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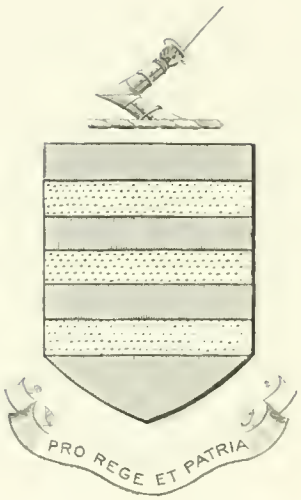

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MEDICAL RECORD

A Weekly Journal of Medicine and Surgery

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Original Articles.

SOME OBSERVATIONS ON CONGENITAL AND ACQUIRED HEMOLYTIC ICTERUS.

WITH A REPORT OF TWO CASES TREATED BY SPLENECTOMY.*

BY GEORGE EMERSON BREWER, M.D.,

NEW YORK.

THE object of this communication is to report two cases of splenomegalic hemolytic icterus, greatly improved if not cured by splenectomy.

Before describing in detail these two cases, it might be of value briefly to review a few facts which have contributed to our knowledge of this interesting condition.

During the past two decades a large amount of study, both clinical and pathological, has been expended on that interesting group of diseases associated with splenomegaly. Of these, three types, having a number of features in common, have perhaps received the most attention.

The first of these is that condition described many years ago by Banti, in which enlargement of the spleen is noted without other symptoms, often for a period of several years. Later there occurs a progressively increasing anemia of the chlorotic type, with gastric hemorrhages and still later evidences of cirrhosis of the liver, ascites, great weakness, emaciation, pigmentation of the skin, and death. To this condition the terms idopathic splenomegaly, splenic anemia, and Banti's disease have been applied.

The second of these conditions is that in which the splenomegaly is associated with a grave and progressive anemia. The disease advances much more rapidly than the former type, and always in the later stages presents the characteristic blood changes of pernicious anemia. In this type also, when untreated, the prognosis is fatal.

In the third type, the chief symptom is jaundice. The disease which may be congenital or acquired is an exceedingly chronic one, the jaundice often appearing at or shortly after birth, and may continue with certain variations in intensity throughout life. The jaundice in this condition has nothing to do with biliary obstruction or bile absorption, but is caused by a too rapid destruction of the red blood corpuscles and is in fact a true hemolytic icterus. The prognosis in this condition is much more favorable than in the first and second types, for a number of cases are on record in which a congenital jaundice has been present throughout a long life without causing marked impairment of health. In perhaps the majority of instances, however, of both the congenital and the acquired types, symptoms sooner or later appear which may result in chronic invalidism or even death.

While these three types of disease when observed in typical cases are quite different and distinct from each other, cases are not infrequently encountered in which they seem to be combined, as evidenced by a comparatively large number of observations in which a long observed hemolytic jaundice finaly presented the characteristic symptoms and blood picture of a pernicious anemia, or in which a definite pernicious anemia with splenomegaly was later associated with gastric hemorrhages or cirrhosis of the liver. These facts and the additional fact that in all three, we have splenomegaly, excessive hemolysis, anemia, and pigmentation would lead to the inquiry as to whether we are dealing with a single pathological entity, with variations in its symptomatology, or whether on the other hand these three conditions should be regarded as three definite and distinct diseases. This question has not up to the present time been definitely settled.

The essential features of splenomegalic hemolytic icterus are chronic jaundice and enlargement of the spleen. The jaundice is of a bright lemon yellow color, which varies in intensity, but is seldom if ever wholly absent. It is not associated with itching, torpor, slow pulse, or other evidences of intoxication with bile salts. The stools are never clay colored, but are light or dark brown, always showing an abundance of bile elements. The urine varies in color and contains urobilin. In some instances hemoglobinuria may be present. In most but not all cases there is a definite fragility of the red cells to the action of hypotonic salt solutions. Enlargement of the spleen is always present, and in the later stages of the disease may reach an enormous size.

In the congenital cases, the jaundice appears at or soon after birth. At first it is only a slight sallowness or yellow discoloration of the sclerotics, with a fainter color in the skin. As a rule there are no other symptoms, and the child may reach adolescence without or with but slight impairment to health. In other cases the child is never robust, the jaundice becomes more pronounced, the appetite is capricious, there are minor digestive disturbances, and anemia of the chlorotic type appears. The degree of anemia is often in direct proportion to the degree of the jaundice; and in the remissions in the intensity of the icterus, which are frequent, the general health and bodily vigor improve. In a fair number of congenital cases the individuals live to a ripe old age without serious inconvenience or ill health.

In the acquired cases, the jaundice is first observed during adolescence or early adult life, and while a fair proportion of these may continue for years without other marked symptoms, in the ma-

*Read at a meeting of the Pracitioners' Society, May 5, 1916.

jority of the acquired cases and in many of the congenital type there occurs sooner or later a series of febrile attacks or crises, in which there may be chills, elevation of temperature, pain in the upper abdomen, particularly on the left side, and tenderness of the spleen on palpation. With these symptoms there is general malaise with weakness, and an increase in the jaundice. Nausea and vomiting may occur, occasionally diarrhea and severe prostration. During these attacks there is an increased excretion of urobilin, and the urine may become blood red (hemoglobinuria). After each of these attacks the patient appears more anemic, and if the attacks are of frequent occurrence, the health rapidly declines. In a few recorded cases the anemia, which at first is always of the chlorotic type, gradually changes to the pernicious variety, and in these cases if untreated the prognosis is fatal.

While a definite enlargement of the spleen is always present when the disease is sufficiently advanced to admit of a positive diagnosis, in many cases it is overlooked, unless the left upper quadrant pain and tenderness or febrile crises lead to a careful physical examination. As a rule, the acquired cases progress more rapidly and are associated with more severe crises and a graver degree of anemia.

An interesting feature of the disease is its tendency to appear in several members of the same family. Graf reports a family of thirteen children, in which the father and six of the children suffered from the disease. Elliott and Kannavel report one family in which three cases occurred, and another in which four were jaundiced. In one of these the tendency was evidently inherited from the maternal great grandfather, six cases occurring in the second generation, seven in the third, and two in the fourth. The number of instances in which this family tendency has been observed has led to the general employment of the term familial hemolytic jaundice, as descriptive of this condition.

Regarding the etiology of the disease it may be stated that it is due to an exaggerated activity of the normal hemolytic function. While Chauffard and Widal have advanced the theory that the hemolyzing agents were present or at least primarily active in the blood and that the condition therefore was a true blood disease, most observers now hold to the opinion that the seat of the disease is the spleen. This view is based upon the fact that in these cases there is always present marked structural changes in this organ, and that careful microscopical and chemical examinations always reveal the evidences of excessive hemolysis in the spleen with the presence of a great excess of pigment granules showing the iron reaction, not only in the liver but in the tissues of the spleen and in the sinuses and tributaries of the splenic vein. These facts and the demonstrated curative effect of splenectomy leave little doubt as to the splenic origin of the symptoms.

Eppinger states that the condition may be spoken of as "hypersplenism," that while in these cases there is at all times an exaggeration of the normal hemolytic action of the spleen, there occurs from time to time a "massive hemolytic activity" with excessive destruction of the red cells, leading to the increased jaundice, anemia, and symptoms of acute intoxication.

In regard to the pathological changes in the spleen in this disease, a large number of observations have been published. While most of these simply report on the gross changes, a not inconsiderable number have recorded the results of careful and painstaking microscopic study. Among these may be mentioned those of Guizzetti, Micheli, Merkel, Kumpiess, Elliott, and Kannavel. In all of these, there is substantial agreement on the chief pathological changes in the splenic tissues, although the individual spleens show considerable variation in the extent and distribution of the lesions. Grossly the spleens show marked hypertrophy, hyperemia, a diminution in the number and size of the Malpighian follicles, and in some instances, thickening of the capsule and adhesions to the diaphragm and abdominal wall.

On microscopic examination the intense blood engorgment of the organ is found to be chiefly in the interstices of the splenic pulp, or the so-called strands of Billroth, the sinuses being nearly empty. The endothelial cells of the sinuses are greatly reduced in size and are oval rather than rod-shaped, as seen in normal spleens. The pulp arteries are occasionally surrounded by fibrous rings in a state of hyaline degeneration, and in their fibrous coats as well as in the surrounding fibrous tissue, are numerous pigment granules. Phagocytosis is marked particularly in the sinuses. Many of the red cells exhibit an irregular outline and show a diminished staining reaction to eosin. Many of the follicles are atrophied or totally degenerated. As certain of the changes in the spleen give evidence of the presence of a chronic inflammatory process, it is interesting to note that in a culture taken from a removed spleen and reported by Upcott and Gibson, a growth was obtained of an organism of the streptothrix group. Bunting has also obtained an organism of the diphtheroid group. Chauffard's report of three cases in one family, in which the Wassermann reaction was positive, and of three other patients in which positive signs of tuberculosis were present, led Kumpiess to make a critical analysis of seventy-nine cases of hemolytic jaundice, in which he was able to establish the association with syphilis in twelve, and of tuberculosis in five cases.

To sum up the facts so far observed in regard to the etiology, it may be stated that the disease is primarily due to an exaggeration of the normal hemolytic processes of the spleen and possibly other tissues of the body; that this excessive hemolytic activity is in all probability chiefly due to pathological changes in the spleen, and that there is some reason to believe that these changes may be the result of one or more types of chronic infection.

In regard to treatment, Banti was probably the first to employ splenectomy in the treatment of this condition. His patient, a woman fifty years of age, had suffered from severe anemia with tenderness in the hypochrondriac region for twenty-five years. Nine years before she came under observation hemolytic icterus developed and persisted until February 20, 1903, when Banti removed the spleen. She made a prompt recovery. She was examined eight years later, in 1911, and was found to be well with no evidence either of icterus or anemia.

In a paper by Muhsam in 1914 (*Deutsche med. Wochenschrift*, November 8, 1914), commenting on Banti's and a number of other cases in which splenectomy had been performed, he stated that he had personal knowledge that the operation had been employed for this condition in fourteen instances, and reports the results as remarkably favorable.

In a rather hasty and incomplete review of the current medical literature I have been able to find no less than thirty-one operations reported, prior

to 1915, with one operative death, and one death later from uremia.

Elliott and Kannavel have been more successful in their search, and in 1915, in an article in *Surgery, Gynecology, and Obstetrics*, they reported forty-eight operations with two deaths. Of these, nine were reported cured more than six months after operation. This list includes one by Spencer Wells twenty-seven years after operation, Banti's case eleven years, Bland Sutton's ten years, and a case reported by Roth six years. They also reported on a number of cases in which postoperative blood examinations were made as follows: Seven cases during the first two weeks, in which four had gained from one to two million red cells; eight cases examined from three to four weeks after operation, in which one gained over three million cells; two over two million, and three over one million. Nine cases reported examined from three to six months, with one case showing an increase of five million, four cases an increase of over three million, and five cases over one million.

While there are as yet very few reports stating the remote results of splenectomy in these cases, the records as far as they go show conclusively that in early splenectomy we have a comparatively safe and the only successful method yet suggested in the treatment of splenomegalic hemolytic icterus.

The following two cases have recently come under the writer's observation and treatment:

Case I.—C. L. A trained nurse aged 30 years. Has suffered from jaundice for seventeen years. Several members of mother's family have suffered from unexplained jaundice. During the first years practically no symptoms. From 1899, however, she experienced a number of attacks of moderate abdominal pain with anorexia, constipation, and increased jaundice. In the intervals the jaundice would lighten but it never disappeared. In 1904 she had a rather severe attack with markedly increased icterus, after which she was weak and indisposed for three months. In June, 1906, operated upon for epigastric pain and jaundice. Gallbladder found normal, easily emptied, no stones. Following this operation she was free from jaundice for two months, gradually regained her health and strength. After a few days of work in the autumn she had another attack of abdominal pain with jaundice. Several months later following another attack she underwent a second operation. Several small stones found. Gallbladder drained for twelve days. Jaundice decreased but did not wholly disappear. During 1908 and 1909, she experienced several more or less severe attacks of pain; one with jaundice, sour vomiting, and diarrhea, but without clay-colored stools, and another with some pain radiating to the right shoulder. Later she entered a hospital for severe diarrhea lasting ten days. These symptoms continued for the next five years, pain, nausea, fever, diarrhea, and a varying jaundice. Was finally seen by Dr. Lewis A. Conner, who made the diagnosis of familial hemolytic jaundice. Entered the Presbyterian Hospital October 8, 1915. On admission she was slightly jaundiced. Physical examination showed chest negative; abdomen; enlargement of the spleen, its anterior border being easily palpated for one or two inches below the costal border. Stools, brown color, contained urobilin. Urine negative. Blood coagulation time, seven minutes. White cells, 11,800; polynuclear, 78 per cent.; red cells, 3,408,000; hemoglobin, 75 per cent.; hemolysis test: Hemolysis begins at .375, complete at .350. Wassermann negative. October 23. Splenectomy; operation without difficulty and without shock. October 30. White cells, 31,000; polynuclears, 88 per cent. Novembr 1. Stitches removed, wound healed, primary union. November 11. Red cells, 4,216,000; white cells, 11,000; polynuclears, 80 per cent.; hemoglobin, 85 per cent. November 14. Hemolysis test: .550—.400. Discharged almost free from jaundice, gain of nearly 1,000,000 red cells and 10 per cent. in hemoglobin. May 2, six months and nine days after operation, fragility test shows hemolysis index .489; hemoglobin, 75 per cent.; red blood cells, 4,800,000; white cells, 13,400; polynuclears, 44 per cent.; lymphocytes, 54 per cent.; blood cholesterin, 3.61 grams to liter.

Case II.—H. O'S. 21. Referred by Dr. Schulman. No family history of jaundice. Three years ago noticed gradual onset of jaundice with lassitude, but without pain or other symptoms. Gradually grew weaker, suffered from occasional pains in upper abdomen, anorexia, and constipation. Lost fifteen pounds in past six weeks. Admitted to the Presbyterian Hospital service of Dr. Longcope. November 18, 1915. Sclerotics jaundiced, skin of face pigmentated in patches. Chest normal. Abdomen: spleen enlarged, anterior border easily palpated one inch below costal border. Blood examination: Red cells, 3,064,000; hemoglobin, 70 per cent.; whites, 9,500; polynuclears, 89.5 per cent.; lymphocytes, 10 per cent. Fragility test: Hemolysis begins at .425, complete at .4. Wassermann negative. November 22. Hemoglobin, 60 per cent. Vital stain: Reticulated cells, 27 per cent. Stools brown, no food remains, acid, no blood, urobilin marked. Urine negative. December 4. Splenectomy without difficulty or marked shock. Recovered from anesthetic satisfactorily. On second and third days suffered from postoperative gastric dilatation which, however, yielded to lavage and hot stupes. Primary union of wound, stitches removed on eighth day. December 18. Fragility test, .489-.483; red cells, 3,824,000; hemoglobin, 75 per cent.; white cells, 13,500; polynuclears, 68 per cent. December 21 Jaundice gone, pigmentation improving. May 2, five months after operation, fragility test, .595; hemoglobin, 80 per cent.; red blood cells, 4,900,000; white cells, 15,000; polynuclears, 54 per cent.; lymphocytes, 46 per cent.; blood cholesterin, 2.77 grams to liter; vital stain reticulated cells, 5 per cent.

Both patients are free from jaundice, are much improved in health, and are able to do their work without fatigue.

16 East Sixty-fourth Street.

THE HUMAN PROSTATE GLAND IN MIDDLE AGE.

By OSWALD S. LOWSLEY, A.B., M.D.,

NEW YORK.

The changes observed in the human prostate gland during the period of youth have already been considered and a review of the anatomical conditions existing during the adult stage, through the middle-age period, and up to the time of old age are now to be described.

By the beginning of the third decade the prostate has about reached its maximum growth so it is observed that practically the entire increase in size occurs during the second decade. Measurements in gross of specimens removed from subjects varying in age from twenty-one to thirty, disclose the fact that such glands vary in length between 2.8 cm. and 4.0 cm. The average being 3.3 cm. In width the smallest one measures 3.6 cm. while the largest is 5.2 cm., with an average of 4.16 cm. In thickness the dimensions are always less than the other two in this period. In this group it varies from 2.0 cm. to 3.0 cm., with an average of 2.4 cm. for all specimens. The trigonum vesicæ, which is generally presumed to be symmetrical, shows some asymmetry in over 50 per cent. of the cases studied. Extending between the apex of the trigonum and the upper end of the verumontanum there are always found small bands of tissue which vary in number from one or two to five. In this series 66 per cent. of the cases show one band only, in 14 per cent. there are two, and in 20 per cent. there are three. The verumontanum averages 2.0 cm. in length for all cases, while it is 0.41 cm. in width and 0.3 cm. in height. The mouth of the utricle varies somewhat in size, but it averages about 0.17 cm. The average depth of the lumen of the utricle is 0.5 cm., but there is a variation in this measure-

ment from 0.1 cm. to 0.7 cm.; 45 per cent. of the cases show an asymmetry in the seminal vesicles of considerable degree. The structures vary in length from 2.3 cm. to 4.4 cm., the average being 3.45 cm. In width the average measurement is 1.34 cm., thickness averages 0.78 cm.

Serial cross sections of a prostate taken from a man aged twenty-five shows the same general arrangement which characterizes the seventeen-year-old specimen described. There is noted a very slight increase in the size of the gland itself and of the individual tubules. The five lobes which make up the gland embryologically are distinguishable and the posterior lobe is fairly well separated from the remainder of the gland. The tubules of Albarran and the subtrigonal group are both present. The verumontanum containing utricle and orifices of ejaculatory ducts is about the average size for this decade. Seminal vesicles and ejaculatory ducts show the same general characteristics that have been described. The interesting group of tubules occurring on the ventral wall of the urethra at the apex of the prostate is present in this specimen.

Serial cross sections of a prostate gland and contiguous structures taken from a man thirty-four years of age show the following: *The middle lobe* is made up of seven tubules. They extend back to the very base of the prostate at which point their separation from the other lobes is pronounced. There it is observed that each branch of every tubule is surrounded by a fairly thick muscular wall which is composed of two distinct layers. The entire tubule in turn is surrounded by an even thicker sheet and a remarkable number of branches join and empty their contents into the prostatic urethra through a comparatively small duct. At the thickest portion of the middle lobe one cannot at a glance distinguish the dividing point between middle and lateral lobes. However, by observing the arrangement of tubules from section to section the division is quite apparent. As the ejaculatory ducts and utriculus prostaticus, surrounded by their thick muscular wall, assume their position in the gland just above the verumontanum, the ducts of the middle lobe tubules group themselves outside of the ventral surface of the above-mentioned muscular wall. At this point they are widely separated from all other portions of the gland, and there is a very definite layer of muscle and elastic tissue separating them from Albarran's group. The ducts open into the prostatic portion of the urethra near the upper borders of the lateral walls and the summit of the verumontanum. Their mouths are considerably separated from other structures and conform in this regard to their original embryological arrangement. It is noted that middle-lobe tubules are somewhat smaller than those of the lateral lobes and have not nearly so many branches. There has not thus far, with the methods at hand, been found a difference in the character of the mucosa. The general architectural characteristics correspond to a certain degree in all of the lobes. There are no particularly large intralobular blood vessels in this specimen.

The lateral lobes of this gland are large and bulging. They compose the main bulk of the organ and are particularly marked by the increase in the size of the tubules composing them and the large number of branches when compared with the younger specimens. There seems to be an increase in the amount of interstitial tissue present and large bundles of muscle fibers are observed at the upper and lateral margins. The capsule is fairly thick, and contains most of the large blood vessels. It is an interesting fact that while there are some blood vessels within the layers of the capsule on its posterior surface, the major portion of them are observed on the anterior aspect. The vessels that extend into the gland tissue proper seem to be quite small, as a general rule. The tubules composing the left lateral lobe are eleven in number while there are fifteen on the right side. It is noticed that the branches of these tubules practically all occur at the outer one-third of the lobe while the inner two-thirds or that portion which is nearest the urethra is composed mainly of muscular, elastic, and fibrous tissue elements. These proportions do not hold in the case of the posterior lobe although the general principle does. Most of the ducts of the lateral lobes have their orifices below the openings of the ejaculatory ducts, very few indeed being found above this point. The ducts proper are quite short and run almost at right angles to the axis of the urethra until the paraurethral region is approached, at which point they gradually bend toward the lumen and empty into it obliquely. The area through which the ducts pass, as described above, is composed of muscular and elastic tissue chiefly and the ducts themselves are surrounded by moderately thick, firmly bound muscular tunics. The entire anatomical arrangement gives one the impression that they are particularly arranged for a very rapid and complete emptying of any fluid within their lumina. The mouths of the ducts empty into the urethra at an angle in such a manner that there is a very thin laplet of tissue covering them so that in wide distention of the posterior urethra pressure would easily close their orifices very effectively, particularly as a large majority of them empty on the lateral walls of the verumontanum, which is itself an easily compressible organ. On the other hand, however, a number of them open directly into the bottom of the prostatic furrow and an effective closure of such duct openings would not be accomplished.

The posterior lobe extends from its origin on the floor of the urethra anteriorly or outward from the orifices of the ejaculatory ducts behind them to the point where they enter the prostate. This lobe is fairly well separated, in this specimen, from the lateral lobes by a layer of tissue similar in structure to the capsule of the gland. The tubules which compose this portion are eleven in number. They are large and have numerous branches. Their ducts are somewhat shorter than lateral lobe tubules in most instances. In this specimen many corpora amylacea occur in the posterior lobe tubules as well as in those of the middle and lateral lobes. The branches are more numerous near the periphery as is the case with the lateral lobes. The mucous membrane of the tubules is made up of the usual cylindrical cells with the nuclei at their bases resting upon a mattress composed of delicate connective tissue threads surrounding which are quite thick, dense layers of smooth muscle fibers. The lumina are widely distended, and contain secretion in most instances.

The anterior lobe. There are four very small tubules which have grown from the anterior wall of the urethra. These structures have few branches, are small in size, and insignificant in appearance. They occur at about the middle of the prostatic urethra. The lumina are lined with low columnar

epithelium, and there is no thick muscular layer surrounding them. The ducts are short and small, being about one-fifth the size of those of other parts of the gland.

The trigonum vesicæ is covered in practically every instance by a mucosa which is free from folds. In this instance there is a slight folding, over the middle portion of the trigonum. There are thirty-eight subtrigonal tubules in this specimen. They show a considerable increase in size over all of those previously described. This increase is noticed not only in regard to the extent of the tubules, but also there is an increase in the thickness of their walls, and, a most unusual thing, several of them have small branches. Although these interesting structures are considerably more extensive than in previously described younger specimens, they retain their general characteristics and grow down to the submucosa but not through it. Their blind ends are situated nearer to the base of the trigone than are their mouths, although they are in every instance very short. Thus their course is seen to be an oblique one. Their mouths open directly into the bladder lumen and are not in any sense protected by a valve-like membrane, as is the case with the duct openings of the prostatic tubules. There is nothing distinctive about the histological arrangement. There are several layers of low cylindrical and cuboidal cells disposed upon a tunica propia. In some instances the cells are piled upon one another, layer by layer, so that the lumen of the tubules is very small in size. No secretory substance can be made out within the lumina of these glands as is often the case with prostatic tubules. They vary considerably in size, some of the largest of them having a small branch but in no case was there found to be more than one, and never does the structure extend through the submucosa, although the ends of the tubule often extend to it.

Albarran's Tubules.—Thirty-one tubules of Albarran are found in the subcervical region of this specimen. They are larger and more branching than any of the younger specimens studied. The uppermost tubules of this large and interesting group of structures are found under the lower part of the trigonum vesicæ. At places it is observed that several subtrigonal glands occur in the mucosa and below them there are seen branches of Albarran's glands, which are embedded in the submucosa and in some places have extended slightly into the sphincteric muscle, but for the most part are contained within the circular fibers making up the sphincter, and in only a few instances do they mingle with these fibers. A very interesting arrangement is noted in that just above the lower border of the thick, ribbon-like internal sphincter and posterior to it there are a few of the branches of Albarran's tubules which are very delicate in architecture with no muscular walls and join with other branches of the same group below the border of the sphincter and empty into the urethra in about the middle line above the verumontanum. Thus we have some of the tubules of Albarran in the shape of a letter "Y" fitting over the lower border of the sphincter, a condition which has not been found in any of the other specimens studied. At no point do these tubules mingle with those of the middle lobe, being widely separated from them. The majority of the tubules composing this group empty on the floor of the urethra. Their branches are quite numerous, in some cases as many as fifteen being counted for one tubule. They always extend toward the bladder and are separated from other structures at the neck of that viscus. Most of them are suburethral but there are a few which empty into the urethra upon its lateral walls and one or two on its anterior wall. These glands are compound tubular and the mucosa is made up of low columnar cells of small size placed upon a thin connective tissue lining membrane. They are very frail, being much smaller in size than prostatic tubules and have no differentiated envelopes surrounding them.

The verumontanum in this specimen measures 0.4 cm. in height, 0.4 cm. in width and contains portions of some of the tubules of the prostate, the ejaculatory ducts and utricle with their surrounding structures.

The utrieulus prostaticus is quite large and deep in this specimen. It extends from its opening in the summit of the verumontanum almost to the base of the prostate, and is about 1.1 cm. in depth. In size it is about three times as large as either of the ejaculatory ducts, and is in a more or less collapsed condition, so that the mucous lining is markedly folded, the lumen proper being almost entirely filled by it. At its end, near the base of the prostate, it is surrounded by a very thick wall of muscular and connective tissue which is at least three times the size of the walls of the ejaculatory ducts. The three structures, each surrounded by its own distinctive wall, are bound together by a comparatively thin envelope which contains them all. At a point about midway between the base of the prostate and the upper end of the verumontanum the individual walls of the ejaculatory ducts and utricle are not so thick as is the case nearer the base, but the envelope surrounding them becomes much more prominent and is arranged far more compactly. This firmly bound structure maintains its compactness until it reaches the verumontanum, at which point the utricle changes markedly in appearance. It is smaller in size and surrounding it almost completely are a great many tubular structures which have in most instances a few branches. They are lined by a mucous membrane similar in type to that of the utricle itself and in turn have a rather thin wall of differentiated tissue surrounding them. Most of these glandular structures enter the utricle itself, but a number of them, near its orifice, open directly into the lumen of the urethra on the summit of the verumontanum and close to the orifice. As is usually the case, the orifice of the utriculus prostaticus opens in the midline just a little outerward from the openings of the ejaculatory ducts.

The vasa deferentia are unusual in a number of ways. The mucosa is very thick and much folded, thus making the lumen quite small. The walls are about four times as thick as the diameter of the lumen and mucous layers and are composed of white fibrous connective tissue and smooth muscle fibers very compactly arranged. At intervals there are found, imbedded in this thick wall, small simple tubules which communicate with the lumina of the ducts. Some of these tubules extend quite deeply into the walls. At the region of the ampullæ of the vasa deferentia the lumina are increased in diameter about five times and the walls are, comparatively speaking, much decreased in thickness. There are a number of folds in the ampulla which afford an added capacity. Towards the urethra, where the vasa deferentia become imbedded in the

tissue of the prostate, they decrease in size until they are a trifle smaller than above the region of the ampullæ. No accessory tubules are noted in their walls at this point.

Well within the base of the prostate the ducts of the seminal vesicles unite with the vasa deferentia to form the ejaculatory ducts. The seminal vesicles themselves extend backward so that their highest level is farther than the base of the trigonum vesicæ. They are made up of a main lumen and several large convoluted branches on each side and are bound together and to the vasa deferentia by a triple-layered fascia which I have described in detail in another communication. The ejaculatory ducts become gradually smaller in size and approach each other more closely as they extend in a rather oblique direction at first and then quite perpendicularly to a location in the summit of the verumontanum, at which point they turn sharply and run parallel with the axis of the urethra for about 0.5 cm., where they open laterally into the urethra near the summit of the verumontanum.

The apex group of glands is made up of nine small tubules with many branches all of which are contained within the wall of the membraneous urethra just at and below the apex of the prostate. These glands are compound tubular in type and for the most part are found extending from the floor of the urethra, although there are a few found laterally and an occasional one in the ventral wall.

During the fourth decade there is no particularly marked change in the gross measurements as compared with the prostates of the third decade at which time this organ seems to have reached its maximum adult size. The blood vessels, most of which are grouped in the anterior and lateral portions of the capsule, are somewhat larger, and phleboliths are more frequently found than in the case previously observed. In size the organs examined vary from 2.4 cm. to 4.0 cm. as regards their length, the average being 3.15 cm. In width, which is always the greatest dimension, there is a variance of from 3.0 cm. to 5.0 cm., the average of 4.0 cm. existing. Thickness averages 2.55 cm. The trigonæ vesicæ of all the specimens being carefully measured show that 50 per cent. of them are asymmetrical by over 0.4 cm. Extending between the apex of the trigonum vesicæ and the upper end of the verumontanum some of the cases have one band of tissue, a few have two, and in over one-half there are three such structures. In younger specimens its length varies at this age from 1.1 cm. to 2.6 cm. The average is 1.8 cm. The width and height, which are usually about the same, average 0.43 cm. in width and 0.46 cm. in height. The utricular orifices average 0.15 cm., the variation being from 0.1 cm. to 0.25 cm., while the length of this interesting vestigial organ varies from 0.2 cm. to 0.9 cm., with an average of 0.5 cm. The seminal vesicles are interesting in that there is a condition of asymmetry in about 60 per cent. of those measured at this age. They average 4.0 cm. in length, 1.1 cm. in width and 0.94 cm. in thickness.

In the fifth decade there is only the very slightest increase in size of the prostate compared with its measurements of the previous period. The average length is 3.45 cm., there being a variation of 1.6 cm. between the shortest and longest glands measured during this period; the former is 3.0 cm. and the latter 4.6 cm. The width, which is always greater, varies from 3.6 cm. to 5.0 cm., with an average of 4.0 cm. The average depth is 2.65 cm.; the variation being from 2.3 cm. to 3.8 cm.

Sixty per cent. of all of the specimens of this age at hand showed an asymmetry of the trigonum vesicæ of over 0.4 cm. The blood vessels in this portion of the bladder seem to become considerably more prominent during the middle and later years of life, and are quite conspicuous during this decade. The verumontanum is very slightly increased in length, the average being 1.95 cm., varying from 1.7 cm. to 2.7 cm. Its width averages 0.45 cm. and height 0.49 cm. The mouth of the utricle varies from 0.1 cm. to 0.4 cm., the average being 0.19 cm. The length or depth of this interesting structure varies from 0.3 cm. to 1.6 cm. The average is 0.7 cm. The average length of seminal vesicles is 3.9 cm., but the variation is very great. One specimen forty-seven years of age has vesicles which measure only 1.8 cm. Another at forty-eight years measures 5.0 cm. The average width and thickness are 1.66 cm. and 0.9 cm. respectively.

Dr. George Walker of Baltimore permitted me to study the prostate of a man who died at about the middle of the fifth decade, which had been cut in series and stained with hematoxylin and eosin. In general this series shows characteristics similar to those of organs already described.

The size of the prostate during the sixth decade is practically the same as that of the fourth and fifth decades. In length the average measurement is 3.65 cm., varying from 2.4 cm. to 4.5 cm. The average width is 4.37 cm., the least wide being 3.3 cm. and the greatest 5.0 cm. In thickness there is a variation of 1.0 cm., the average being 2.75 cm.

The trigonum vesicæ shows an asymmetry of over 0.4 cm. in 80 per cent. of the specimens. The verumontanum is about the same length as in the preceding period, the average being 1.7 cm. It is 0.43 cm. in width and the same in height. The mouths of the utricle average 0.13 cm. in length while the length of the utricle averages 0.7 cm., varying from 0.4 cm. to 1.3 cm. The seminal vesicles show very little change in size, averaging 3.7 cm. in length, 1.55 cm. in width and 0.8 cm. in thickness. Thirty per cent. of the seminal vesicles were asymmetrical comparing one side with the other.

The human prostate gland reaches its maximum size in health by the end of the third decade, almost the entire change occurring during the second period. The measurements for the adult organ as given by Wilson and McGrath agree fairly well with the measurements during the adult decades in my series. They found the average adult gland to vary in length from 3.3 cm. to 4.5 cm., with an average of 3.4 cm. In width there is a variation from 3.4 cm. to 4.5 cm., average 4.4 cm. Thickness varies from 1.3 cm. to 2.4 cm., averages 1.5 cm. The weight averages 16 or 17 grams. Cuthbert Wallace does not quite agree with these figures. He states the length to be 3.0 cm., the greatest transverse diameter being 3.6 cm. and the anteroposterior measurement 1.8 cm. He believes the average weight to be 20.5 grams. It seems to me to be much more preferable to consider the size of the gland in decades in order to detect the changes that may normally occur. Considering the matter in this manner with a moderately large number of specimens in each decade I have shown that the prostate practically reaches the maximum normal size during the third decade. During the fifth and

sixth decades the size is very slightly increased, but the change is very slight, as shown by the accompanying table.

Table Showing Changes in Size of the Prostate Gland at Various Ages in a Series of 224 Cases

Age	Number of Cases	Length		Width		Height	
		Variation	Average	Variation	Average	Variation	Average
1st decade, 1-10 years	38	1.0 cm. to 1.7 cm.	1.2 cm.	1.0 cm. to 2.0 cm.	1.5 cm.	0.7 cm. to 1.3 cm.	0.9 cm.
2d decade, 10-20 years	10	2.5 cm. to 3.5 cm.	3.0 cm.	.....	3.8 cm.	1.8 cm. to 2.4 cm.	2.1 cm.
3rd decade, 20-30 years	40	2.8 cm. to 4.0 cm.	3.3 cm.	3.6 cm. to 5.2 cm.	4.1 cm.	2.0 cm. to 3.0 cm.	2.4 cm.
4th decade, 30-40 years	33	2.4 cm. to 4.0 cm.	3.15 cm.	3.0 cm. to 5.0 cm.	4.1 cm.	1.6 cm. to 3.0 cm.	2.55 cm.
5th decade, 40-50 years	42	3.0 cm. to 4.6 cm.	3.45 cm.	3.6 cm. to 5.0 cm.	4.0 cm.	2.3 cm. to 3.8 cm.	2.65 cm.
6th decade, 50-60 years	29	2.4 cm. to 4.5 cm.	3.65 cm.	3.3 cm. to 5.0 cm.	4.37 cm.	2.4 cm. to 3.4 cm.	2.75 cm.
Old age, 60 years	32	2.6 cm. to 4.5 cm.	3.23 cm.	3.0 cm. to 5.0 cm.	4.12 cm.	2.0 cm. to 3.6 cm.	2.47 cm.

The prostate gland is in every instance divided into five portions corresponding to the five original groups of tubular evaginations noted in the embryo. The division between the middle and two lateral lobes becomes less and less noticeable as age advances, but the orifices of the middle lobe tubules are in every instance widely separated from all other tubular orifices and quite closely grouped together. The middle lobe tubules always grow backward behind the vesical orifice outside of the broad ribbon-like sphincter, and its tubules are never found imbedding themselves in it or extending within the sphincter. This is an important fact to be noted when considering pathological conditions at the bladder orifice, and will be discussed in another paper at a later date. The lateral lobes during the period of middle age become more and more prominent and cause a bulging of the lateral surfaces to a marked degree, thus making the transverse diameter of the organ proportionally greater than the prepuberty specimens studied. The number of branches of these and other lobes of the prostate are markedly increased but the number of tubules is certainly not increased and seems rather to be decreased, but that is a variable matter which is undoubtedly determined in the embryo, and the exact number is a personal characteristic.

The posterior lobe is fairly well separated from all of the other portions of the gland and is divided off by a rather firm, and in some instances, quite thick connective tissue partition. It is always present as is the lobe itself, and is intimately attached to the ejaculatory ducts which are not imbedded in this partition, but seem to be set upon its anterior surface. This is a decidedly important matter to the surgeon in enucleating a prostate either by Squier's suprapubic intraurethral method in which the enucleating finger approaches the partition and attached ejaculatory ducts and passes along to the upper end of the verumontanum, which is usually removed without injuring the ducts and surely would not be injured if the verumontanum, which is usually torn through with some difficulty, were cut with the scissors; or Young's perineal method in which the two parallel longitudinal incisions must be extended entirely through the partition, thus preserving the ejaculatory ducts in order that the enucleating instrument may go into the lateral lobe cavities because otherwise it will lead into the capsule of the gland and proper enucleation is then an impossibility.

The posterior lobe is always present and is the part of the gland felt per rectum. Its tubules are in most respects similar to those of the other lobes. In some cases, however, they seem not to be quite so large and in most instances there is evidence that they do not secrete prostatic fluid actively. The branches of these tubules are usually not as numerous as those of other lobes, and are smaller in size and have a thinner layer of smooth muscle surrounding them.

The anterior lobe varies greatly in different specimens. At the time of birth it consists of two small unimportant tubules with very few branches. In the post-puberty specimen the anterior lobe is quite prominent and is made up of tubules which branch extensively and are apparently actively secreting prostatic fluid. A number of important changes are noted when the pre-puberty prostates are compared with the gland in adult life. In order to study the various types of tissue, sections have been stained with Van Gieson's, hematoxylin and eosin, and Weigert's elastic tissue stains. The mucosa of the terminal branches of prostatic tubules in pre-puberty specimens is made up of cuboidal-shaped cells with nuclei which are quite large and situated in the center of the cells. They are usually two layers thick and occasionally three. Scattered here and there are occasional cylindrical-shaped cells with the nuclei elongated and in the center of the cell. The lumina are very small and apparently devoid of secretion. The mucous cells are placed upon a felt-like base made up of minute connective tissue fibers, as described by Walker. The smooth muscle layer surrounding the terminal branches are very interesting as brought out by Van Gieson's differential stain. Each branch is surrounded by a definite layer of smooth muscle circularly arranged. The branches occur in groups of 5 to 10, and the entire tubule is surrounded by a much heavier envelope of smooth muscle, also circularly arranged. Outside of this envelope there are several small bundles of longitudinal fibers which occur at intervals around the tubule but not as a definite intact sheet. The branches of tubules all extend backward towards the base of the prostate with the exception of a few of the most anterior tubules of the lateral and posterior lobes. The collecting ducts are situated at the most anterior portion of a given group of branches and pass quite directly toward the verumontanum so that almost the entire duct, with the exception of a very small portion which turns forward, may be seen in one cross section. The ducts are lined by a mucous membrane which resembles that already described in practically every detail. There is, however, a great difference noted in the arrangement of the musculature. A thick layer of smooth muscle surrounds the ducts, but it is arranged almost entirely in a longitudinal direction, very little circular muscle being noted. There are practically no branches from this portion of the tubule, most of them occuring in the peripheral third of the gland. In the verumontanum, the tubule turns and runs forward for a slight distance again, and

about nine-tenths of them open on the lateral walls of the verumontanum in such a manner that there is a little leaflet of tissue covering the orifice which is an exceedingly important factor in protecting the tubules of the gland from an inpouring of urine and other foreign matter when the posterior urethra is put under pressure. The direction of the openings of the tubules of the prostate and ejaculatory ducts is an important consideration also because instrumentation will frequently cause an infection by forcing foreign substances into them. In the adult prostate there is noted a great change in the mucosa. I have found in my specimens that the tubules and their branches are lined by a single layer of high cylindrical cells with the nuclei at their bases. Occasionally there is inserted, between the bases of adjoining cells, a round or conical cell, as Krause pointed out. In some places there is a piling up of the cylindrical cells, but I have not found that there is a double layer of cylindrical cells in all of the terminal branches as Langerhans states. Near the orifices of the ducts the epithelium is transitional in type, being similar to that of the urethra itself. The muscle bundles surrounding the tubular branches are very thick in the peripheral portions of the gland, and particularly in the case of middle-lobe tubules near its base. These muscular bundles are much more pronounced, comparatively speaking, in the case of the younger specimens than in the older, and this is probably due largely to the fact that the entire gland becomes more compactly arranged after puberty.

It is interesting to note the various figures quoted in regard to the prostatic tubules. By carefully following each tubule from its most peripheral terminal branches to the orifice from section to section, I have found that in twelve specimens studied, in this manner, the number of middle-lobe tubules vary from 0 to 12, with an average of ten. Right lateral lobe varies from 10 to 23, average 16. Left lateral lobe 11 to 23, average 16. Posterior lobe varies from 6 to 12, with an average of 9, and the anterior lobe from 2 to 14, averaging 7. The total number of tubules varies from 41 to 74, with an average in all specimens of 58. This figure is much greater than that quoted by most authors. Kölliker states that the number varies between thirty and fifty; Hessling 15 to 30; Luscha 16 to 25; Svetlin 15 to 32. I do not believe it possible to estimate the exact number of prostatic tubules by the examination of the posterior urethra by any method because of the interesting manner in which these tubules enter the urethra. In health they are rarely visible by using any posterior urethroscope, but in diseased conditions their orifices become indurated and in some cases are actually held widely open and can be seen beautifully with the McCarthy straight instrument.

The prostate gland seems in adult years to be made up of concentric layers of tissue. The innermost or central area consists of the horseshoe-shaped urethra with the verumontanum, which is made up of the ejaculatory ducts and utricle, with their muscular and connective-tissue walls, the terminal ends of the prostatic tubules with their rather thinly disposed circular layers of muscle, and the stroma, which is not very abundant and is made up of connective tissue for the most part with a moderate amount of smooth muscle fibers but practically no elastic tissue fibers. The next layer, in the lateral and posterior direction, is made up of stroma with practically no tubular tissue except the ducts proper, which have very few branches. The stroma is largely made up of connective tissue with a generous sprinkling of smooth muscle cells which are not arranged in definite

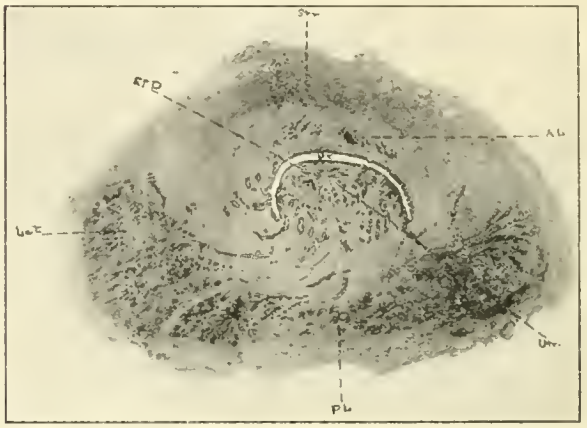

Fig. 1.—Cross-section through the prostate at the level of the openings of the ejaculatory ducts of a four year old child. *Ur*, urethra; *Ej.D*, ejaculatory ducts; *Utr*, region usually occupied by the utriculus prostaticus is in this case occupied by two tubules with many branches; *Str*, striated muscle in anterior portion of gland; *AL*, anterior lobe tubules; *Lat*, lateral lobe tubules; *PL*, posterior lobe tubules.

bundles except around the tubular ducts, as has already been described. There are a moderate number of elastic tissue fibers here also. In the anterior region there are observed the tubules of the anterior lobe with a very slight amount of smooth muscle around them quite firmly imbedded in the stroma. This consists in the anterior region of the middle concentric layer of a considerable amount of smooth muscular fibers interspersed with the white fibrous tissue bundles with occasional fibers of elastic tissue. Near the upper border of the layer are seen a few bundles of striated muscle fibers which in my specimens have not been found to exist among the tubular branches. Cuthbert Wallace, however, reports that he has observed them around some of the outermost of the branches of lateral lobe tubules. The outermost of these concentric layers is exceedingly interesting as it

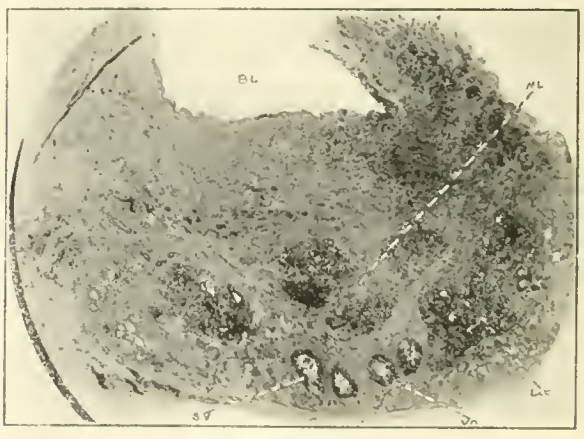

Fig. 2.—Cross-section through the region of the middle of the trigonum vesicæ of a man 34 years of age. *BL*, bladder lumen; *ML*, middle lobe tubules showing wide separation from the lateral lobes; *Lat*, lateral lobe tubules; *VD*, *vas deferens*; *SV*, seminal vesicle.

contains practically all the branches of the posterior and lateral lobes. The middle and anterior lobes are contained, for the most part, in the middle concentric layer. In the outer layer there is a great preponderance of muscular tissue and mucosa.

over all other elements of the gland. In the posterior and lateral portions the muscular tissue is practically all smooth and surrounds the tubular elements, as has been described. In the anterior portion and extending down the lateral borders al-

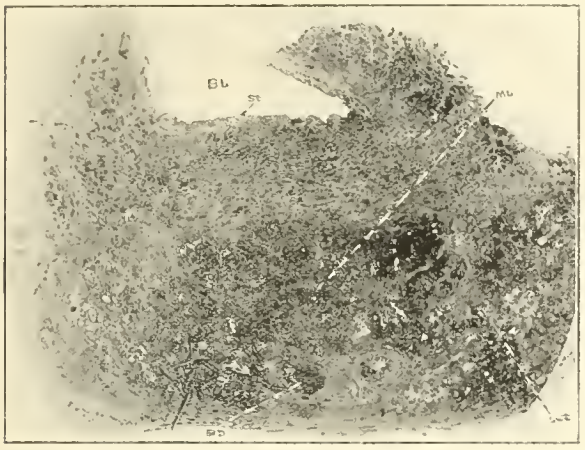

FIG. 3.—Cross-section through the region of the lower portion of the trigonum vesicæ of a man 34 years of age showing the intimate attachment between the prostate and the vesical wall. *BL*, bladder lumen; *ST*, subtrigonal tubules; *ML*, middle lobe tubules; *Lat*, lateral lobe tubules; *Ej.D*, beginning of left ejaculatory ducts showing where the seminal vesical joins *vas deferens*.

most to the posterior surface are found the striated fibers which make up the so-called muscle of Henle. This muscular tissue is so arranged that near the most anterior portion of the gland it is almost the only tissue present. Looking from this point toward the urethra it is seen to become less and less, gradually shading off and being scattered by the smooth muscle and connective tissue so that at the edge of the middle concentric layer there are only occasional fibers noted. There is less and less striated muscle down the lateral borders of the gland until it finally disappears altogether.

There are islands of lymphoid tissue scattered here and there in the adult prostates. Rarely one finds some of these areas in the pre-puberty specimens. They seem to be most frequently met with in specimens older than thirty years. Waldeyer has found similar areas in the prostate of a dog and Weski has studied them in the human and believes them to be normal anatomical structures.

The base of the prostate is intimately attached to the musculature of the bladder, as shown in Figs. 2 and 3.

In regard to the internal sphincter of the human bladder Versari concludes from his investigations that (1) The smooth muscle sphincter of the urinary bladder of man constitutes a structure by itself, which develops independently of the middle (circular) layer of the bladder, the circular muscle layer of the urethra, and the musculature of the ureters. (2) The sphincter is made up of an urethral and a trigonal portion, and it is the urethral portion only which assumes the form of a ring surrounding the initial part of the urethra. The first groups of the fibers of the sphincter arranged in bundles correspond to the anterior arch of the urethral portion; from there immediately follow those of the urethral portion of the posterior arch, and these last are apparently those of the trigonal portion. The posterior arch of muscle extends little by little, with new bundles either upwards to occupy part of the trigonal area or downwards along the posterior wall of the urethra, so that it comes to have an extent much greater than the anterior. On the other hand, the older view held by Krause, Hyrtl, Gegenbauer, and others is that the sphincter is a continuation downward of the circular musculature of the bladder.

The capsule of the prostate is composed of a structure which is made up of closely knit connective tissue fibers and surrounds the entire organ except at the base between the entrance of the ejaculatory ducts into the substance of the prostate and the junction of the bladder wall with the gland. Here the tubules of the middle lobe are almost free and have as a consequence very thick muscular and connective tissue walls. The large blood vessels which supply the prostate run in the capsule and intralobular partitions for the most part and are most numerous on the anterior portion of the capsule. By fibrous connections adhering to the capsule the prostate is fixed in position. Retzius has termed this the ligamentum pelvic-prostaticum capsulare.

A study of the secretion of the prostate gland in adults is very instructive. Normally it is milky in appearance, possesses a characteristic pungent odor, and is usually acid in reaction, but may be neutral. Under the microscope it is seen to be composed of a fluid containing numerous spherical refractile bodies of varying sizes composed of lecithin. There are very few leucocytes in normal cases and no erythrocytes. Spermatozoa are not usually found in fluid obtained by massage unless the vesicles are also touched. The relation between the lecithin bodies and leucocytes is an excellent indicator for determining whether the prostate is normal or the seat of inflammation. Cells composed of many refractile granules often brownish in color are found. These structures have been described by Waldeyer, who called them compound granular cells, and are found often after the fortieth year, and in most of the cases older than fifty. Corpora amylacea are occasionally met with. They have a slightly brownish color, as a rule, although they may be colorless. They are composed of concentric layers, and look more or less like an onion cut in cross section. They are found in old age most frequently but occur in younger specimens as well. I remember one specimen particularly, obtained from a man thirty-four years of age, which had more corpora amylacea than any other that I have seen. There are usually some loose epithelial cells

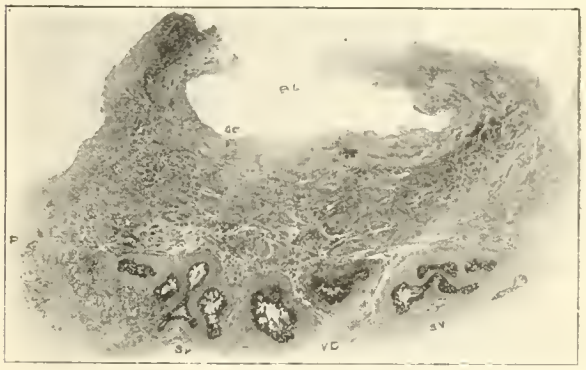

FIG. 4.—Cross-section through middle of trigonum vesicæ of 17 year-old boy. *BL*, bladder lumen; ST, subtrigonal tubule; *VD*, ampullæ of *vas diferentia*; *SV*, seminal vesicles; *P*, lateral lobe tubules of the prostate.

which have been exfoliated from the mucosa. Wilson and McGrath, in their splendid review of the literature of the prostate gland, have explained the various views on the chemistry and physiology of prostatic secretion.

There are a number of organs which are so intimately associated with the prostate gland that I have called them accessory structures. They occupy in each instance a position contiguous to this organ and a disturbance in their arrangement or function is of as much importance as a disturbance of the prostate itself. There is a member of this group of structures which I have described and called the subtrigonal group of tubules. They occur in the mucosa of the trigonum vesicæ usually below its central point, and are found as far outerward as the apex. They are for the most part simple tubules which extend to the submucosa and somewhat into it. In the younger specimens there are never branches, but some of those found during the middle-age period show one or two small branches. There is nothing distinctive about the structure of the membranes of the subtrigonal group. The mucous lining is composed of transitional epithelium similar in type to the vesical mucosa. The cells are much piled up and in some cases five or six deep. Their lumina are quite small, as a rule. These tubules are of importance on account of two facts. First, because their position is such that an overgrowth or enlargement from any cause will bring about a disturbance in the emptying of the bladder; second, because an enlargement of this group does occur in a small percentage of cases. I have observed six non-malignant tumors of the trigonum vesicæ intravitam and three in post-mortem specimens. The number of these simple finger-formed tubules increases markedly after birth but are found in the embryo after the fourth month. More than twenty of them are observed in every specimen older than four years.

Albarran's subcervical group is by far the most important structure at the orifice of the bladder. It is made up of many tubules which are rather frail in structure and whose ducts open in or near the midline of the floor of the urethra between the upper end of the verumontanum and the orifice of the bladder. As shown by Van Gieson's differential stain no smooth muscle fibers are demonstrable around these tubules, which are much more frail than the prostatic glandular elements. In every case studied with one exception these tubules and their branches grow entirely within the sphincter of the bladder, thus occupying a most important position. In the case of the thirty-four-year-old specimen a few branches of Albarran's tubules extend outside of the sphincter for a short distance. Up to the time of birth these tubules are few in number, but all specimens examined older than three years have more than thirty of them. Not only are the location and number of Albarran's tubules important, but for some reason pathological change in the form of enlargement in this region is very frequent. In my series of post-mortem specimens, I have found almost 25 per cent. of the specimens taken from men over thirty years of age to be enlarged sufficiently to demonstrate signs of obstruction in the bladder. It often happens that the passage of an instrument such as a catheter in a patient who is suffering from a moderate obstruction to urination will be completely obstructed thereafter. It seems to me that such trauma causes an edema of both the subtrigonal and Albarran's tubules, thereby producing a complete blocking of the upper end of the urethra.

The seminal vesicles and the lower portions of the vasa deferentia are bound together by a fascia which I have called the intervesicular fascia. It is made up of three portions, the most prominent being the posterior leaflet, which is composed of two layers. It extends around and between the two seminal vesicles and posterior to the vasa deferentia. The seminal vesicles are thus suspended in a sac-like structure, the posterior layer of which extends directly across from one vesicle to the other. The anterior layer, after circling the vesicles, joins the posterior lamella at the border of each vesicle and becomes intimately attached to it, thus forming a two-layered, rather firm fibrous fascia. The middle portion is formed by a two-layered structure which envelops the vasa deferentia in a similar manner. The third or anterior lamella is a single-layered fibrous structure extending from the anterior and lateral surfaces of one seminal vesicle to those of the other, at which point it is attached to the encircling portions of the posterior part of the fascia described above. In most instances the upper border of this fascia extends somewhat higher than the fascia of Denonvilliers, and the two structures are easily separated, being in direct contact only at the lateral surfaces of the seminal vesicles. At other places the two structures are separated by a considerable amount of fatty and areolar tissue.

The intervesicular fascia is not nearly so firm as that of Denonvilliers. Its posterior leaflet is the strongest portion; the middle, or that portion which encircles the vasa deferentia, is the weakest. The three lamellæ combined hold the seminal vesicles and vasa deferentia in a very definite envelope, which is of considerable importance in surgery of this region. This structure is undoubtedly a barrier to the extension of carcinoma, and may explain why carcinoma of the seminal vesicles is usually confined to those structures for such a long period of time without extension to surrounding tissues and organs. The type of pain which accompanies acute infections of the seminal vesicles is explained by the fact that these organs are contained within a sacculated fascia. The intervesicular fascia corresponds fairly well to the area of the trigonum vesicæ and, reinforced by the fascia of Denonvilliers, forms a firm support to the bladder wall at this area, and is an additional factor in preventing the formation of diverticula in this region.

The epithelium of the vasa deferentia is made up in part of simple ciliated columnar, and in part of stratified ciliated columnar cells, with two rows of cells. The cilia are often absent, however, and vary a great deal. In the ampulla of the vas deferens the epithelium is for the most part simple columnar in type and the cells often contain granules of yellow pigment. Besides folds there are evaginations and tubules which occur frequently in older specimens and extend quite deeply into the muscular walls. The epithelium of the seminal vesicles is simple nonciliated columnar in type containing yellow pigment.

The ejaculatory ducts as a rule are lined by a single layer of columnar cells, although the mucosa is often folded and the cells are frequently arranged in two or three layers. These structures usually remain attached to the upper surface of the partition separating the posterior from the lateral lobes and pass through the prostate as a distinct body until they arrive at the verumontanum, where their muscular walls become quite thin and less compact, and while they are arranged circularly, as Porosz described, they are so frail that their sphincteric ac-

tion must be very slight. Their main protective agent seems to be the fact that they enter the urethra obliquely in such a manner that there is a laplet of tissue covering each orifice so that it acts as a valve.

The utriculus prostaticus has a wide-open mouth which is unprotected in any way. Its walls contain a very great many tubules with branches that are fairly numerous and seem to contain all the elements which would tend to harbor infection for a long time. The utricle varies in size in all ages but seems to undergo a gradual increase in size up to the third decade. It is usually contained within the summit of the verumontanum but may extend to the base of the prostate.

The apex group of tubules which is first observed in a specimen seven and one-half months intrauterine is found in every older specimen examined. The number of these tubules varies from 9 to 26, with an average of 15. They occur at the apex of the gland, are frail in architecture, but extend fairly deeply into the coats of the urethra. They have many branches, and are lined with a mucosa composed of columnar cells.

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THE WYOMING, SEVENTH AVE. AND FIFTY-FIFTH ST.

Impromptu Diagnosis of Atropine Poisoning.—Hunziker states that the picture of atropine poisoning is as a rule quite characteristic, but it happens occasionally that because of the attendant delirium a subject is rushed to an asylum. In any suspected case it is best to use the cat's eye as a diagnostic resource. If any suspicious drink or medicine is in evidence a drop of this is instilled into the eye, and this failing, a drop of the patients urine may serve the same purpose.—*Correspondenz-Blatt für Schweizer Aerzte.*

FROZEN LIMBS AND THEIR TREATMENT IN THE PRESENT WAR.

BY E. KILBOURNE TULLIDGE, M.D.,

PHILADELPHIA, PA.

FORMERLY CAPTAIN SURGEON IN THE AUSTRIAN ARMY; AND MILITARY SURGEON, FRENCH RED CROSS.

COLD is probably the greatest hardship and most dreaded enemy the soldiers of both armies on the Eastern War Front experience. For the cold there is no remedy; they must grin and bear it day after day. We have ridden on horseback through the blinding snow and sleet that froze to the horse's mane and tail, standing each hair out like the quills of a porcupine; slept in fur bags night after night on the cold, bleak snow of the mountainside, and trudged along the drifted roads when it was too cold to snow, until the first burning sensation of frostbite was replaced by numbness and complete loss of feeling in the limbs, from which the men dropped and were forgotten by the wayside, to revel in that overwhelming grip of tired, sleepy sluggishness that has for hours knawed its way to the end from which there is no awakening, a peaceful death.

We were riding with reinforcements to join that one man-of-the hour in all Germany, Von Hindenberg; it had been snowing for the past week, and our way led through the wooded Carpathians, already deep in snow. One evening I was aroused by a voice at my elbow, and, drawing rein, I learned after much difficulty, because of the wind and driving snow, that I was lost and alone with a medical student attached to my staff, and that we had been traveling aimlessly for hours on a densly wooded slope. We took a course due north by our compasses, and hurrying on came upon what appeared to be a tiny light some distance ahead. Following this beacon we soon emerged into a clearing, where to our delight we could distinguish what seemed to be several men sitting about the dying embers of a fire. I called to them, but received no response, and throwing the bridle of the horse to the student alighted and approached the circle. Not a soul stirred, and as I came closer I put out my hand and touched the nearest one of them on the arm. To my horror, he was stiff! Cold! Frozen to death, all six of them—four Austrians and two Russians—while they slept about the fire. They were bitter foes, united against a common enemy—cold, fatigue, and hunger; they had lost, and were there rocking in the wind to tell the tale to others.

Frozen extremities, particularly the feet, are by far the most common, and represent during the fall, winter, and early spring months the majority of all cases sent to the hospital, or treated at the front. The frequency and common suffering of this condition may be ascribed not only to the biting, intense, continual cold of the mountainous districts, but to a tendency due to the retention of the moisture of the feet, and to the inadequate blood supply of these points. The arteries should and must be kept warm where they are most exposed, and an endeavor made to prevent the occurrence of trophic and circulatory disturbances that lead to the more serious complications of gangrene, general sepsis, and death. With this end in view, proper and adequate clothing, socks, gloves, and wrist and ankle warmers of wool and cotton should be supplied to the troops in quantities large enough to allow of a change at least three times a week when on active duty, long campaign marches, and prolonged trench, marsh, and snow maneuvers. Warm, fresh, dry

socks and underclothes produce an effect both physical and mental upon the soldiers of a refreshing ease, soothing to the tired, sore, swollen, cold, moist feet and limbs. This necessity has been recognized by the German medical and military authorities, who have sent out, as the result of appeals and private donations to the men on the front, over 15,000,000 marks worth of half-cotton, half-woolen underclothes; 8,000,000 marks worth of cotton and woolen socks and ankle warmers; and the special "Military Committee for Warm Underclothing," formed at the suggestion of the Empress, woolen goods to the value of 20,000,000 marks.

Among the foot protectors sent by this committee were assorted sizes of yellow oiled and waxed paper covers shaped to go on the foot inside the boot. Some men display a predisposition to frostbite by pathological cardiac conditions and sluggish circulation in general. This should be recognized by the recruiting examiner or the regiment physician, and a note made that they should not be sent to exposed parts, although in the Carpathian mountain campaign all parts were more or less exposed, and the proper necessary care could not be taken along this line. However, the right man in the right place is a great medico-military secret of success toward providing for and sustaining the health and vigor of the troops. It must be remembered that probably the greatest factor of sluggish circulation and a most frequent and important one is fatigue. It is more pronounced, and occurs more easily in cold climates and high altitudes. Relief and frequent changes of the men upon active duty are necessary, and large, commodious boots, with no buttons or laces, should be supplied to them. Unfortunately, boots and shoes were at a premium on many occasions, and we were forced to devise large easy-fitting, straw-woven covers with a one to two-inch sole that could be slipped on over the shoes. These were of such excellent protection, keeping the feet warm and dry, that later many thousands were made and sent out by the government and Red Cross.

If early measures are taken to tone up the vessel walls and nerve supply of the legs and feet, frostbite may be avoided in the majority of cases. This can be done by daily cold baths, and massage with snow. Several officers with poor circulations treated in this manner benefited immensely. They stripped in the open every evening (behind a "lean-to") and received a complete massage of the entire body; first with snow and later with olive oil. They became so fond of the practice that it was continued during the whole winter campaign, with a resulting gain in weight and a marked improvement in their muscle tone.

The conditions manifest by the effect of cold upon the feet may progress from simple vasomotor disturbances and minute blisters, to total gangrene of the toes or even of the entire foot and leg. Soldiers standing for hours with their legs immersed in snow or cold water, which many times formed a crust of ice upon its surface, suffered mostly from a vasomotor condition, which, if left untreated, resulted in the death of the tissues and gangrene. A great factor in these cases is the persistent wearing by the troops of tight ankle-bands, boots, and puttees; swollen, water-soaked wool and cotton stockings and socks that constrict the leg and interfere with the circulation. The feet are swollen, inflamed, red, and blistered, paresthesia and anesthesia being at times present. The legs become edematous above the water-line, and the skin may break, displaying an open serous discharging wound. Some French authors term this affliction "water-bite," but I fail to disclaim its relationship as a first or primary stage of frostbite, held in check temporarily by the excessive moisture. We know that, if these cases are taken out of the water and placed in a dry, warm room the prognosis is better, and that, if they are allowed to remain outside, the dampness aggravates the condition, producing a maceration of the tissues and causing the shoes and other coverings to shrink still more.

The typical frostbite symptoms do not display themselves until on or after the fourth day of water or snow sojourn, but circulatory disturbances, if complained of during this time, should indicate an interference of some character, and all constricting bands about the thigh, knee, calf, and ankle should be removed, and massage of the entire limb ordered with the oil preferred by the soldier himself. Some authors, I have noticed, suggest the application, at this stage of a solution containing collodium, alcohol, glycerin, and iodine, both to the feet direct and to the sock; but I failed to obtain more benefit from the use of any or all of these preparations alone or in combination than that which results from applications of crude oils to the parts.

The circulation of both the blood and lymph is most sluggish toward the ends of the limbs, and because of this, artificial aid is required to treat the presence of extravasated blood in these regions; passive and active movements routinely practised should be recommended to the men while on duty, and prescribed even in the hospitals for bedridden cases of this nature. I know of one surgeon who, after elevating the affected limb, insisted that each morning after massage with alcohol and olive oil was given the patient lift his own extremity from off the inclined plane, and flex and extend the knee six times the first day, increasing daily until twenty movements were made, and then decreasing it. He claims that after one or two days the circulation improved, pain was relieved, and the tissues regenerated, recovering their normal character without gangrenous formations. This method I have not tried, but am inclined to favor a seven or ten day immobility with a daily massage, external friction, deep-breathing exercises, and hydrotherapy before motion is insisted upon. Hot coffee or caffeine is an excellent remedy in treating these early cases, helping to tone up the motor system with more favorable results than any other drugs tried.

In the later stages of frostbite there is a necrosis of the parts involved, usually the ends of the fingers, hands, feet, or toes. It may be classed as a dry gangrene, mummification, or death followed by inspissation if the tissues are bloodless at the time of freezing. However, most of these cases, in fact, practically all of 2,000 that I saw and treated, underwent a mortification or moist gangrene followed by putrefaction necrosis, accompanied by a great septic reaction and often death if the diseased area was not removed in time. Infection takes place very quickly from the slightest break of the skin in the early stages above described and spreads rapidly, accompanied by dysuria, oliguria, hematuria, disturbances in sensation of various parts of the body, and disorders in metabolism. The best treatment in this stage of the affection is at first friction with snow or cold water out in the open, where the patient should be kept for the first twenty-four hours, the change to a warmer atmosphere being gradually brought about. Friction or massage with oil or

alcohol—some prefer turpentine, benzine, alum, etc. —should be followed by elevation of the limb upon soft pillows after being wrapped loosely in cotton-wool over which is spread boric vaseline. These coverings can be held in position by bandages applied loosely so as to avoid any danger of constriction. Blisters and discoloration of the toes or other parts show that gangrene is imminent. At this period is the time to apply iodine tincture over the whole surface of the limb extending it far above and if possible below the involved area. The blisters contain a dark blood-colored serous fluid, and should be opened, carefully dried, and dressed with dusting powder, preferably powdered borax, salicylic acid, or zinc oxide. Every effort should be made to keep the parts dry and sterile when gangrene sets in. Incisions at or near the beginning of the inflammatory area may be made to allow the escape of accumulated and retained lymph and blood. They should be small, sometimes mere punctures, and extend through to the bone. If this is practised, a stimulating effect upon the capillary circulation and tissue regeneration will be noticed with the resulting diminution and decrease in the gangrenous involvement, thus saving as much of the injured extremity as possible. Immediate, early or too hasty amputation is absolutely contraindicated, as it is impossible to say how much of the damaged tissues will survive. It is true that a line of demarcation does occur, but the tissues adjoining it become more and more healthy, forming granulations significant of regeneration.

It is astonishing how an apparently serious gangrenous area or spot may contract and slough off, leaving a healthy but infected granulating area. Toes, and even completely involved feet, may regain their color and former healthy appearance in time if properly treated. Operation should, therefore, be delayed until at least it is evident that flaps of skin are available and can be applied conveniently so that they will make a good covering for the stump. The delay, however, should by no means await the spontaneous sloughing of the dead parts, because of the septic systemic infection that invariably accompanies it. Much to my sorrow, I followed the advice of others, among whom were Profs. Walther, P. Thiery, and Goutley, in the early days of my service, and waited until cicatrization had accomplished as much repair as it could, allowing spontaneous sloughing, with the result that death carried with it five of the boys who would probably have been saved by earlier operation at the proper time. To operate upon these cases, the surgeon must know thoroughly the operations relative to amputations and disarticulations of and about the feet and hands, especially the former. Of these, Lisfranc's, Chopart's, Syme's, and Pirogoff's operations are of most value and of great importance in that a fairly presentable limb must result that will be of some use and service in after years.

The first of these operations, Lisfranc's, is best performed by making a short dorsal and a long plantar flap, and disarticulating the toes and anterior portion of the foot at the tarsometatarsal junction or line, the stump being composed of plantar and dorsal tissues. The incision begins behind the base of the fifth metatarsal bone, passes straight down the outer side of the foot about one inch, then around onto the dorsum and crosses the foot with a slight downward convexity, parallel with, and just below the tarsometatarsal joints, reaching the inner border of the foot about one-half inch below the tarsometatarsal articulations. From there it rounds into the inner aspect of the foot and passes straight upward, ending above the cuneiform-metatarsal articulation of the great toe. This completes the dorsal flap.

The plantar flap incision with the horizontal portion of the dorsal incision passes down the outer lateral side of the foot, along the plantar edge of the fifth metatarsal to below its middle, then gradually rounds onto the sole and sweeps obliquely across the plantar surface, crossing the fifth metatarsal just above its neck, and ending at the first metatarsal-phalangeal joint. This incision is joined to the dorsal incision by an incision running up the mid-lateral aspect of the foot, along the border of the first metatarsal. Care should be taken not to make the dorsal flap too short or either flap too pointed, allowing plenty of soft tissue on the plantar flap to compensate for postoperative sloughing, and not to mistake the scaphocuneiform joint for the metatarsocuneiform articulation.

The incision above described should be deepened and carried down to the bone at the line of demarcation, or just above, allowing enough room for clean fresh flaps. The vessels are often already closed by thrombus formations and rarely need ligation. The flaps must be left open and not closed by sutures, allowing the parts to drain. Wet sublimate dressings, if warm and applied twice daily for the first four days, will soon control the septic serous discharges, and stimulate healthy granulations in the course of two weeks.

Disarticulation of the foot at the mediotarsal joint may be done by a slight modification of Chopart's flaps: "a short dorsal and long plantar," and substituting a modified oval flap as described by Tripier, with the horizontal sawing of the os-calcis. Chopart's, however, I found to be much simpler and by far the quickest and best operation. It consists of the disarticulation of the anterior portion of the foot at the astragaloscaphoid and calcaneocuboid joints, being somewhat similar to Lisfranc's operation.

The plantar incision begins on the outer aspect of the foot at a point opposite the calcaneocuboid joint, and passes down the outer side of the foot to the middle of the fifth metatarsal, then around to the sole of the foot along the middle of the metatarsal to the inner side of the foot, passing straight up that border to a point opposite the astragaloscaphoid joint. The dorsal incision begins by curving from the outer limb of the plantar incision, just posterior to the fifth tarsometatarsal joint, and ends by curving to meet the plantar incision of the opposite side at its tarsometatarsal joint, crossing the foot at the dorsal level of the bases of the metatarsal bones.

The incision should be deepened down to the bone, and the disarticulation performed from the dorsal surface, while the foot is forcibly extended by an assistant or by the operator's left hand. The tendons of the tibialis anticus and posticus, peroneus tertius brevis, and longus are cut and the extensor tendons and tibialis anticus of the dorsal flap sutured to the plantar flap. This will help to counteract the tendency that exists for the displacement of the bones of the stump by contraction of the tendo-Achillis, which throws in many cases the head of the os calcis downward, causing pain from pressure on walking.

Pirogoff's operation is also necessary to resort to when the heel of the foot has become frozen and sloughs off with the toes. The intervening tissue on the arch of the plantar surface of the foot that re-

mains in a living condition is often so small or so inflamed that it is not worth while saving, and the disarticulation of the foot at the ankle joint with the removal of the malleoli, the articular surface of the tibia, and the anterior part of the os calcis is necessary. A modified dorsal flap is necessary, as a heel flap is impossible. This if tried will give good results, although a fleshy person will produce a better flap than a lean one. Sometimes the foot is frozen so badly and the area of necrosis so extensive that it becomes necessary to perform Syme's operation, which is indeed a far better operation for both the patient and the surgeon if performed with a dorsal flap. This is a disarticulation of the foot at the ankle joint with the removal of the malleoli, the articular surface of the tibia and fibula being sawed transversely at about one-quarter inch above the inferior border of the tibia. The anterior tibial, external malleolar of the posterior tibial, and internal plantar, anterior peroneal, internal malleolar of the posterior tibial and internal and external saphenous vessels are ligated; the nerves are all cut short, especially those of the heel-flap bent over the ends of the sawed bones, and the wound remains open and is dressed as above with a wet bichloride dressing for the first four or five days.

Watson of the British Army has devised a method of amputation at the ankle joint when necessary that leaves the heel intact, and in his opinion provides a more serviceable stump than obtained from Syme's or Pirogoff's amputations. He amputates the foot in front of the os calcis, removes the lower ends of the tibia and fibula, and the upper surface of the os calcis, wedging the os calcis up between the malleoli, pinning it there with a pin that may be removed in about two weeks, thus leaving the walking surface of the heel intact, preserving the malleoli to give a firm hold to the "uppers" of the shoe and permitting the patient to wear an ordinary padded shoe.

If the toes or fingers alone are involved, disarticulation at the first joint behind the line of demarcation should be performed, permitting ample space for free tissue drainage of the open infected stump, and sufficient tissue to form a respectable flap when the infection has subsided. Amputations of all the toes or fingers through the metatarsals were frequently easily and simply performed, giving good results. Care in these operations should be taken to replace the tendons of the flexor and extensor muscles suturing them into the mouth of the cut theca and periosteum or even the flap, and thereby secure control of the stump. The operation is a simple one, the palmar incision beginning opposite the saw-line on one side and carried down in a circular curve one and one-half times the diameter of the finger, to end on the opposite side at the same line as the starting point. It is deepened to the bone, and the bone should be disarticulated; the digital artery may or may not be ligated, as the case demands. The deep flexor will, however, be severed and should be sutured into the mouth of the fibrous sheath ending at the middle of the second phalanx and into the neighboring periosteum and soft parts if necessary. The flap is then allowed to remain open and a wet sublimate dressing applied to facilitate drainage.

Other amputations and disarticulations are so simple and so commonly and thoroughly discussed by other authors that I will not mention them here.

Care and attention are required in the after-treatment of these finger and toe amputations and disarticulations. Exercises, passive and active, should be commenced at the end of the first week to keep up the strength of the muscles, particularly the extensors, for they degenerate faster than the flexors. The remaining fingers or parts of fingers and toes should be left exposed or in a condition of easy mobility so that the patient can keep them continuously working vigorously to ward off stiffness. Enough of the hand should be left if possible to permit the patient to grasp things with, as there is no feeling and little comfort in an artificial hand, which is decidedly inferior to a mutilated stump that still has grasping and holding powers. Lastly, when placing the arm in a sling, care should be taken that the hand does or will not drop from its own weight or receive pressure from the edge of the supporting binder.

THE PRESENT CONCEPTION OF CONGENITAL SYPHILIS AND ITS MODERN DIAGNOSIS.*

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ATTENDING DERMATOLOGIST TO THE GERMAN HOSPITAL O. P. D. AND TO BRONX HOSPITAL AND DISPENSARY

THE epoch-making discoveries of the last decade in syphilography have along with other changes also necessitated an important revision in our conception of congenital syphilis. Up to ten years ago it was more or less the general belief that germinative transmission was the common mode of infection from parent to child, that is a transmission through either spermatozoon or ovum or both. The strongest support for this theory was given through Colles' law, whereby a syphilitic child could be the offspring of an apparently healthy mother, even transmitting an immunity to the mother against a syphilitic infection in later life.

Matzenauer in 1903 in his Monograph, "Vererbung der Syphilis," guided solely by clinical and pathological observations, doubted the correctness of this theory and maintained that it was the mother alone, carrying the infective agent in her placenta, who transmitted the disease to her offspring.

With the discovery of the Wassermann test and the finding of the sphirochetes it could be shown that Matzenauer was correct with his placental theory, as in every specific case spirochetes were found by all investigators in the intervillous spaces and the maternal portion of the placenta; besides the Wassermann was found strongly positive in almost 100 per cent. of all these cases even when the mother clinically did not show any specific manifestations.

And must we not admit from theoretical deductions alone, how improbable the germinative transmission of congenital syphilis appears? Does it not seem rather impossible that the spermatozoon or ovum could develop, if invaded by a host of living parasites? Now that we understand Colles' law correctly, we are able to explain why syphilitic children with frank lesions on mouth and lips, could nurse their mothers and would not infect them, whereas the same children would invariably infect a wet nurse. These so-called Colles mothers unfortunately were infected with lues long before their offspring was born, the disease was only latent in their system, and therefore we find this apparent immunity against a specific infection in later life.

*Read at a meeting of the Bronx County Medical Society, March 15, 1916.

In view of these facts it seems for all practical purposes justifiable to assume, and most authors take this stand to-day, that there is no congenital without maternal lues. If so, the placenta must be the high road through which the infection goes. From the placental blood vessels the spirochetes are carried to all the fetal organs. This fact explains at once the principal difference in the dissemination of the virus in acquired and congenital lues. In the latter we have no primary lesion as the starting point, from which the infection travels, first through the lymphatics and thence in the blood stream. In congenital syphilis, as just said, the spirochetes are carried from the mother's placenta into the fetal blood vessels, thus establishing a condition which practically corresponds to the early secondary stage of acquired lues. This fact also explains why congenital syphilis acts so deleteriously on the fetus in a recent infection. Here the spirochetes, which are found in greatest abundance in all the internal fetal organs, will naturally produce a severe septicemia through their toxins, and to this the majority of these unfortunate beings succumb, before they have reached their full development. According to Kassowitz, only three-fifths of all luetic offsprings go to full term, and other statistics show even a higher mortality in this respect.

After these theoretical considerations let us outline more in detail the various modes and possibilities through which the fetus acquires its congenital infection.

I want to state right here that the mother may sometimes infect her offspring without showing manifest clinical symptoms herself. This is also a cardinal differential point between congenital and acquired lues, as in the latter lesions on skin and mucous membranes only transmit the infection to another individual. Whether the fetus will become infected at all depends on a variety of circumstances, which are sometimes very complex and often very difficult to understand.

Let us assume at the beginning that both parents are suffering from a manifest case of lues at the time of conception. In such a case the fetus will hardly ever escape; a severe spirochetal septicemia will cause an abortion or an early miscarriage, the macerated fetus showing all the stigmata of congenital lues. In a few instances, especially when some form of treatment has been instituted during pregnancy, a living child may be born, but soon some grave specific symptoms will develop, causing an early death of this unfortunate being in most cases.

If the mother alone was syphilitic at the time of conception, the offispring will be in the same danger as before, especially if the mother had none or insufficient treatment and married during the first two years after her infection. If the mother was free from syphilis at the time she conceived, but contracted the disease while already pregnant, then the fate of the child will greatly depend upon the period of gestation at which the infection took place. Here different observers have come to contradictory conclusions. Some claim that the infection is transmissible to the offspring only during the early period of gestation, whereas others maintain that the infectiousness is more intense during the second period and increases as the pregnancy approaches full term. Does the child ever escape infection at all? According to the so-called law of Profeta it does. Unfortunately though, Profeta's law has also been proven to be untenable in the light of our recent investigations. The apparently healthy children, born of mothers who became infected *post conception*, remaining, according to Profeta, free and even immune against a syphilitic infection in later life; these children give, according to most investigators, a positive Wassermann reaction, which shows that they do suffer from a latent form of lues and acquired their infection during intrauterine life.

A paternal infection is ordinarily not so serious to the offspring as a maternal one. If we adhere to Matzenauer's placental theory, the paternal infection is of no consequence at all unless the mother becomes infected also. This positive statement of Matzenauer seems, however, to have been somewhat shaken recently since Finger and Landsteiner have succeeded in inoculating monkeys with the spermatic fluid of a syphilitic man and obtained luetic manifestations, thus proving the contagiousness of syphilitic sperma, in spite of the absence of spirochetes in the spermatozoon. Bab has also found a positive Wassermann reaction in the sperma obtained from syphilitics. These findings may now explain a few rather strange cases which were called by Fournier infection through *choc en retour*, whereby we find the following: A healthy mother conceives from a syphilitic father, who does not show any infectious lesions anywhere on his body at that time. But the mother without having had a primary lesion, develops early secondary symptoms in the first half of her gestation; an abortion usually follows and the fetus shows all the earmarks of congenital lues. In these cases, according to Fournier, the fetus received the syphilitic virus from the father's sperma and infected its mother through the placenta. These cases, however, are so extremely rare, that to my mind they should not offset the placental theory of Matzenauer and for all practical purposes we ought to adhere to it as the only plausible mode of congenital transmission of syphilis.

That early and rational treatment will ameliorate the symptoms and modify the issue in congenital syphilis is self-evident. But even untreated cases show, according to Kassowitz, a tendency toward a gradual diminution in severity, ameliorating with the duration of the disease in the parents. Therefore we find as a rule in syphilitic families first abortions, then stillbirths, then living premature infants, then living syphilitic infants, born at full term, but showing syphilitic lesions, then living full term children, free from specific lesions or showing them only after birth, and finally entirely healthy children at birth and remaining so afterwards. Of course this is not an ironclad rule and exceptions are seen frequently, so that sometimes healthy and syphilitic children alternate in successive pregnancies.

It is generally accepted and obviously seen from the closer contact of mother and child, that a maternal syphilis will persist in its infectivity much longer than a paternal one; therefore we see cases in which a syphilitic woman, joined in second marriage to a perfectly healthy man, bears him syphilitic children; such transmissions have been observed as late as twenty years after the mother was infected.

As to the diagnosis of congenital lues, I do not know of any other instance where the physician's responsibility is taxed to a greater extent than here. It is not only the case in question, but the

outcome for the future, which depends on the correct diagnosis thus leading to the correct treatment and so offering much brighter prospects later on.

It goes without saying, that in all cases of pregnancy, where manifest luetic symptoms are noticed in either or both parents or where the Wassermann test taken as a precautionary measure, without the presence of lesions, reveals a positive reaction, a very prompt and intensive specific treatment should be instituted at once. Unfortunately though such cases are in the very small minority, the family physician as a rule gets his first inkling of suspicion when he is called to attend a case of an abortion or an early miscarriage, and I want to state right here that we should suspect lues in every case of spontaneous abortion or miscarriage, occurring in an apparently otherwise healthy woman. Statistics from various large obstetrical institutions will bear out this statement. So found Ruge in Breslau, in a series of 94 abortions in 78 cases lues as the only causative factor. Professor Williams of Baltimore has shown on a material of 1,000 consecutive pregnancies, in which 705 resulted in still-births, that 26 per cent. of these were due to syphilis.

What are the characteristic diagnostic features in a stillborn syphilitic child? As a rule the skin will be found macerated and peeling off; this phenomenon, however, may occur in any fetus which has died from any cause and has been retained *in utero* for several days or longer, before being expelled. Tissier, however, found, on examining 155 macerated fetuses, in 99 the presence of syphilis, and 95 per cent. of all macerated fetuses were found to be syphilitic by Boissard. We therefore are justified in suspecting very strongly the presence of syphilis just from this condition alone. But all the internal organs will furnish more abundant evidence. The thymus gland is enlarged and contains multiple abscesses, the lungs show the so-called white hepatization, the liver, spleen, pancreas, kidneys, adrenals are all greatly enlarged due to an interstitial fibrosis and gumma formation. In all these organs spirochetes are found in abundance. At the ends of the long bones there is a broad zone of ossification between the diaphysis and the epiphysis with very irregular proliferations; in the bone tissues are found islets of cartilage and in the cartilage islets of bone tissue, a process known as "Wegner's osteochondritis." The placenta is also of great diagnostic value in these cases. Its size and weight are larger than normal and its consistency is more solid. On cutting, the tissue appears more friable and looks like sausage meat; the weight, instead of being about one-sixth of that of the fetus, may be one-quarter or more and this latter phenomenon alone, if not due to edema or the presence of cysts or tumors, should be looked upon in itself as strongly suggestive of syphilis. Microscopically we find the presence of gummata, vascular changes in the stroma of the villi, decrease in the number of the blood-vessels, partly due to a periarteritis and partly to an increase of stroma-cells of the villi. In the decidual portion we find a gummatous endometritis. The umbilical cord is thick and there is a marked hypertrophy of the connective tissues and thickening of the walls in the umbilical veins. Spirochetes are also found in all these different structures. It rarely happens that syphilitic infants are born alive, showing specific symptoms at birth; if they are, however, the children look puny, ill-nourished, have a shriveled appearance, blue extremities and a hoarse, feeble cry. The majority of congenital syphilitic children surviving their intrauterine infection are born with a clear skin and apparently in perfect health, but soon our suspicion will be aroused, for characteristic symptoms develop as a rule between the first and twelfth week of life. Desquamating patches on the palms and soles may be seen during very early infancy and occasionally syphilitic pemphigus may come on within a day or two after birth; if the eruption is severe, the child usually dies. The changes that take place within the first few weeks in an infant, who appeared healthy at birth, are such that it gradually seems to waste away. The skin, which is wrinkled, assumes a dull earthy color and there is evidence of marked anemia. The face assumes a careworn expression, and looks like that of a little old man. Various external lesions make their appearance, such as pemphigus, rhagades at the mouth, which may be so painful as to interfere with nursing, condylomata around the anus, and a copper-colored rash on buttocks and back. Snuffles is a very characteristic symptom. At this time various internal changes also take place, affecting important visceral organs and undermining the little patient's general health to such an extent that death soon relieves all its sufferings, especially if no proper and energetic treatment has been instituted. All these clinical symptoms are characteristic enough to enable us to make a correct diagnosis. But if still in doubt, the Wassermann test will be of additional value, for, as we have seen above, nearly 100 per cent. of all mothers giving birth to syphilitic children show a positive reaction. Therefore, it will be our duty to examine the mother's blood in such a case. The Wassermann test in the infant is unfortunately not reliable enough, as we frequently get a negative reaction in spite of positive lues. This phenomenon has been explained by the fact that a certain amount of immunizing substances have been transferred from mother to child, sufficient to counterbalance the development of a number of spirochetes, thus weakening the formation of antibodies and therefore leading to a negative Wassermann. As soon as manifest lesions develop, and in later life of the infant, the reaction will become positive and follow the same rules as in acquired lues.

In conclusion I want to make a final appeal to the family physician, as he is the first one, as a rule, who is called upon to make the diagnosis, to recognize congenital syphilis or at least to suspect it in a given case, and then to demand a Wassermann test of the mother. Only then can such an appalling waste of human life, as due to congenital syphilis, be reduced. According to the best statistics 50 per cent. of all syphilitic children are born dead and of those born alive 75 per cent. die within the first year, most of them during the first few weeks of life. The survivors, as a rule, go through life physically and mentally damaged, a living reproach to the misfortune of their parents.

1872 Washington Avenue.

Granuloma Pyogenicum.—C. D. Wescott reports a case of granuloma pyogenicum occurring in a boy aged 9, and affecting the eye. It was located just above the edge of the left upper lid and caused serious anxiety for fear of cancer, the disease of which the child's father had died. Wescott says the two conditions simulating this growth are cancer and chancre. Although persistent and liable to recurrence, it is usually treated without much difficulty. The tumor in this patient was removed and the wound cauterized; it healed, leaving a very small scar.—*Journal of the American Medical Association.*

THE IMPORTANCE OF BLOOD PRESSURE TO THE EYE SPECIALIST.

By F. P. HOOVER, M.D.,
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THE taking of the blood pressure in many instances has to me been most satisfactory; it has given me a clearer and better understanding regarding such cases as incipient Bright's disease, for instance, after examination with the opthalmoscope. I always prefer to take the blood pressure myself in my office than to have it taken by someone else, no matter what report may have been rendered me by the attending physician (if one were in attendance prior to my seeing the case). I have come to look upon my instrument as a necessary adjunct to my office equipment. Time in taking these readings should not be considered. As, however, the specialist rarely goes beyond his domain, the taking of blood pressures by many is not considered to come within their jurisdiction; it does not belong in their line of work; it is an incroachment upon the work of another. My ideas are at variance with those who feel that taking a blood pressure should be left to another entirely, but this is merely a matter of opinion and preference. I have always felt when a man went to a specialist on the eye, not to a "doctor of optics or optometry," he does so because he desires positive information regarding his condition. He may never have had medical attention before in his life, or since childhood, and it is fair to that man, should the trouble be retinitis albuminurica, for example, to turn him loose with orders to consult a general practitioner before seeing you again, until you have personally investigated his condition more fully, if for no other reason than that of impressing, by a thorough knowledge of the case, the great importance of prompt medical attention, for there are men and women who, unless you force, so to speak, a realization of what is the matter with them, will in all likelihood leave your office and never see a doctor until they are beyond help. I have noticed this more especially in the less well to do, those who in the majority of instances have strained a point to see a specialist and cannot afford additional expense; yet these same people more often follow instructions implicitly than those who are better off and have more of this world's goods.

In taking the blood pressure the auscultatory method is by far the easier and more satisfactory. I used to take it by palpation, but the former method is much more reliable. The systolic pressure alone gives too uncertain a reading to warrant a diagnosis, for it is more easily influenced by general conditions. In more than 90 per cent. of my cases the pulse pressure averaged from 30 to 35; my cases ranged from sixteen to seventy years of age. Sometimes the pressure was abnormally high in patients who were in first-class condition; for instance, a man thirty years old came to me with a foreign body in his eye; after its removal and seeing my sphygmomanometer, he asked what it was for and, when told, said he wished his blood pressure taken. This proved to be: systolic, 130; diastolic, 100; pulse, 50, the record being taken three times. A few days later he called again, and I took the blood pressure once more; it was exactly what it was at the previous visit, and yet this man had no organic or physical ailment, spent a great deal of time out of doors, was not of a nervous temperament, had no business or domestic worries, and was a splendid specimen of manhood 5 feet 11 inches tall and weighed 195 pounds. Nicholson says "the diastolic pressure is between 60-105 mm. Hg.; a diastolic pressure above 105 mm. Hg. would be a sure indication of hypertension, regardless of the age of the patient."

In the aged, high blood pressure need not necessarily prevail, neither should a snap diagnosis be made in the event of a high blood pressure without due consideration. There are many elderly people who have had a high blood pressure for a long time; they should be kept under observation, for a sudden lowering of the blood pressure might be disastrous for them, owing to its effect upon the heart.

I have found the blood pressures to vary somewhat in diseases of the eye: in hemorrhage of the eye, high; in recurrent conjunctivitis with a rheumatic history, usually high; in retinitis albuminurica, high; in hysterical blindness, high; traumatism of the eye, in the majority of instances, high, but we do not always see these cases until some time after injury; in orbital cellulitis, high; in exopthalmus, in the only case of the kind I ever took a blood pressure, high; in optic neuritis, high; in the nervous affections, varied; in keratitis, retinitis, and various inflammatory conditions, varied, except where there has been great pain, etc., as in iritis, and where there has been very little rest or sleep, the pressure has been high, in chronic eyestrain with more or less constant headache, pain in or over the eye, pain in temples or on top of the head, inflammation of the lids, the pressure is high. We find this condition especially in bookkeepers and those who use their eyes constantly for near work, electricians, draughtsmen, painters on china or those who work much on dark goods or glazed material, those who sew for a living, proofreaders, typesetters, cooks, etc. I do not mean to say the eye may have been responsible for the high blood pressure, for some condition in the heart, kidneys, or nervous system in all probability was the direct cause, but, nevertheless, in the various affections of the eye named, I have found a blood pressure not normal. I have said nothing regarding syphilis or alcohol as a cause of eye trouble; in the event of either a high blood pressure is expected. I do not wish to be misunderstood in this article to state the absolute necessity of taking a blood pressure in all of our eye cases, but I do say by so doing, many times, one can locate some underlying cause that plays an important part in the disease we have under our care. In throat work in several instances I have taken the blood pressure, and also in my ear cases; in the former in acute bronchitis, tonsilitis, laryngitis, asthma, also when inflammation was accompanied by neuralgia or rheumatism or gout, the pressure was varied, more often high. In sufferers from anemic or run-down conditions, in cases bordering on break down, and in diabetes, the blood pressure was usually low. In acute otitis, in furunculosis, in acute mastoiditis, in bulging of the drum membrane, prior to rupture, and in cellulitis, I have found the blood pressure high.

MUTUAL LIFE BUILDING.

Indications for the Use of Ergot.—Sinha says that, as ergot contracts unstriped muscular tissues in all parts of the body and its action is not confined solely to the organs of reproduction, it should be given when the skin is pale, cool, and relaxed, bathed in cold, clammy perspiration, the mucous secretions being increased, with or without involuntary passages from bowels and bladder.—*Indian Medical Record.*

SOME DEFORMITIES OF THE HEAD MENTIONED IN THE TALMUD.

AN HISTORICAL NOTE.

By DAVID I. MACHT, A.B., LL.B., M.D.,

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AMONG the most interesting malformations of the head met with by the modern clinician are those due to rickets, acromegaly, and osteitis deformans. The history of these conditions is interesting and is of a comparatively recent date. Osteitis deformans was first described by Sir James Paget in 1877 and is sometimes known as Paget's disease.[1] Acromegaly, the interesting condition which is now regarded as related to disease of the pituitary gland,[2] was first described by Marie,[3] in 1886. Even rickets, though probably a very old condition, was first described by Glisson[4] in the seventeenth century and is regarded as a disease of modern civilized life, distinctly occidental in origin. It is the morbus anglicus or English disease, and the term rickets is originally from the English *wrickken*, to twist. Rickets was a rare disease in the ancient Orient.

In the course of some researches into the history of medicine among the Semitic nations, I have come across some passages in the Babylonian Talmud which are of interest in connection with the above named diseases. It is a matter familiar to every student of the Bible that the Hebrew priests were required to be physically, as well as morally, perfect—without a bodily defect or blemish—in order to be eligible to service in the Temple.[5] The Talmud, in the tractate *Bechoroth*, enumerates several defects which disqualify a priest from ministering in his holy office. Among these, I was particularly struck by three—the *kilon*, the *lafton*, and the *maqbon*.

The condition of *kilon* is described as a person having a peculiarly shaped head which is pointed at the top, and broad at the bottom.

The *lafton* was a man with a head shaped exactly the opposite of the preceding. To use the expression of the Talmud he had a head, very broad at the top and narrow at the bottom, like a *lefes*, *i.e.* a pumpkin.

The expression *maqbon*, derived from the word hammer, refers to a hammer-shaped head, or as the Talmud describes it, one with a prominent and projecting forehead and occiput.

The terse descriptions of the kilon-head and lafton-head, given by the Talmud, could not be improved on by any modern text book in medicine. Take, for instance, the excellent treatise on diagnosis by Musser. We have there a description of the skull shapes in acromegaly and osteitis deformans, namely a triangle with its base below and apex above in the one case, and the reverse in the other, which matches exactly with the Talmudical description. The diagrams drawn by that author emphasize the similarity still more.

The Hebrew description of "hammer-head," as applied to the rachitic skull is also very characteristic. The classing of the rachitic deformity with the two others, tends further to confirm the rarity of rickets among the ancient Hebrews. That condition, thanks to their dietary and other hygienic laws, we know to have been a very rare one among them, and was therefore probably as unusual and striking as acromegaly or Paget's disease is among us. It is thought that the above references to skull deformities are of sufficient historical interest to be worth noting, especially as the original sources are not accessible to most medical men.

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2. Cushing: "The Pituitary Body and Its Disorders," 1912.
3. Marie: "Essays on Acromegaly," New Sydenham Soc., 1891.
4. Glisson: "A Treatise of the Rickets, Being a Disease Common to Children," London, 1651.
5. Leviticus, XXI.

Medicolegal Notes.

Expert Evidence in Malpractice Cases.—In an action for damages against two surgeons for failure to exercise reasonable care and skill in treating a compound fracture of the bones of the plaintiff's right arm, the evidence only showed the acts of the defendants in getting the injured bones as observed by the plaintiff and his wife, the nature of the treatment by one of the defendants thereafter as they observed it, the statements of the defendants as to their belief that the arm would be restored to its usefuness, and the fact that the arm was not straight when the splints were removed. There was no evidence from any physician to give the jury a standard to determine the fact of reasonable care and skilfulness, and it was held that the question was therefore one of law for the court, as to permit the jury to determine it without such expert evidence would be to allow them to decide it from mere speculation and conjecture. Judgment for thedefendants was affirmed.—Adolay v. Miller, Indiana Supreme Court, 111 N. E. 313.

What Constitutes Practising Medicine. — On a trial for practising medicine without a license the defendant contended that the evidence was not sufficient to show that he was guilty of violating the Iowa Medical Act, or that he held himself out as a physician and surgeon, or publicly professed to cure and heal, or that he made a practice of healing and curing. The substance of the evidence was that one witness went to the defendant's house to ascertain if the defendant would treat him for rheumatism; he said he did not remember what the defendant told him, but he took four or five treatments, these being performed while the witness was lying on a sort of bench, and the defendant worked on his spine and legs. The witness did not have any arrangement as to charges, and never paid the defendant anything.

Another witness testified that the defendant came to his house and gave him a treatment. This was done by an adjustment of some of the joints of the witness's spine. He was stretched out on a bench which the defendant had brought with him. This witness took three or four treatments and gave the defendant $5.

Another witness said the defendant treated his wife for goiter by rubbing the goiter and the spine; the patient also had gas in the stomach, and the defendant rubbed the stomach. For this the defendant received $20 for 24 treatments.

Another witness testified that he had one of his arms out of place, that he had sought treatment without avail, and finally, meeting the defendant on the street, asked him to see if he could put his arm in place, which the defendant did.

The court thought the evidence was sufficient to take the case to the jury on the question as to whether the defendant assumed the duties of a physician, and that he publicly professed to cure and heal. The conviction was affirmed. State v. Booher, Iowa Supreme Court, 155 N. W. 167.

Prosecution for Practising Without a License.—The Missouri statute declares that any person practising medicine or surgery without a license from the State Board of Health, or after revocation of such license, shall be deemed guilty of a misdemeanor, provided that physicians registered on or prior to March 12, 1901, shall be regarded for every purpose as licentiates and registered physicians. An information charging the accused with practising medicine without a license did not negative the exception. It was held that as the exception was not contained in that portion of the statute defining the offence it was not necessary to negative it in the information, but to be available as a defence it must be insisted on by the accused.—State v. Saak (Mo.) 182 S. W. 1074.

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MEDICAL WORK AND WAR.

THE threatened war with Mexico and the mobilization of the State militia have given an opportunity to the American Red Cross and to the medical units attached to the National Guard as well as to the Departments of Health to show in how far they have profited by the experiences of the past few years. The showing so far has been satisfactory. In New York, for example, the State Department of Health has on hand, as a consequence of having foreseen the possible demand, sufficient typhoid vaccine to immunize every member of the New York State National Guard against this disease, and is now sending it out to the mobilization camps as rapidly as it is needed. The excessive morbidity and mortality of the Spanish War will thus be avoided. The first field hospital, the original of its type in this country, and the Third Ambulance Corps, both from New York City, the latter under the command of Capt. L. H. Shearer, M.D., of Bellevue Hospital, and the former of Major J. Franklin Dunseith, M.D., of the City Department of Health, were among the first units to reach the concentration camp at Beekman, N. Y. The sanitary conditions at the mobilization camp are in charge of Col. William S. Terriberry, M.D., of New York, who will have each man inoculated against typhoid, and will forbid the eating of any food except that prepared in the camp kitchens.

Through timely gifts the New York branch of the American Red Cross has been enabled to complete its equipment of eight base hospitals of 500 beds each, the hospitals being manned by members of the staffs of the New York, Presbyterian, Mt. Sinai, Bellevue, Lincoln, German and the Post-Graduate hospitals. The eighth unit is the Naval Base Hospital in Brooklyn. Corresponding to these New York units a number of other units are being planned in other cities (thirteen in all are organized), which will give the Red Cross a total equipment for over 15,000 beds. The New York branch is also conducting classes in first aid and the care of the sick, in order to have volunteer helpers available, and these courses will be continued throughout the summer. Six thousand Red Cross nurses are holding themselves in readiness for mobilization orders, according to the statement of the executive secretary of the New York headquarters. The Preparedness League of American Dentists has opened a registration bureau in Buffalo in the hope of enrolling 20,000 dentists who will prepare free at least one applicant each to meet the requirements for enlistment in the Army, Navy, or Marine Corps. The standard of enlistment requires the applicant to have at least twenty sound teeth, with four opposed molars and four opposed incisors. Properly filled teeth are counted as sound.

TWO VIEWS OF TOURNIQUETS.

ALL the devices of surgery are being tried out on a gigantic scale in the European war, and the surgeons of America are awaiting the verdict of their European colleagues on many points, just as a half century ago the situation was reversed. Many a surgical procedure, beneficent in the hands of a surgeon in the operating room and admirable in theory, does not justify itself when put to the stern test of the battlefield. Among the doubtful instances the tourniquet may be mentioned. This appliance has a limited field of usefulness in the modern operating room and a wholly disproportionate value in the minds of the laity who recall newspaper accounts of persons saved from bleeding to death by the prompt application of a tourniquet improvised from a handkerchief by a quick-witted bystander. At any rate, the European soldier is furnished with a rubber one in his first-aid packet and instructed in its use, the theory being that unnecessary loss of blood can thus be prevented.

Professor Albrecht of the Austrian Army, quoted in the *Wiener medizinische Wochenschrift*, calls attention to cases of gangrene resulting from rubber tubing tied around a limb to prevent hemorrhage. These, he said, were usually due to the fact that after such a bandage had been placed, either the surgeon or the patient would be transferred elsewhere. He suggested that such cases should be plainly labelled "rubber tourniquet." Unfortunately in many cases only the outer dressings were changed and the pressure of the tourniquet was not discovered until gangrene had set in. Some cases were due to the application of the tourniquet by the soldier himself who was later unable to remove it or did not dare to do so.

On the other hand, Dr. R. P. Rowlands, surgeon to Guy's Hospital, writes in the *Lancet* for May 13 a plea for the more thorough use of the tourniquet in peace and war. He believes that many lives have been lost because sufficient pains were not taken to prevent the wounded from losing still more blood. This extreme loss of blood causes a secondary anemia which handicaps the patient and also increases the risk of sepsis and other complications. The rest of Dr. Rowland's letter is chiefly concerned with the technique of amputation, his only allusion to the use of the tourniquet in war being where he says, "during this war I have tentatively extended the method to the septic wounds now so common, and with very satisfactory results."

Professor Albrecht's comments on the tourniquet seem much more pertinent, dealing as they do with

his observation of cases on the battlefield where the after-care of the patient had not been properly carried out. The correct view would seem to be that the tourniquet has a proper and very useful place in battlefield surgery, but also that every case in which a tourniquet has been applied should be given very special attention and wherever possible should be attended by the same surgeon for at least forty-eight hours after the application of the bandage.

THE BLOOD IN EPILEPSY.

It is hardly necessary to recall to the minds of the profession the many theories that have been held in the past regarding the nature of epilepsy. The explanation of the ancient Romans who believed that epilepsy was a visitation of the gods and that of the present-day savages who think that ancestral spirits enter the body and fight the indwelling spirit, causing convulsions, seem to be as plausible as any. Accompanying the varying theories, inevitable sequellæ of them in fact, many kinds of treatment have had their day. Nearly every drug in the Pharmacopeia and every one reputed to be a sedative, has had its trial. The bromides, opium, chloral, cannabis indica, borax, solanum carolinense, adonis —the list could be extended almost indefinitely.

Lately more spectacular forms of therapy have had their vogue. The psychoanalysts, *e.g.* have maintained that in the epileptic convulsion we have a parallel to the incoordinate movements of the infant when he comes in conflict with his environment, that epilepsy in fact represents a regression of the individual to infantile levels. Their method of approach to the problem would be an analysis of the convulsion itself to see how it represented the conflict and then an endeavor to get the patient to adjust himself to his conflict in a way more compatible with social conventions. We all know something of the treatment with rattle-snake venom, or the crotalin treatment. Then we have tried recently a serum obtained from the blood of other epileptics.

With this latter method is associated the name of Spangler, who reports further studies of his on the blood in epilepsy in the *Lancet* for April 29. His observations were made on 369 private patients, not institutional cases. He finds that the hemoglobin is high in the disorder, averaging 84 per cent., in his series of cases. This is at variance with Fackenheim, who found an average of not quite 60 per cent. Of course Spangler's cases appear to be from a somewhat higher social plant and therefore present the factors of better nutrition, hygiene, etc. The latter observer found no marked diminution in the red blood cells and no degeneration of them; the white blood cells showed increase approximately synchronously with the paroxysm, small lymphocytes and polymorphonuclears were normal, the large lymphocytes were increased, but there was no evidence of eosinophilia. The coagulation time of the blood was shortened and its alkalinity lowered.

It is not obvious what deduction, if any, can be made from the above observations, but in a disease as obscure as epilepsy all accurate contributions to the pathology are welcome as possible future sources of light in the therapy.

CITRATED MILK FEEDING FOR INFANTS.

There has been of late a good deal of discussion with regard to citrated milk feeding for infants. Dr. F. J. Boynton was the first to work out and publish a paper on this form of feeding, and in the *Practitioner* for June, 1916, he has a short paper on the subject, in which he reiterates several of his former conclusions. He is of the opinion that it is a practical error to advocate placing infants on citrated whole milk from the first, as he thinks there is too much risk in such a course. Diluted milk should be used until the infant's reaction to cow's milk has been tested, and then the strength of the milk should be quickly increased. Citrated milk is valuable for correcting milk dyspepsia. Nevertheless, its routine and prolonged use are not advisable. Moreover, the use of very diluted milk with large quantities of citrate of sodium may result in general anasarca and convulsions. Sometimes it produces instant diarrhea, but Boynton remains convinced that his original contention that it has a tendency to produce constipation is correct. The citrate should be increased in proportion to the milk, and not to the mixture of milk and water. Boynton especially emphasizes the point that sodium citrate should never be given to a healthy child of eight or nine months as a routine practice, and when given he prefers a solution to tablets. The commencement of hand feeding should always be cautious. Small infants should not be started on citrated whole milk. In short, when used judiciously and discreetly sodium citrate in many instances is valuable in the feeding of infants, but care must be taken not to overdo the practice or to use the drug prematurely.

News of the Week.

Medical Preparedness.—Col. Jefferson R. Kean, Medical Corps, U. S. A., director general of military relief for the American Red Cross, states that the most important work which has probably ever been undertaken by the American Red Cross for the assistance of the medical service of the army is now being done in the organization of base hospital units from the personnel of the larger civil hospitals in this country. These base hospitals, which embrace much of the best professional talent in the country, are intended to be transported on the outbreak of war to the seat of military operations, where they will be located at the city which is selected to be the military base. One of these is needed for each 20,000 men brought into service. They receive the sick and wounded coming from the field hospitals at the front, and in them the wounded soldier in his journey to the rear first finds a comfortable bed and trained nurses. Thirteen base hospitals with skilled personnel are now organized and seven more are in process of organization. Each base hospital is equipped to receive 500 patients. Although organized by the Red Cross, they are not administered by it, but when called into active service pass under the exclusive authority of the War Department and become a part of its medical service. The medical officers are given military commissions in the Reserve Corps, and receive volunteer commissions when called into active service. The nurses in the same way belong to the Red Cross Nursing Service, and in time of war become a part of the Army Nurse Corps. The organization in

time of peace of these large and complex units will place at the disposal of the Government immediately on the outbreak of war organizations which it would require many weeks to create and equip, and offers our soldiers from the first the finest medical talent in the country. The following are the locations of these hospitals and the heads of their various services:

Presbyterian Hospital, New York City.—Director and chief of surgical service, Dr. George E. Brewer; principal assistant, Dr. Alfred Stillman; chief of medical service, Dr. Warfield T. Longcope; chief of laboratory service, Dr. Karl M. Vogel; chief nurse, Miss Anna C. Maxwell.

Mount Sinai Hospital, New York City.—Director, Dr. N. E. Brill; chief of surgical service, Dr. Howard Lilienthal; chief of medical service, Dr. R. Weil; chief of laboratory service, Dr. George Baehr; chief nurse, Miss Elizabeth A. Greener.

Bellevue Hospital, New York City.—Director and chief of surgical service, Dr. George David Stewart; chief of medical service, Dr. Van Horne Norrie; chief of laboratory service, Dr. Charles Norris; chief nurse, Miss Clara D. Noyes.

New York Hospital, New York City.—Director and chief of surgical service, Dr. Charles L. Gibson; chief of medical service, Dr. Lewis A. Conner; chief of laboratory service, Dr. William J. Elser; chief nurse, Miss M. H. Jordan.

New York Postgraduate Hospital, New York City.—Director, Dr. Samuel Lloyd; chief of surgical service, Dr. Edward W. Peterson; chief of medical service, Dr. Arthur F. Chace; chief of laboratory service, Dr. Ward J. MacNeal; chief nurse, Miss Amy Patmore.

Brooklyn, N. Y., for Navy.—Director and chief of surgical service, Dr. W. B. Brinsmade; chief of medical service, Dr. Luther F. Warren; chief of laboratory service, Dr. Robert F. Barber; chief nurse, Miss Frances van Ingen.

Massachusetts General Hospital, Boston, Mass.—Director, Dr. Frederic A. Washburn; chief of surgical service, Dr. George W. W. Brewster; chief of medical service, Dr. Richard C. Cabot; chief of laboratory service, Dr. J. Homer Wright; chief nurse, Miss Sara E. Parsons.

Boston City Hospital, Boston, Mass.—Director, Dr. J. J. Dowling; chief of surgical service, Dr. Edward H. Nichols; chief of medical service, Dr. John Jenks Thomas; chief of laboratory service, Dr. Arial W. George; chief nurse, Miss Emma M. Nichols.

Harvard University, Mass.—Director and chief of surgical service, Dr. Harvey Cushing; chief of medical service, Dr. Roger Lee; chief of laboratory service, Dr. Richard P. Strong; chief nurse, Miss Carrie M. Hall.

Lakeside Hospital, Cleveland, Ohio.—Director, Dr. George W. Crile; chief of surgical service, Dr. W. E. Lower; chief of medical service, Dr. C. F. Hoover; chief of laboratory service, Dr. H. T. Karsner; chief nurse, Miss Grace Allison.

Rochester, N. Y.—Director, Dr. John M. Swan; chief of surgical service, Dr. C. W. Hennington; chief of medical service, Dr. William V. Ewers; chief of laboratory service, Dr. C. C. Sutter; chief nurse, Miss Emma Jones; assistant, Miss Jessica Heal.

Johns Hopkins Hospital, Baltimore, Md.—Director, Dr. Winford Smith; chief of surgical service, Dr. J. M. T. Finney; chief of medical service, Dr. T. C. Janeway; chief of laboratory service, Dr. T. R. Boggs; chief nurse, Miss Bessie E. Baker.

Harper Hospital, Detroit, Mich.—Director, Dr. Angus McLean; chief of surgical service, Dr. C. D. Brooks; chief of medical service, Dr. B. R. Shurly; chief of laboratory service, Dr. P. M. Hickey; chief nurse, Miss Emily McLaughlin.

The names of the heads of the German and Lincoln Hospital units in New York have not been announced at this writing.

Mr. Irving T. Bush has relieved the embarrassment of the Red Cross in regard to space for storing the equipment of the five base hospitals now being organized in New York in behalf of our own army and navy by offering to provide for three of these units at the Bush Terminal.

Death Rate in New York.—The death rate in New York City for the week ending June 17 was 12.36 per 1,000 of population, representing a total of 1,324 deaths, as compared with a rate of 13.28 for the corresponding week of 1915. This decrease was due chiefly to the lessened mortality from the acute infectious diseases—measles, scarlet fever, diphtheria, croup, and whooping-cough—and from lobar and bronchopneumonia. There was, however, an increase in the number of deaths due to heart disease, Bright's disease, and pulmonary tuberculosis. For the first twenty-five weeks of 1916 the death rate was 14.92, or 0.29 lower than for the same period last year.

Medical College Commencements.—At the ninety-first annual commencement of Jefferson Medical College, Philadelphia, held on June 3, the degree of doctor of medicine was conferred on 162 graduates of the school. Dr. W. W. Keen addressed the class on "The Doctor's Duty."

The thirty-sixth and final commencement exercises of the Medico-Chirurgical College, Philadelphia, were held on June 9, when the medical degree was conferred on eighty-three graduates. The college has been merged with the medical department of the University of Pennsylvania.

Six graduates in medicine received the doctor's degree at the 216th commencement of Yale University on June 21. Dr. Arthur Dean Bevan, professor of surgery in the Rush Medical College, Chicago, and chairman of the council on medical education of the American Medical Association, received the honorary degree of master of arts; the same degree was given to Dr. David Russell Lyman, head of the Gaylord Sanatorium, Wallingford, Conn., and on Dr. Theobald Smith of the Rockefeller Institute of Medical Research was bestowed the honorary degree of doctor of science. The Yale Corporation has announced that hereafter a limited number of graduates of approved colleges for women will be admitted to the Yale School of Medicine.

Harvard University at its annual commencement on June 22 bestowed the degree of doctor of medicine on sixty-three graduates of the medical school, and the degree of doctor of dental medicine on forty-five graduates. Dr. W. G. Smillie and Dr. Ralph Mellon received the degree of doctor of public health, and Dr. Richard Pearson Strong, professor of tropical medicine in the Harvard University Medical School, received the honorary degree of doctor of science.

Personals.—Dr. Edward Perkins Carter, professor of medicine in the medical department of Western Reserve University, Cleveland, Ohio, received the honorary degree of master of arts from Williams College, Williamstown, Mass., on June 21.

Dr. Joseph A. Andrews of New York and Los Angeles, Cal., sailed from New York on June 20 for Labrador, on his sixth annual trip to treat at Gren-

fell Mission natives of Labrador who are suffering from eye troubles.

Dr. Allen G. Rice of Springfield, Mass., has for the second time within four years been awarded the prize of $200 offered annually by the Caleb Fisk estate of Providence, R. I. The subject for this year was "Diagnostic and Prognostic Value of Blood Pressure Determinations."

Dr. Charles L. Gibson, director and surgical chief of the New York Hospital Red Cross unit, sailed for Europe on Saturday last.

Civil Service Examination.—The New York Municipal Service Commission, Municipal Building, Manhattan, will receive applications until July 5, 1916, from candidates for the position of pathologist in the city employ. One vacancy exists at present in the Department of Public Charities, Kings County Hospital, Brooklyn, at a salary of $1,500 per annum without maintenance. Application blanks will be mailed upon request, but no applications will be accepted at the office of the Commission after 4 o'clock P.M. on the date mentioned. Candidates must be over twenty-one years of age and have the degree of M.D. from an approved institution. The duties of the pathologist include the performance of autopsies, the microscopical diagnosis of tissues, and bacteriological diagnosis and clinical pathology; and a practical test will be held in the laboratory at which the candidates will be required to demonstrate their ability to perform the work as above outlined.

Navy Medical Corps.—The next examination for appointment in the Medical Corps of the United States Navy will be held on or about August 7, 1916. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps; the successful candidate then attends the course of instruction at the Naval Medical School, beginning October 1, 1916, and during this course receives a salary of $2,000 per annum, with allowance for quarters, etc. At the end of the course, if he passes an examination in the subjects taught, he is commissioned an assistant surgeon in the navy to fill a vacancy. Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical education. Full information with regard to the physical and professional examinations, with instructions how to submit formal application, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington.

Grading of Restaurants Continues.—The Health Department continued during the past week its work of inspecting and grading the restaurants in New York City, although no figures have been given out, the Department having determined, in order not to be unfair, not to grade a restaurant until after reinspection. This will meet the objection that minor violations have resulted in some of the recent "bad" gradings. The Department has received indorsements of its plan from the State Food and Drugs Commissioners of North Dakota and Indiana, in both of which States similar grading has been carried out.

Poliomyelitis Epidemic.—During the past few weeks an unusually large number of cases of poliomyelitis have been reported, especially from the section bounded by Henry Street and Seventh Avenue, Baltic Street and First Street, and occurring chiefly among Italians. The Department of Health is having made a house to house canvass in each block in which there is known to be a case of the disease, and the Acting Commissioner has addressed a letter to every Brooklyn physician, calling attention to the existence of the disease, the methods of diagnosis, and the possible modes of infection, and asking for the co-operation of the profession in controlling the outbreak.

A Decision Against the American Medical Association.—The long-drawn out trial of the Chattanooga Medicine Company's suit against the American Medical Association for libel has at last ended with a verdict against the Association. The *Journal* had characterized one of the products of the Medicine Company as "booze," "a tipple," and "a worthless fraud." The trial, which was held in Judge Landis' court in Chicago, lasted three months and must have cost the Association a very large sum.

Obituary Notes.—Dr. LAWRENCE THOMAS AITKEN of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1908, pediatrist at the Coney Island Hospital, and dermatologist at the Polhemus Clinic, died at his home on June 18, aged 32 years.

Dr. EUGENE ALBERT GILMAN of Boston, Mass., a graduate of Harvard University Medical School in 1872, and a member of the Massachusetts Medical Society and the Suffolk County Medical Society, died at his home, after a lingering illness, on June 17.

Dr. FREDERICK BUELL WILLARD of Hartford, Conn., a graduate of the University of Vermont, College of Medicine, Burlington, in 1900, a member of the American Medical Association, the Connecticut State Medical Society, the Hartford County Medical Society, and the American College of Surgeons, and a surgeon on the staff of the Hartford Hospital, died at the hospital, following an operation for appendicitis, on June 16, aged 43 years.

Dr. JOHN OWEN SMITH of South Canterbury, Conn., a graduate of the Eclectic Medical College of the City of New York in 1882, died recently at his home, aged 76 years.

Correspondence.

THE SARATOGA CO_2 BATHS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—At the annual meeting of the Saratoga Springs Medical Society held on May 25, 1916, Conservation Commissioner George D. Pratt, under whose department the management of the State Mineral Water Reservation at Saratoga Springs has recently been placed, was a guest of the society and addressed the meeting on the above subject. He said in part as follows:

> I have evolved certain fundamental policies with regard to this reservation which I am very anxious to make clear, not only to the members of your own society but also to the medical profession at large. No more fortunate time for expressing these principles could be found than this evening, when what I have to say can be addressed to you personally and through you to your brothers in the profession throughout the entire United States. In full assurance that the force of my statement will be thoroughly appreciated, I can say to you that the highest development of the springs at Saratoga and the greatest realization by the people of the healing virtues in their waters can be brought about only by whole-hearted cooperation between the physicians themselves and the State commission that is charged with the control of these natural resources.
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> The waters of the springs are good of themselves, and in many cases may be taken freely without medical direction. This is particularly true of the table waters, of which Saratoga offers a wonderful supply. When we

turn to the medicinal springs, however, we are brought face to face with the incontrovertible medical fact that in a large number of diseases the greatest good from these waters can be obtained only through careful courses of treatment prescribed and carried out in accordance with the tested principles of medical therapeutics. It is well understood by physicians that every case of disease and of lowered efficiency, such as can be benefited by the opportunities presented at Saratoga, has its own individual characteristics, and that these characteristics, these organic and constitutional conditions, can be accurately determined only by expert medical diagnosis. It accordingly follows that correct application of the principles of medical therapeutics to each individual case can be made only by a physician. In fact, though I am no physician, I believe that I am not far from the truth when I state that persons who without the advice of a competent practitioner undertake courses of treatment for the serious maladies that bring many of them to the baths and springs at Saratoga are taking very grave and unwarrantable chances. If this is true, it is clearly evident that right utilization of the medicinal springs at Saratoga can be brought about only through coordination of the State's administrative control with the practice of the medical profession.

It is in the highest degree important that the Conservation Commission, in its conduct of the great natural resources found here in such lavish abundance, shall appreciate fully not only the material, physical requirements for taking the cures that these waters offer, but also the ethical obligations that are involved in the exploitation of the springs. I speak of these ethical obligations in the medical sense. In the advertising and sale of the purely table waters, such as the Soft Sweet Spring water, and the other waters for which curative qualities are not claimed, the obligations imposed upon the commission are the usual moral obligations of honest and conservative business. With the development of the medical springs, however, whether their waters are used for baths or for drinking, there is imposed upon the commission a further obligation which you physicians, if not all laymen, understand as the obligation of medical ethics. This obligation the commission will endeavor to appreciate and adhere to. Saratoga holds no cure-all. But for certain diseases and for certain functional disturbances, fostered by the pace of our modern, high-pressure civilization, its springs do indeed run with an elixir of life and hold as much of the power of rejuvenation as any fountain of youth yet discovered. In their more extensive development no false or extravagant claims must be made for them. They need no such exploitation. But in a thoroughly broad-minded and ethical spirit the boons that they offer must be made increasingly available to the entire public in their pure and unchanged natural condition.

It is now of immediate importance that the medical profession at large and the people of Saratoga and of the State and nation understand the firm resolve of the commission, and, behind the commission, of the State administration, as vouched to you by Governor Whitman the other day, to work steadily and consistently, and above all ethically, for the higher development of this wonderful health resort. There has grown up in the public mind, and in the minds of some of the medical profession, an idea that the waters of Saratoga are adulterated or altered in some degree. If this were true it would be equivalent to an admission that the waters of Saratoga are either not all that is claimed for them or else they have been lessened in value by alteration or adulteration. We know, on the authority of the very highest medical opinion, that the unchanged waters of the springs, as they flow naturally from the earth, are equal, if not superior, in their medical qualities to those of any other known springs in the world. To adulterate them is unthinkable to any right-minded person, and to alter their chemical content is quite unnecessary. I wish to state to the medical profession on this occasion that the policy of the Conservation Commission will be to conserve the springs in their natural state and to give both the baths and the waters in the same natural condition that they are in when they come out of the ground. If any individual physician wishes to prescribe them in altered form for an individual patient this will be entirely upon his own responsibility and will affect no other than his own individual patient. The waters of Saratoga are Saratoga waters. As such they are widely and favorably known for their efficacy in the treatment of certain disorders. To endeavor to identify them as to their chemical make-up with the waters of other springs is to endeavor to make them shine by reflected light. It is the belief of the commission that they need no such illumination. To change their make-up artificially in order to make them more nearly conform to the chemical formula of springs in other places is to assert that their established reputation has been built upon no firm foundation in the past. Such a statement would be untrue. Saratoga offers its own gift to the world; a gift that, in the opinion of the most capable specialists, is destined to place Saratoga still farther in the lead as one of the world's great benefactions. Believing fully in the correctness of this prophecy, the Conservation Commission is determined that Saratoga's position shall be taken by Saratoga herself because of the merits that it possesses, and not because of artificial or transplanted merits or reputation. In this endeavor the commission asks the cooperation of the medical profession.

The force and wisdom of the policy herein outlined by Commissioner Pratt are most commendable. The local medical society through many of its members expressed sincere and hearty accord with the Commissioner's ideas. The medical profession of Saratoga Springs realize that the Saratoga mineral waters have in the past with careful and scientific administration given most excellent and decided results in pathological and functional disorders and now with the increased efficiency of these waters and the added facilities for their administration made possible by state ownership and control, these therapeutic results have been increased several fold.

The physicians of Saratoga Springs decry most sincerely the adulteration of these waters for bathing purposes unless it be in exceptional cases where it should be left to the judgment of the individual physician to determine what additions shall be made and in what quantities and these additions should only be made on special prescription. They do not in any sense favor the routine addition of any chemicals to the natural Saratoga waters, believing that these waters in themselves with their supersaturation with carbonic acid gas are eminently efficient without any addition and that they should stand on their own merits for therapeutic effect.

The use of the term "Nauheim Bath" is somewhat misleading as every so-called "Nauheim Bath" throughout the world varies from all the others and the use of that name as applied to the Saratoga waters should be discouraged. The local profession prefer the term "Saratoga CO_2 Mineral Baths." Following the discussion of the subject the following resolution was unanimously adopted:

"*Whereas,* after an experience covering a considerable period, during which observations have been made of several thousand baths administered to a large number of patients at Saratoga Springs with the use of unaltered natural mineral water:

"*Resolved,* that it is the deliberate and emphatic expression of the conviction of the members of the Saratoga Springs Medical Society that for series of successive CO_2 mineral baths given systematically, our natural Saratoga Springs mineral water, as now supplied in the tubs of the State bath-houses, with its dissolved gas retained in supersaturation, is fully efficient; and further, that it should be used for such series of baths without the addition of any salts, chemicals or other substances, unless such additions are plainly and explicitly ordered in the prescription of the physician."

It is believed that when this matter is carefully analyzed this position in regard to the baths at Saratoga Springs will meet with the approval of the profession of the State as well as of the nation.

OFFICERS OF THE SARATOGA SPRINGS MEDICAL SOCIETY.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GENERAL MEDICAL COUNCIL—EDUCATION COMMITTEE —TEACHING ETHICS—FORENSIC MEDICINE—DENTAL COMMITTEE—PUBLIC HEALTH, PHARMACOPŒIA AND OTHER COMMITTEES—GENERAL MAXWELL'S TRIBUTE—KILLED AND WOUNDED—DISTINGUISHED SERVICE.

LONDON, June 10, 1916.

THE General Medical Council has held its 103rd session, extending over five days. Much of the business is formal but necessary and would not interest your readers, but there are some subjects which may claim mention. Thus penal cases occupy a good deal of time and result in a few names being removed from the register for "infamous conduct in a professional respect," the most frequent offence being that of "covering" illegal practice. Generally, it is a nurse who has thus been enabled to abuse her position and the council "takes a very grave view" of the danger from the public point of view of practitioners lending their names for this purpose. Nevertheless, when cases are proved the judgment too often only amounts to a brief suspension which, in such circumstances, may not be so severe as it looks, and those are not altogether unreasonable who urge that the full penalty in a few cases would be a more efficient deterrent.

The report of the Education Committee refers to the ethical relationships of practitioners to the State, to their patients, and to each other. At their appointment they were directed to make such inquiries as they deemed advisable on these matters. A letter addressed to all the teaching bodies elicited the information that the subject is dealt with as a part of the regular work in the colleges—sometimes in the courses of forensic medicine and public health or in other classes; sometimes in special lectures. But in a number of institutions no regular instruction has heretofore been provided on the subject. The committee consider that this neglect should not continue though they recognize that great variety may exist in the arrangements made by various bodies. They propose that a general recommendation dealing with the teaching of medical ethics be added to the resolution of the General Medical Council in regard to professional education, as follows: "Instruction should be given in the courses of forsenic medicine and public health, or otherwise, on the duties which involve upon practitioners in their relationship to the State, and upon the generally recognized rules of medical ethics. Attention should be called to all explanatory notices on these subjects issued by the General Medical Council."

The report of the Dental Education and Examination Committee was received and approved after some discussion. Reports from the committees on Public Health, the Pharmacopœia and Students' Registration were also received, approved and entered on the minutes.

General Maxwell has paid a striking tribute to the doctors and nurses who rendered their valuable services during the late disturbances in Dublin and particularly those who exposed themselves to heavy fire in attending to and removing the wounded. Also to members of the Red Cross and St. John's Ambulance Societies, as well as the numerous medical men and private persons who gave assistance to these associations or in other ways helped in the work, especially those who placed their houses at the disposal of the military medical staff for use as dressing stations. In numerous instances such services were rendered in circumstances involving great inconvenience and even personal risk.

The war office has issued dispatches from the commanders at the front in which a number of medical officers are mentioned for distinguished and meritorious service.

The King has conferred the D. S. O. on Captain T. Lewis Ingram, R. A. M. C., who collected and attended wounded under very heavy fire and has been conspicuous for bravery throughout the war; also on Captain Brash, B. B., who, under heavy shell fire, assisted by two men, extracted the wounded at an artillery dug-out and administered first aid; on Captain Woodhouse, M. B., Captain Hart, M. B., and Lieutenant Knight, M.D., who acted in the same courageous way. The dispatches state that all branches of the medical services deserve the highest commendation for the successful work done by them both at the front and on the lines of communication. The sick rate had been low and there had been no epidemic. Enteric fever had almost disappeared before the energetic preventive measures carried out. The results of exposure in trench warfare in the winter were considerably restrained by the precaution of the regimental medical officers. The wounded were promptly and efficiently conveyed to the base. The cooperation between officers of the regular medical service of the army and members of the civilian medical body who patriotically assisted them contributed to the prevention of disease and the successful treatment and comfort of the sick and wounded. The value of the work in the central laboratory and of that done by the chemical advisers with the armies in investigating into the nature of gases and other new substances used in hostile attacks should not be overlooked nor should the means of protecting our troops against them.

In the Franco-Prussian War, out of 4062 German doctors with the army only 9 were killed and 69 wounded; but in the present war, up to January 15, 56 German doctors have been killed, 216 wounded, 40 made prisoners, and 94 are missing, while 29 have died of disease or wounds, 5 have met with accidents, and 2 are invalided. These figures are out of a total number of about 12,000 actually with the army and do not include men in the military hospitals, nor about 10,000 employed in reserve hospitals, sanatoria, prisoners' camps, and ambulance trains. As Germany has about 32,000 medical men, if these figures are correct, it would seem that only about 8,000 would be available for ordinary civilian practice.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 15, 1916.

1. Respiratory Exchange, with a Description of a Respiratory Apparatus for Clinical Use. Francis C. Benedict and Edna H. Tompkins.
2. Studies of the Basal Metabolism in Disease and Their Importance in Clinical Medicine. J. H. Means.
3. The Physicians and the Prevention of Industrial Accidents. Herbert J. Cronin.
4. Memorial Address. Benjamin E. Cotting.
5. Two Cases of Syphilis of the Lung. Abner Post.

1. Respiratory Exchange, with a Description of a Respiratory Apparatus for Clinical Use. — Francis C. Benedict and Edna H. Tompkins call attention to the fact that many clinicians are perhaps not aware that a loss in weight, especially an initial loss in weight,

may be largely due to a loss of water from the body, even with patients not edematous. Furthermore, they may have no knowledge as to whether the loss consists of fat, muscle, or carbohydrate. A loss in weight due to a loss of a specific material may vary in its interpretation according to the character of the material; thus a loss of muscle, and particularly a loss of carbohydrate, would have a far greater significance than a loss of fat. A definite knowledge of the character of the loss of weight may be obtained by a study of the respiratory exchange. In pathological cases it was distinctly of importance to know whether or not the demand for nutriment, as indicated by the total amounts of material consumed in the body, is met by the supply. Observations of the respiratory exchange will show very quickly the demand for energy under the conditions of observation, and thus the clinician will be able to adjust without delay the supply to the demand. The majority of the earlier methods of studying the respiratory exchange were, for one reason or another, precluded from general acceptance in clinics and an attempt was made to broaden the field of study and increase the potentialities, by devising, constructing, and testing a relatively simple apparatus called the "universal respiration apparatus." With this apparatus it was possible to measure the carbon dioxide output and the oxygen intake with almost as high a degree of accuracy as with the costly calorimetric respiration chambers. Before describing the apparatus the writers define exactly what is meant by the terms "respiratory exchange" and "respiratory quotient," consider their relation to the heat production, and outline the fundamental principles underlying a study of the respiratory exchange and the essentials for an apparatus designed for use in pathological cases. The detailed description of this apparatus will be published later.

2. **Studies of the Basal Metabolism in Disease and Their Importance in Clinical Medicine.**—J. H. Means defines what is meant by calorimetry, and explains the methods of calculation by which the respiratory quotient and heat production are obtained. He reviews various studies of the basal metabolism made in the medical wards of the Massachusetts General Hospital, a particular study having been made of thyroid disease and obesity. He lays emphasis on the following points. 1. Basal metabolism can be readily studied in a hospital clinic with a comparatively simple apparatus. 2. The normal basal metabolism is a fairly constant affair, and hence wide variations from it in disease are of interest to the clinician. 3. A marked rise occurs in hyperthyroidism. 4. A marked fall occurs in hypothyroidism. 5. In regard to hyperthyroidism it seems probable that the basal metabolism furnishes (*a*) The best index as to the severity of the disease, and hence is a quantitative means of following the course and of judging of the effectiveness of treatment; and (*b*) A valuable aid in differential diagnosis. 6. Enormous grades of obesity are possible in the presence of a normal basal metabolism. 7. When a reduction in the metabolism was found in obese subjects there was also clinical evidence of defective internal secretion. 8. A clearer conception of the food requirements in disease is furnished by the basal metabolism than by any other factor.

3. **The Physician and the Prevention of Industrial Accidents.**—Herbert J. Cronin believes that the physician should take a more active interest in the campaign for the prevention of industrial accidents. He points out that the physician is in a position to get the true history of how the accident occurred, look into the physical condition of the patient and decide for himself from the injury how it may have been caused. The recurring cases will be strongly brought to his attention. The youngest interne at any of the metropolitan hospitals quickly recognizes by their frequent occurrence the causes of the common traumatisms; he knows the crush from the printing press, the mangling of gears, the buzz-saw fingers, and burns from molten metals. The doctor can inspect the site of the accident before the real cause of the injury such as an oily floor or a broken board, is removed. The family physician of the manufacturer can draw attention to the reforms needed and give advice. Technical knowledge is not necessary in giving advice for the correction of a large number of accidents. Many of the accidents are caused by such simple things as obstructions, unguarded pits, or floor openings. The writer considers more in detail defects in machinery and other factors that are responsible for a large number of accidents and says it has been shown that after all the practical devices have been put on machines only about 35 per cent of accidents can be so prevented. In order to supplement the work, every plant should start a safety organization among its employes. He describes a plan for such a safety organization which will not increase the pay-roll, except in large plants where one employe is designated to be a safety inspector and spends his entire time at the work. In closing, it is stated that the by-products of industrial warfare are worse than those of real warfare and that the medical profession should act as pioneers in this new work as they have done in nearly every other social reform.

5. **Two Cases of Syphilis of the Lung.**—Abner Post reports these two cases, both of which were syphilitic, and in neither of which were tubercle bacilli found. The resemblance of the radiograms in these two cases is striking. From these cases the writer believes it is justifiable to say that disease of the lung, in which consolidation is found in unusual positions, or limited entirely to one lung and in which tubercle bacilli have not been found, may be considered suspicious of syphilis. If the Wassermann is positive the suspicion is much greater and may almost be regarded as a certainty. It is certain that consolidation in unusual positions, with the absence of tubercle bacilli and the presence of a positive Wassermann, does not permit the diagnosis of tuberculosis. These cases show also the important fact that syphilis of the lung occurs in hereditary cases, that is, among the young, the very individuals who are most subject to tuberculosis.

New York Medical Journal.

June 17, 1916.

1. Some of the Larger Problems of the Medical Profession. Rupert Blue.
2. Failures in Diagnosis. William S. Gordon.
3. Focal Sepsis. Judson Daland.
4. *X*-Ray Diagnosis of Surgical Complications Within the Chest. George E. Pfahler.
5. The Corroborative Diagnosis of Mastoiditis by Means of the *X*-Ray. Harold Hays.
6. Meningitis. Randle C. Rosenberger and David J. Bentley, Jr.
7. Fleck Typhus. E. Kilbourne Tullidge.
8. Camp Sanitation. P. W. Huntington.
9. Radium in Gastric Carcinoma. C. Everett Field.
10. The Leucocyte Count of Appendicitis. J. E. Robinson.
11. Cardiac Dilatation. Max Grossman.

1. **Some of the Larger Problems of the Medical Profession.**—Dr. Rupert Blue. (See MEDICAL RECORD, June 17.)

2. **Failures in Diagnosis.**—William S. Gordon gives a comparison of physical and laboratory methods, and sums up by stating the following: The chief causes of errors or failures in diagnosis are ignorance or neglect on the part of the physician; the partial or incomplete employment of the aids afforded by science;

the failure to make routine examinations; the failure to correlate laboratory and physical findings; exceptions to the laws governing diagnosis and pathology; the limitations of scientific knowledge; the impracticability at times of using all of the diagnostic methods; the failure of the patient to submit to the requirements of the physician; the direct or indirect influence upon patient and physician of the erroneous expressions of the laity. Science is rapidly advancing in all of its branches. Diagnosis is becoming more and more accurate, while the doctor is becoming more highly educated. When the public awakes to a realization of the many difficulties which beset the pathway of the medical man, and when it ceases to place him on a level with the charlatan, it will be surprised at the comparatively few mistakes which the physician makes and at the large number of successes which can be placed to his credit.

3. **Focal Sepsis.**—Judson Daland considers a cause of constitutional disease from the viewpoint of the internist and offers the following conclusions: 1. Chronic focal sepsis is known to be one of the causes of acute and chronic arthritis, periarthritis, arthritis deformans, osteitis, endocarditis, pericarditis or myocarditis, endarteritis, acute and chronic parenchymatous nephritis, cholecystitis, cholelithiasis, gastric and duodenal ulcer, appendicitis, meningitis, thyroiditis, neuritis, oophoritis, ocular diseases, furunculosis, and is the recognized cause of other diseases. 2. The results of chronic focal sepsis are due to the varying virulence of the microorganism, the duration of the focus, the quantity of microorganisms and toxins entering the circulation, the rapidity of absorption, the integrity of the tissues, and the susceptibility or immunity of the patient. The rôle of toxemia is not fully understood. 3. The usual location of chronic focal sepsis in the order of frequency is the mouth, the tonsils, and the sinuses. 4. The diagnosis of chronic septic focus is sometimes easy, but more often difficult. A common error is to recognize only one focus when more than one exists, and this is especially true of the teeth. Loose, dead, capped teeth and those containing large fillings, or those connected with bridges or artificial dentures, are frequently septic and should be explored. The mouth should be carefully examined for pyorrhea or pyorrheal pockets. The diagnosis of mouth sepsis should be made by a dentist especially trained for this work, and a roentgenograph is always necessary. A tonsil may appear normal and yet contain an abscess or be infected. A partial removal of a tonsil may cause a septic focus by sealing crypts and follicles. The adenoid structure in the supratonsillar fossa may be infected. A sinus may appear normal and a second examination show suppuration. This is especially true of the ethmoid and sphenoid. The virulence of the microorganism, rather than the size of the focus, is important. 5. Success in treatment of constitutional diseases secondary to focal sepsis depends upon the diagnosis and removal of the focus or foci of infection. Temporary improvement with relapses may be expected when the septic focus is only partially removed. After removal of the focal sepsis recovery may be hastened by personal and general hygiene. It is believed by those having experience that an autogenous vaccine hastens recovery. I have seen a number of patients make satisfactory recoveries without vaccines. The recognition of the principle of secondary systemic infection is one of the most important advances in medicine in recent years.

9. **Radium in Gastric Carcinoma.**—C. Everett Field approaches this theme with a degree of hopefulness that he trusts will not be considered unduly enthusiastic. Possibly there is no subject in medicine or surgery today that is receiving more attention at the hands of the scientific world than radium. To the credit of this element we must acknowledge that a large percentage of the early disappointments were due to the fact that insufficient doses and lack of purity of the elements were common. Radium does kill the cancer cells and exerts its power in direct accord with the accessibility of the mass. Superficial cancer is controlled and cured in fast increasing percentages. In the light of our present knowledge we place the rays as merely an adjunct to the knife. The London Radium Institute, in its report for 1913, says that "tabulated data on a total of 181 cases of cancer of the face, neck, and breast, show a total of 154 cases healed, and seventeen discontinued. Of the 154 listed as healed on January 1, 1911, at present 135 are still healed." Von Czerny of Heidelberg has reported observations in several thousand cases of gastric carcinoma. His experiences detail the direct application of radium, the use externally of radium compresses for the relief of pain, and the injection of soluble salts. With the later treatment, he avers that he has checked for a time active congestion, relieved the pain, and reduced stenosis to the point of allowing the passage of food.

Journal of the American Medical Association.

June 17, 1916.

1. Some of the Larger Problems of the Medical Profession. Rupert Blue.
2. Dispensary Abuse and Certain Problems of Medical Practice. J. Whitridge Williams.
3. The Duodenal Tube as a Factor in the Diagnosis and Treatment of Gallbladder Disease. Max Einforn.
4. Acidosis in Diabetes. R. T. Woodyatt.
5. Large Endothelioma of the Dura Compressing Both Frontal Lobes. Moses Kescher, New York.
6. Trench Foot Tetanus. George G. Davis and Joseph J. Hilton.
7. Early Death from Cerebral Syphilis, with Successful Rabbit Inoculation: Report of a Case. Mathew A. Reasoner.
8. An Unusual Stomach Case, with Roentgenographic Findings. George E. Brown.
9. Fecal Concretions of the Appendix Demonstrable by the Roentgen Ray. John Douglas and Leon Theodore LeWald.

1. Some of the Larger Problems of the Medical Profession.—Professor Rupert Blue. (See MEDICAL RECORD, June 17.)

2. Dispensary Abuse and Certain Problems of Medical Practice.—J. Whitridge Williams spoke on this subject at the one-hundred and eighteenth meeting of the Medical and Chirurgical Faculty of Maryland. He outlines the growth of the modern dispensary and pleads for the maintenance of dispensaries of the highest type, with the knowledge that the better they become, the greater will be the cry of the dispensary abuse, which to his mind will not disappear until the principles of medical practice in our larger cities have undergone reorganization. As a corrective of the present abuse of free operations by persons able to pay, he suggests that a mechanism should be devised for the investigation of the circumstances of the patient and the charging of an equitable fee by the institution. In many cases after charging such a fee for drugs and supplies nothing would be left for the surgeon, but in other instances a balance would be left for the payment of professional services. Naturally this would be so small that the operator could not accept it as a fee without a distinct loss of self respect, so that the question would arise as to its disposition. Such money along with other available funds could be utilized for the payment of moderate salaries to the members of the staff who do the work, with the understanding that such a salary was in lieu of all fees from patients, except those occupying private rooms at full rates. The author endorses the "diagnostic group plan" which is being used at the Massachusetts General Hospital, and suggests that a fee of $10 to $25 be charged for

the complete examination, and that the dispensary staff should be compensated either by fixed salaries or by a pro rata division of the fees after a proper deduction has been made for maintenance charges. He then considers the subject of health insurance and suggests that each insured family be allowed to choose as its medical attendant any physician on the panel of the insurance organization living within a certain radius. In cases of minor illness the patient would visit the physician in his offices or go to the dispensary, while in more serious cases he would go to the dispensary for diagnosis and treatment. If the patient were ill in bed he would be cared for at home by his medical attendant and a visiting nurse, or sent to the hospital if the physician deemed it advisable. Under such a system there would be no possibility for dispensary abuse as the expense would be borne by the insurance fund and indirectly by those insured, no matter whether the patients were treated at home or at the dispensary or hospital. Nor would the doctor suffer. As probably two-thirds of the residents of each district would be in the insured class, large numbers of physicians would be necessary for the conduct of the dispensary and hospital and as they would be paid for such services, as well as for visiting patients in their own homes, and would have no bad bills, they would probably consider it a matter of indifference where the patients were seen. This would mean that the great majority of physicians would become state officials and would devote their entire time or a great proportion of it to official duties.

3. **The Duodenal Tube as a Factor in the Diagnosis and Treatment of Gall-Bladder Disease.**—Max Einhorn emphasizes the advantages of direct examination of the bile in diagnosing gall-bladder disease. He says he had diagnosed probable cholecystitis by examination of the bile in conjunction with the usual symptoms in forty cases since May, 1914. Thirteen of these cases were operated upon. In the majority of cases in which turbid bile was found in the duodenum in the fasting condition, cholecystitis with gallstones is encountered. Turbid bile may exist, however, without gall-bladder disease when the liver itself is seriously diseased, or in stricture of the duodenum below the papilla of Vater. On the other hand clear bile may exceptionally be found in association with biliary calculi. There are then two possibilities: Either the gall bladder is not inflamed or the gall bladder is entirely filled with the calculi. In these cases no bile enters the organ and it therefore enters the duodenum in the same state as excreted by the liver. In a number of patients with cholecystitis an attempt was made to instil a weak solution of ichthyol or argyrol into the duodenum just above Vater's ampulla. The writer describes his method of doing this and believes that it possesses a distinct benefit. He has also carried out duodenal alimentation for the relief of gastric or duodenal ulcer; among them were quite a number of patients who had gallstones at the same time. The latter were benefited not only with regard to their digestive disorders but also in reference to their gall-bladder condition. This occurred in a striking manner with such frequency that he felt inclined to attribute to the duodenal alimentation the decidedly beneficial influence on the gall-bladder lesion. The essayist believes that duodenal alimentation will find an appropriate place in some forms of cholecystitis, particularly when complicated with ulcers of the stomach or duodenum.

4. **Acidosis in Diabetes.**—R. T. Woodyatt discusses acidosis in general, the origin of the acidosis compounds, conditions favoring their appearance, acidosis in fasting, and states that acidosis in diabetes develops under exactly the same fundamental conditions which cause this condition in non-diabetics. There happens in the severe cases of diabetes a rate of fatty acid metabolism which in the absolute sense is not greater than what might occur in health but becomes excessive in proportion to the amount of oxidizing glucose and so acidosis develops. In order to check a diabetic acidosis, it is necessary to restore the proper ratio of fatty acid to glucose oxidation by reducing the fatty acid metabolism to whatever level is fixed by the existing rate at which glucose is oxidizing. In diabetes protein alone, if metabolized in sufficient amounts, may be productive of acidosis as well as fat, because, although protein in breaking down liberates plenty of glucose for the complete oxidation of its own ketogenic fraction, in diabetes not all the glucose so formed can be oxidized owing to the lessened ability of the body to split it open. Accordingly to check a diabetic acidosis it is necessary to reduce both the protein and the fat metabolism. Fasting, rest, and warmth accomplish this.

6. **Trench Foot Tetanus.**—George G. Davis and Joseph J. Hilton report a case of tetanus occurring as a complication of "trench foot" with a fatal outcome. In this case a prophylactic dose of antitetanic serum had not been given, and in view of the excellent results obtained by prophylactic doses in the wounded the writers conclude that it would be a reasonable rule in military surgery to consider all cases of trench feet as in a class with the wounded, and to give these patients also in every instance a prophylactic dose of antitetanic serum.

8. **An Unusual Stomach Case, with Roentgenographic Findings.**—George E. Brown reports this case which is of interest not alone because of its clinical rarity, but also from the fact that the roentgenologic findings were deceptive. The mass on the lesser curvature resembled the roentgenologic picture of penetrating ulcer, though no incisura was present. The clinical findings were also deceptive, namely, hematemesis, occult blood in stools, gastric pain, and vomiting. The writer says he can find no mention of any similar condition in the textbooks.

9. **Fecal Concretions of the Appendix.**—John Douglas and Leon Theodore LeWald state that in a small number of instances a fecalith of the appendix may be demonstrated by roentgenographic examination and that this fact must be taken into consideration in making an examination. Usually the passage of opaque ureteral catheters will be of the greatest assistance in differential diagnosis, but the two cases reported by Eastmond and Seelig demonstrate that even with this assistance a mistake may be made. As a further aid in Roentgen diagnosis, they would suggest that when the shadow is above the crests of the iliac bones, a *lateral* stereoscopic roentgenographic examination be made, preferably with an opaque catheter in the ureter on the suspected side. In a case recently examined in this way they were able to distinguish what is probably a calcified lymph node from a supposed ureteral calculus. If there is still doubt, a Roentgen examination, combined with an opaque meal or enema, may show the relationship of the suspicious shadow to the appendix or cecum. They call attention to the possibility of one encountering a left sided appendix due either to a non-rotation of the colon or to a complete transposition of all the viscera. LeWald has encountered the former condition in three persons, and the latter condition in twelve. A shadow on the left side, therefore, may represent a calculus in the appendix unless a Roentgen examination shows the cecum on the right side.

The Lancet.

May 27, 1916.

1. The Chadwick Lectures on Typhus Fever in Serbia. R. O. Moon.
2. Arrangements for the Care of Cases of Nervous and Mental Shock Coming from Overseas. William Aldren Turner.
3. Congestion in the Treatment of Epidemic Cerebrospinal Meningitis. Duncan Forbes and Eveline Cohen.
4. The Treatment of Gunshot Wounds by Packing with Salt Sacs. Alfred J. Hull.
5. The Anatomical Position of Localized Foreign Bodies. J. Metcalfe and E. N. Keys-Wells.
6. Simple Tertian Malaria in French Flanders. A. C. Rankin.
7. Warfare Neuroses of the Throat and Ear. John F. O'Malley.
8. Notes on Cases of Head, Abdominal, and Joint Injuries. H. E. Brown.
9. Notes on Camp Sanitation. A. White.

2. Arrangements for the Care of Cases of Nervous and Mental Shock Coming from Overseas.—William Aldren Turner gives information with reference to the arrangements that have been made for the care of soldiers sent home from overseas who are suffering from nervous shock, neurasthenia, and nervous breakdown. At the commencement of the war the cases of nervous shock and neurasthenia were transferred from over seas in company with medical and surgical cases, and were treated in the general wards of the hospitals at which they arrived, while the cases of mental disorder were transferred to the established institutions for the treatment of mental patients in the service of the army. The increase in the number of cases of this nature coming over in consequence of the severe fighting during October and November, 1914, made special provision for their treatment desirable. Plans were made so that upon the soldier's arrival at one of the British base hospitals abroad his condition was investigated by a special medical officer. The patient is then sent to a section of a hospital according as his symptoms are of a neurological or a mental character. Should he be suffering from transitory mental symptoms, which subside rapidly, he is transferred from the mental to the neurological section as soon as it is advisable to do so. In order to meet this class of cases special accommodation is now being provided at the base hospitals overseas, so that the patient may be placed under the most suitable circumstances for recovery. The patients are labelled for one of the clearing hospitals at home. On arrival at one of the clearing hospitals the patient is given treatment. If his symptoms are slight or transitory and disappear rapidly, he is sent on furlough and later is returned to light duty. On the other hand should the course of the disorder be less favorable, he may be transferred to one of the special hospitals for nervous diseases or to a special institution. In a general way the results of the treatment of the neurological cases showed 40 per cent of cases returned to light duty, 20 per cent invalided, and 20 per cent transferred for further treatment to the special institutions. The patients transferred to the mental hospitals are mostly of the certifiable type and include most of the severe forms of acute mental disorder. In accordance with accepted policy none of these patients are certified as of unsound mind. Each patient is given a reasonable period of treatment with a view to recovery. In consequence, however, of the accumulation of chronic and incurable cases which was observed a few months ago it was decided to discharge to asylums all cases of general paralysis of the insane, of epilepsy with insanity, and all patients who had been in asylums prior to enlistment. The percentage of cases of this kind returned to light duty was obviously small, from 10 to 15 per cent.

3. Congestion in the Treatment of Cerebrospinal Meningitis.—Duncan Forbes and Eveline Cohen report five cases of epidemic cerebrospinal meningitis in which congestion of the cerebral vessels was brought about by raising the foot of the bed. The foot of the bed was elevated so as to make an angle of from 14 to 23 degrees with the floor. The type of cases at first treated in this way were the class of cases that almost get over their illness, then become chronic and die. Later congestion was found useful in the earlier stages of the disease. If the head of the bed was raised too high there might be severe headache and persistent vomiting due to too great congestion and its results. In such cases if the bed was lowered and the tension relieved by puncture the patient usually recovered. As different cases require varying degrees of stimulation, no hard and fast rule can be laid down as to the height to which the foot of the bed should be raised.

4. The Treatment of Gunshot Wounds by Packing with Salt Sacs.—Alfred J. Hull says that the treatment of septic wounds by a pack which is allowed to remain in the wound for several days is so opposed to the usual teachings of surgery that at first sight its utility may be doubted. Nevertheless such treatment has proved one of the most effective methods of dealing with septic wounds during the present war. It has also been found to be one of the most generally applicable procedures for the treatment of secondary hemorrhages. The sacs are made of gauze in several sizes, filled with salt, sterilized in an autoclave, and stored ready for use. The effect of the salt bag is to form a concentrated solution of salt which promotes the resolution of inflammatory induration and aids the separation of dead tissue by solution of coagulated lymph. If the wound is clean the sacs are removed in from five to ten days, and treatment by normal saline solution. This method of treatment saves the patient the inconvenience of frequent dressing and forms an efficient means of preventing hemorrhage.

5. The Anatomical Position of Localized Foreign Bodies.—James Metcalfe and Ernest N. Keys-Wells call attention to the great improvements in detail and technique and the various forms of new and elaborate apparatus that have been evolved in order to produce greater accuracy in exact localization, and give their method of localizing foreign bodies in some of the important positions. The results have been arrived at by the use of a long needle on a handle and measuring the depth inserted when the bony point under investigation is reached. This method was supplemented by taking a double image of the various regions on one plate and estimating the depths of the body point as for a foreign body. No attempt had been made to give the positions in the leg or arm. A tales gives the various parts examined. The following are examples of anatomical depths estimated from the measurements and given to various surgeons.

1. Rifle bullet lying in wall of pericardium, the point 2 inches and the base 1½ inches from a mark on the front of the chest. Successfully and easily removed.

2. Small metallic fragment 2 inches deep to a mark on the front of the thigh on a level of the lesser trochanter, stated to be lying between adductor brevis and adductor longus. Removed without difficulty.

3. Rifle bullet, the point 1¾ inches and the base 2¼ inches deep to a mark over the scapula, stated to be in the serratus magnus. Removed from that muscle.

4. Shrapnel bullet, 1 3/5 inches deep to a mark on the front of the chest just below the coracoid, stated to be immediately beneath the tendon of the pectoralis minor. Removed from that position.

British Medical Journal.

May 27, 1916.

1. The Louse Problem at the Western Front. A. D. Peacock.
2. Notes on Military Orthopedics, III. The Soldier's Foot and the Treatment of Common Deformities of the Foot. Robert Jones.

3. A Case of Arteriovenous Aneurysm of the Subclavian Artery and Vein Treated by Excision of the Sac and the Second and Third Parts of the Artery. Comyns Berkerley and Victor Bonney.
4. Notes on a Case of Penetrating Wound of the Heart. R. Garside and P. McEwan.
5. White Gangrene. A. J. Hull.
6. Simple and Inexpensive Methods for Fermentation Tests and for Obtaining Cultures of Anaerobes. J. M. Beattie.

1. The Louse Problem at the Western Front.—A. D. Peacock presents a morphological study of the *Pediculus humanus* or common body louse and the results of an investigation into the habits of this parasite. As a result of his experiments it was found that the longest period during which lice survived separation from the human body was nearly nine days. The maximum time during which eggs away from the body might remain dormant was found by Warburton to be about forty days. This was under laboratory conditions and the temperature fell at times below the freezing point. Similar experiments were carried out and samples taken from a shirt exposed thirteen days did not hatch after twenty-eight days' incubation. In applying this knowledge the important fact is that eggs on the clothing, particularly the outer garments, if not treated regularly by ironing or disinfection, are a possible source of infestation for as long as a month after laying. Also, the removal of the clothing from the body for a few days in order to kill the eggs and lice by exposure is not a practical scheme. The louse, therefore, is a parasite which is utterly dependent upon man's blood for sustenance and man's body and clothing for prolonged, prosperous longevity and reproduction. The louse adds greatly to the troubles of the soldier at the front largely because of its interference with sleep which results in impaired vitality and mental weariness.

2. The Soldier's Foot and the Treatment of Common Deformities of the Foot.—Robert Jones expresses surprise at the number of men with claw-feet that have been passed into the army, and at the fact that many such cases have found their way to the front after the vigorous initial training which the recruit undergoes. Sooner or later these men gravitate to the hospital and few of them return to the ranks as efficients. A patient with this condition of the foot is quite unfit for military service, and should never be accepted as a recruit. Clinically the condition presents five degrees or stages. The progress of the development of the deformity from one degree to another, though often continuous, is frequently arrested in one of the early stages. Hallux rigidus, hallux valgus, and metatarsalgia are all frequently associated with flat foot. In connection with these conditions the author discusses the importance of correct position and free mobility of the great toe in marching. In young children of all races the great toe is directed slightly inwards towards the middle line of the body, in line with the anterior part of the inner longitudinal arch of the foot. In races who habitually go barefoot this position of the great toe is preserved in adult life. In civilized races—those, at least, who wear boots—the toes are often cramped into boots of unsuitable shape, so that the small muscles of the foot suffer atrophy from disuse, and the power to spread the great toe inwards in walking is much impaired. In a strong foot which has not been deformed by wearing pointed boots the great toe is spread inwards by the action of the abductor hallucis when balancing on one foot, when the weight of the body is on the fore part of the foot in walking, and still more so when carrying a pack on the shoulders. A good marching foot should therefore leave the foot free to adapt itself to altering conditions of balance and strain. The writer discusses the palliative and operative measures that may be employed in correcting these deformities.

3. A Case of Arteriovenous Aneurysm of the Sub-Clavian Artery and Vein Treated by Excision of the Sac and the Second and Third Parts of the Artery.—Comyns Berkerley and Victor Bonney report the case of a soldier who was wounded by a rifle bullet striking him just outside the axillary border of the right scapula near its inferior angle and emerging just above the middle of the right clavicle. The wound of entrance was healed and wound of exit practically healed, but underlying it in the subclavian triangle was a pulsating swelling about the size of a double walnut. There was a very marked thrill which could be felt and heard even as far as the bend of the elbow. The right arm was entirely paralyzed. A diagnosis of arteriovenous aneurysm of the third part of the subclavian artery and vein and injury to the brachial plexus was made. As the swelling in the neck was enlarging, and, if it continued to enlarge the difficulties of operating would become greater, it was decided that operation should be performed. The sac lay between the third part of the subclavian artery and vein, and communicated with both. The aperture into the vein was fortunately small and was situated about the point where the external jugular joined it. The sac wall was very thin. Its front part was formed by the deep cervical fascia; behind and above it adhered to the brachial plexus, while the first rib and clavicle had limited it below. There is only one other case in which an after history of arteriovenous aneurysm in this situation is available and this together with the successful result in the present instance justifies the decision to operate. The authors say that if they ever have to perform this operation again they will not replace the resected clavicle, for they think that if they had not done this suppuration would not have occurred. It would also they acknowledge, have been better not to have used silk for the main arterial ligatures. In all cases of military surgery where absolute asepsis could rarely be attained catgut of an absorption rate of not more than twenty days should be used for large arteries, a suture having this absorption rate being used so as to minimize the duration of a ligature sinus if by chance such a complication should happen to occur.

Calcium Sulphide an Antidote for Mercurial Poisoning.—B. Merrill Ricketts recently described a method devised by him to antidote mercury in the system after the swallowing of a lethal dose. For every grain of mercury ingested he gives one grain of calcium sulphide by the mouth and repeats it every two hours until five grains have been taken. If the case is already forty-eight hours old when treatment is begun he injects the drug into a vein—one grain in an ounce of water for each grain of mercury swallowed. Ricketts reported several cases of recovery, in one of which 80 grains of bichloride had been taken.—*American Journal of Clinical Medicine.*

Delayed Appearance of Tetanus.—Julliard, a Swiss surgeon connected with a base hospital in Lyons, states that preventive antitoxin may sometimes delay infection, while not mitigating its severity. He saw fatal cases which did not develop until two and three months after injury. In one of these, two months after aseptic healing of a wound of the os ilium, tetanus suddenly appeared and proved fatal in eight days. The author does not include here cases of delayed tetanus started up by secondary operations on wounds.—*Correspondenz-Blatt für Schweizer Aerzte.*

Book Reviews.

Back Injuries and Their Significance Under the Workmen's Compensation and Other Acts. By Archibald McKendrick, F.R.C.S.E., etc., Surgeon in Charge of Surgical X-ray Department, Royal Infirmary, Edinburgh. Blue muslin; pp. 174, with 14 illustrations. Price, $1.25 net. New York: William Wood & Co.; Edinburgh: E. & S. Livingstone, 1916.

McKendrick shows that he fully appreciates the situation, and also that he has a sense of humor, when he says in his preface, "Back injuries have a bad reputation. The workman looks upon them with apprehension, the insurance company with doubt, the medical examiner with suspicion, the lawyer with uncertainty, and the court with as open a mind as is possible under the circumstances." As he also says, the lawyers are puzzled by the conflicting and often contradictory reports of the surgeons; and this book is offered to the medical and legal professions as an honest attempt to throw some light into the existing darkness and to suggest some practical methods of testing the genuineness or otherwise of the complaints made. With this end in view the author discusses the anatomy of the spine, including its bones, joints, ligaments, and overlying fascia and musculature, then takes up the examination, history, and numerous other matters, tests, etc., which should be carefully considered in order to arrive at a correct diagnosis and separate the true from the "fake" cases.

This book was written with the laws of the British Isles in mind; but that interferes but little, if at all, with its practical value, since the author is concerned with the medical and surgical rather than the legal aspects of the subject. Since the Workmen's Compensation Law in this State went into effect the apparent number of slight injuries has increased enormously, treatment being sought for injuries so trivial that they would have been disregarded formerly; and as real or feigned injuries of the back have always been a fruitful source of claims for financial balm, it is probable that the apparent number of these cases will likewise show an increase under present conditions. Hence McKendrick's book is most opportune; and as it is well written and covers the ground quite thoroughly, it should be of much service to those who have to do with these often perplexing cases.

Cerebrospinal Fever. By Thomas J. Horder, M.D., Assistant Physician, St. Bartholomew's Hospital; Major (Temp.) R.A.M.C., Serving with the British Expeditionary Force. With Seventeen Illustrations. Price, $1.25. London: Henry Frowde; Oxford University Press; Hodder & Stoughton; New York: Oxford University Press, American Branch, 1915.

This is one of the Oxford War Primers of Medicine and Surgery. It is a book of exceptional merit, presenting a complete survey of the latest knowledge of meningococcus meningitis and serving at the same time as a practical working manual for the benefit of those who are actually treating cases of this disease. The methods of bacteriological diagnosis and the technique of lumbar puncture are described in satisfying detail. The chapter on diagnosis is excellent. It discusses the subject of meningism, the diagnosis of meningitis from toxemia merely, the acute infective processes with toxemic symptoms simulating meningitis, the differential diagnosis of cerebrospinal fever from certain diseases of the central nervous system and the differential diagnosis from other forms of meningitis. Considerable value is attached to the old distinction originally attributed to Sir William Jenner, namely, that if headache and delirium synchronize, meningitis is probably present and not merely toxemia. The chapter on treatment is thoroughly up-to-date. Preference is given to the gravity method of introducing the curative serum into the subarachnoid space, a method probably first employed in the Mount Sinai Hospital in New York. The control of the serum administration by watching the blood-pressure as advocated by Sophian is also discussed. The treatment by means of soamin (sodium aminophenylarsenate) as recently reported on the basis of successful results obtained in South Africa is fully described. In summarizing the many good features of this book one must not fail to mention the discussion of the carrier problem in this disease, the question of the incidence of abortive cases, and the pathogenesis, all of which subjects have come to the forefront within recent years. The fact is emphasized that the exact habitat of the meningococcus in carriers is the upper part of the nasopharynx and the posterior nares, and there is described and illustrated a method, as advocated by Dopter, of obtaining material from the nasopharynx by means of a special swab. This is a method of examination of definite value in the case of suspected contacts.

Character and Temperament. By Joseph Jastrow, Professor of Psychology, University of Wisconsin. Price, $2.50 net. New York and London: D. Appleton and Company, 1915.

That such subtle attributes of human nature as character and temperament should be capable of close analysis speaks well for the progress of modern psychology. At any rate, it is no longer considered that those elusive traits that distinguish the so-called qualities of men are beyond the scrutiny of science. Professor Jastrow has attempted to gauge these qualities and the result is a valuable contribution to psychological literature in a volume of 596 pages. This delineates the "foundations of human differences" and the "traits upon which education builds, which the vocations select, and which society encourages." One might aptly describe this book as a treatise on human nature. Its subject-matter is subdivided into nine chapters under the following headings: The Scientific Approach, The Sensibilities, The Emotions and Conduct, The Higher Stages of Psychic Control, Temperament and Individual Differences, Abnormal Tendencies of Mind, The Psychology of Group-Traits, Character and the Environment, and The Qualities of Men. This book bears the stamp of rare scholarship and is written in a singularly clear and elegant style.

A Text-Book Upon the Pathogenic Bacteria and Protozoa for Students of Medicine and Physicians. By Joseph McFarland, M.D., Sc.D. Professor of Pathology and Bacteriology in the Medico-Chirugical College, Philadelphia; Pathologist to the Philadelphia General Hospital and to the Medico-Chirurgical Hospital, Philadelphia; Fellow of the College of Physicians of Philadelphia. Eighth edition. Price, cloth, $4.00 net. Philadelphia and London: W. B. Saunders Company, 1916.

McFarland's text book upon the pathogenic bacteria and protozoa is almost a household word among the members of the medical profession in this country, and is of course well known and esteemed by English speaking medical men everywhere. The present, the eighth edition, has been almost rewritten; so much so indeed that the type of the entire book has been reset. The work is remarkably full and has been brought thoroughly into line with all the most recent developments of the subjects dealt with. All relating to the matter in hand is discussed exhaustively but at the same time in language concise and clear. The volume provides a valuable book of reference for students and physicians. The book is well printed and the illustrations are excellent.

Changes in the Food Supply and Their Relation to Nutrition. By Lafayette B. Mendel, Professor of Physiological Chemistry in the Sheffield Scientific School of Yale University. Price, 50 cents. New Haven: Yale University Press. London: Humphrey Milford, Oxford University Press, 1916.

The changes of the food supply and their relation to nutrition have a very important bearing on the health of a community. Modern methods of preparing certain staple articles of diet have resulted in various phases of ill health. Highly milled bread, for instance, is less nutritious by far than the coarser varieties, while polished rice has been shown to be responsible for beriberi. Pellagra and scurvy again are what is known as deficiency diseases, due to the lack or absence of vitamines in the article of food on which the sufferers therefrom have subsisted. Professor Mendel in his able essay has presented some very valuable facts in a very interesting manner.

Breathe and Be Well. By William Lee Howard, M.D. Price, $1. New York: Edward J. Clode, 1916.

In this book, which is written for the instruction of the laity, the author gives some very practical advice on the most important and greatly neglected subject of correct breathing, and shows how intimately it is related to the preservation of health. He gives directions for a number of breathing exercises, which may be followed by those who are unable to take brisk physical exercise in the open air. For those who can and do walk at a rapid pace several miles a day the breathing will take care of itself.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Sixty-seventh Annual Session, Held in Detroit, June 13, 14, 15 and 16, 1916.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 1164, Vol. 89.*)

SECTION ON MEDICINE.

Wednesday, June 14—Second Day.

A Consideration of Types of Uremia.—Dr. NELLIS B. FOSTER of New York presented this paper. He said that a diagnosis of uremia could not be based on demonstrable organic changes, since the organic lesions disclosed at necropsy were inconstant. The clinical manifestations of uremia were found in association with advanced renal disease and hence, presumably, were due to a defect in renal function; but if the kidneys were removed entirely the course of events leading to death conformed but remotely to any type of uremic state. Clinically, several types of uremia had been differentiated, depending on the presence or absence of group symptoms; these types might be in some instances pure, not infrequently merging together. As nephritis presented various manifestations determined by the specific renal function most impaired, so uremia could be divided into several groups and the primary factor determined with a high degree of probability. There were, according to his present conception, three pure basic types of uremia. (1) Retention type, the urinary poisoning of Ascoli. This was a simple retention of urinary nitrogenous waste—urinary poisoning. (2) Cerebral edema type. This was due to defective water and salt metabolism, resulting in cerebral edema. (3) The toxic type, or epileptiform uremia. This was a toxemia resulting from an abnormal katabolism.

The Value of Recent Laboratory Tests in the Diagnosis and Treatment of Nephritis, with Special Reference to the Chemical Examination of the Blood.—Dr. ARTHUR F. CHASE and Dr. VICTOR C. MYERS of New York presented this paper, which was read by Dr. Chase. He said the chemical examination of the blood in nephritis was often of greater diagnostic and prognostic value than the chemical and microscopical examination of the urine, the blood pressure, phenosulphonephthelein test, etc. The case of excretion of the three most important nitrogenous waste products, creatinin, urea, and uric acid, appeared to fall in the order just named, probably owing to purely physical laws of concentration and solubility. Thus a lowered kidney activity should become evident first by the retention of uric acid, later by urea, and lastly by creatinin. A retention of uric acid alone should form an early diagnostic test; an appreciable retention of creatinin should constitute a grave prognostic sign, a view well supported by their own observations. As a gauge to the acidosis which occurred in many advanced cases, they had found Van Slyke's method of determining the CO_2 combining power of the blood of great value. Of the large number of methods used in the past few years to estimate the functional capacity of the kidney, they felt that the following were of practical use to the general practitioner: Phenosulphonephthalein test, the determination of the fixation of the specific gravity and of nocturnal polyuria and the estimation of the blood content of the uric acid, urea, creatinin, sugar and CO_2 combining power. These tests, they believed, were distinct contributions to medicine and had come to stay. The amount of nitrogen in the blood served as a most excellent guide in the giving of protein. The use of salt-free diet in cases of parenchymatous nephritis with edema and salt retention gave prompt results.

A Comparative Study of Tests for Renal Function.—Dr. HERMAN O. MOSENTHAL and Dr. D. SCLATER LEWIS of Baltimore presented this paper—a comparative study of the phenosulphonephthalein, non-protein nitrogen in the blood, blood urea, Ambard's coefficient of urea excretion, and the test meal for renal function tests had been carried out in a series of cases. A definite scale by which to judge the degree of impairment of renal activity was proposed. These observations indcated that in most instances the results obtained by the various tests tended to be of equal degree. In a certain number of individuals, however, they were not. This discrepancy was not interpreted as invalidating either one test or the other, but was regarded as evidence that they signalized a diminution of various phases of renal function which did not necessarily parallel one another. When it was well understood what part of renal function each of these and other renal functional tests tried out, a more intelligent study of diseases of the kidneys might be made than heretofore. In summarizing they stated the following: (1) A scale of impairment of renal function was proposed according to which the tests might be measured. Such a gradation called to the attention of the clinician the relative degree of involvement as shown by different procedures. Inasmuch as each of them had a significance apart from the others, comparison according to this method was an extremely valuable aid in the treatment and prognosis of diseases of the kidney. (2) The level of the non-protein and urea nitrogen of the blood must be estimated largely as the resultant of three factors—kidney efficiency, diet, and protein destruction. In judging of prognosis, when these substances were high in the blood of nephritics, due regard must be given as to whether their accumulation was brought about by retention alone or through retention coupled with protein destruction. The former offered a comparatively better prognosis than the latter. (3) The coefficient of Ambard was a better bethod of determining the ability of the kidney to excrete urea than the level of this substance in the blood. (4) The progress of renal disease was probably followed most minutely by means of the 'phthalein excretion and Ambard's coefficient, as these tests furnished figures in which even small variations were of significance. (5) The test meal for renal function gave the earliest indication of diminished kidney efficiency. It likewise reached the maximum degree of impairment before the others. (6) Each test for renal function covered only a limited range of the kidney's activities. It was, therefore, a mistake to speak of any test as measuring renal function as a whole. The aim should be to develop a proper interpretation of the old tests and easily applied new ones, in order to obtain a true guide in the treatment of diseases of the kidneys.

Elective Localization of Bacteria in Diseases of the Nervous System.—Dr. EDWARD C. ROSENOW of the Mayo Foundation, Rochester, Minn., briefly summarized the results of an experimental study of the possible etiological relation of localized foci of infection, especially in and about the teeth and tonsils, to diseases of the nervous system. A table thrown upon the screen gave a summary of the results obtained in animals; the figures indicated the percentage incidence of focal lesions in the various organs. Lesions of the spinal cord, usually patchy in character, were observed in 58 per cent. of 31 animals injected with the bacteria from the tonsils or infected teeth in three cases of multiple sclerosis. In one of these the lesions appeared to be due to a staphylococcus; in the other two, to a green-producing streptococcus. Markedly increased reflexes, ataxia, and paraplegia were noted during the life of some of the animals. None became paralyzed. The duration of the symptoms ranged from three to eight years. In two additional cases little evidence of focal infection was found and the cultures failed to produce lesions in the spinal cord. Lesions of the spinal cord were noted in 78 per cent. of 36 animals injected with the staphylococcus from the tonsil in a typical case of sporadic anterior poliomyelitis. Lesions of the meninges and spinal cord occurred in 50 per cent. and 66 per cent. of 21 animals injected with the bacteria as isolated from the pyorrheal pockets and tonsils in a case of transverse myelitis with paralysis of the lower extremities. Partial or complete paralysis, which began in the hind extremities, developed in many animals. The lesions of the cord consisted chiefly of hemorrhages both in the gray and white matter and of leucocytic infiltration of the meninges and surrounding blood vessels. Lesions in or about one or more of the posterior roots occurred in 83 per cent. of 18 animals following the injection of streptococci from cases of brachial, intercostal, and post-herpetic neuralgia. The occurrence of neuritis in 28 per cent. of these animals was noteworthy. This and the high incidence of lesions in the skin, 28 per cent. (chiefly herpes) occurred in animals injected with relatively large doses. As far as could be determined, this was the first experimental demonstration of the probable nature of this form of neuralgia. Lesions of the peripheral nerves occurred in 79 per cent. of the 19 animals injected with the pneumococcus obtained on two occasions from multiple neuritis. Lesions in or about the joints occurred in

48 per cent. of the 29 animals injected, in the myocardium in 28 per cent., and in the muscles in 93 per cent., following injection of the cultures from 12 cases of "myalgia."

Thoracic Disease—The Status of Surgical Therapy.— Dr. SAMUEL ROBINSON of Rochester, Minn., read this paper in which he said that the treatment of diseases of the lung, the pleura, and mediastinum was in a lamentably chaotic state. Several quesstions arose: "Was it not probably that more cooperation between the internist and the surgeon might result in better treatment of the patient? Was the surgeon operating on lesions which the practitioner might cure? Was the practitioner treating some cases unsuccessfully which the surgeon might cure?" Surgery of the pleura began only where non-operatipe treatment failed. The surgeon would be found useful and safe in the treatment of post-pneumonic abscesses; in chronic lung abscesses he was less successful, and would welcome the exclusion of this group of cases from the surgical field. He was watching with interest the efforts with vaccines, climatic influences, and hygiene, but grieved at the limited accomplishments in this direction. He believed that early compression therapy in chronic abscess cases would do great good. Bronchiectasis would seem to be a chronic incurable disease. The records were hopelessly void of successes without surgery and painfully attended with fatalities by operation. Artificial pneumothorax had been reported as curable but grave doubts were entertained as to the truth of this statement. The writer warned against permitting a surgeon to drain a case of bronchiectasis. It would do no good, possibly much harm. Emphysema was again a stumbling block. Surgery offered but one operation, namely, the removal of several costal cartilages on one or both sides. In a considerable proportion of cases it relieved distressing symptoms, but it did not cure. It might justly be contended that our methods of exploring the pleural cavity were inadequate. In the management of tuberculosis the practitioner must cease to look to the surgeon for help. The tuberculous patient was *a priori*, a poor surgical risk and the outlook for successful extirpation of tubérculous lung tissue was particlarly discouraging. Neither was the drainage of a tuberculous cavity a profitable surgical measure. Of all swellings on the chest wall there were at least two types that were curable, the so-called "cold abscesses" and operable tumors of the chest wall. If there were lateral bulgings suggesting mediastinal tumor, the growth seen upon the chest wall was inoperable. The removal of an early localized malignant tumor of the lung was surgically possible, but the internist could not be expected to diagnose these tumors at an early stage. It was to be hoped that within a few years more successful extirpation of esophageal carcinoma might be recorded.

Localized Bronchiectasis Involving the Upper Portions of the Lung, with Report of Five Cases. — Dr. THOMAS MCCRAE and Dr. ELMER H. FUNK of Philadelphia presented this paper, in which they reported five cases of bronchiectasis that came to autopsy within a period of five months and represented the only instances of bronchiectasis in 80 consecutive autopsies from the service of the Department for Diseases of the Chest of the Jefferson Medical College. They illustrated particularly some of the problems of diagnosis. The features of the marked general cases of bronchiectasis were usually such that a diagnosis could readily be made. The problem was a more difficult one in cases of local bronchiectasis. Of particular importance in making a diagnosis was a history of chronic cough for a long period with considerable expectoration without marked constitutional disturbance, especially if the sputum was fetid. The cough being paroxysmal and often induced by changes in position was also suggestive. The presence of blood in the sputum was present in all of these cases, but could not be considered as diagnostic since it occurred in tuberculosis. Dyspnea was common, especially on exertion, and was most marked in the cases with considerable fibrosis. The problem of these upper lobe cases of bronchiectasis was largely that of differentiation from tuberculosis. The first case reported was in a man who had been in several sanatoriums with an invariable diagnosis of tuberculosis. It served to emphasize the fact that when symptoms and signs pointed to advanced pulmonary tuberculosis and repeated sputum examinations did not show the tubercle bacilli, the condition was not tuberculosis.

Another point which might aid in diagnosis was the disproportion between the signs in the lungs and the constitutional symptoms. Radiographic studies should be made in every case in the hope that in the future this diagnostic aid might be developed. The treatment was largely palliative. The adoption of a semi-erect posture facilitated drainage of the apical cases. After intratracheal inflations the patient should be placed in the recumbent position. Autogenous vaccines might be tried, although their value was undetermined. The five cases reported had the following distribution: right upper lobe, one; the right upper and lower lobe, one; both upper lobes, three. Tuberculosis was associated in four cases, three of which were bilateral. Syphilis was apparently excluded as an etiological factor. There was marked evidence of pulmonary fibrosis in the bronchiestatic areas. The error of taking bronchietasis for tuberculosis might be avoided by careful sputum examination.

Splenectomy in Pernicious Anemia—Studies on Bone-Marrow Stimulation. — Drs. ROGER I. LEE, GEORGE R. MINOT, and BETH VINCENT presented this study from the Medical Service of the Massachusetts Hospital. They stated that in the study of the diseases of the blood, and particularly of the effects of therapeutic procedures in such diseases, it was necessary that one should be able to estimate by reliable criteria any alteration of the relative rate and degree of destruction and regeneration, at least of the formed constituents of the blood. Such information was particularly desirable in pernicious anemia. The methods for studying the processes of destruction and regeneration were few. Fifteen cases of pernicious anemia were studied with reference to the effect of splenectomy on the blood forming organs with a view of determining, if possible, the value of this procedure in altering the activity of the bone marrow. An analysis of the end results in these cases certainly failed to show any permanent results from this procedure. The ultimate progress of the disease was not changed by the operation. There was in eight out of thirteen cases a considerable temporary improvement in two months which persisted in some cases until six months. The study of the condition of the blood in these cases led to the conclusion that one found stimulation of the bone marrow in pernicious anemia frequently occurring spontaneously. One might find stimulation of the bone marrow usually associated with improvement after splenectomy. Splenectomy seemed to result in the greatest stimulation of the bone marrow of any known therapeutic measure. It acted on the whole bone marrow and not only on the portion that formed the red cells. While more constant stimulating effects occurred after splenectomy, yet they could roughly parallel any given case of bone marrow stimulation after splenectomy with a case of bone marrow stimulation that occurred either spontaneously or after transfusion. It was evident that from splenectomy one could obtain stimulation but once. Transfusion, while perhaps of less constant and less active effect had the advantage that it was relatively simple, and it could be repeated a number of times. Transfusion did not modify the destructive agencies at work in pernicious anemia.

Late Results of Splenectomy in Pernicious Anemia.— Dr. EDWARD B. KRUMBHAAR of Philadelphia presented this paper which consisted in a statistical and critical review of the late results of splenectomy. He concluded that of the 153 cases studied, 19.6 per cent. died within six months; a distinct improvement in the clinical condition and in the blood picture occurred in 64.7 per cent., and there was no improvement in 15.6 per cent. The high postoperative mortality might be due to the poor choice of cases in the early series. A much greater proportion of the later cases had survived. Of the individuals, nearly two-thirds of the total number, that showed improvement shortly after operation, a large number had failed to maintain this improvement, or had since died in a relapse or from intercurrent disease. A few had continued in good condition during the period of observation, over two years. In no case could it been said that a cure had been effected, and the blood of these individuals continued to show many of the characteristic signs of pernicious anemia. On account of the improvement that followed splenectomy, it would appear that it was not only a justifiable, but in many cases an advisable procedure. The best results were obtained if the operation was preceded by one or more transfusions. Those cases that relapsed after operation might still be greatly helped by transfusion. The most favorable results might be expected in individuals who had not passed the fifth decade, in

whom the disease had not progressed for more than a year, and who had a relatively good blood picture. Individuals with enlarged spleens had done better than those in whom the spleen was small or normal in size.

Pernicious Anemia Treated by Splenectomy and Systematic Often-Repeated Transfusion of Blood—Transfusion in Benzol Poisoning. — Dr. Roy D. McClure of Baltimore read this paper. He said that there were many reasons why blood transfusions had not been of more value in pernicious anemia. Chief among these was the lack of systematic treatment. Usually about as much good was accomplished by a single transfusion as by a single inunction of mercury in syphilis. Discredit had also been incurred by using blood which had not stood the proper tests. The writer said that their attention was first drawn to the great value of repeated transfusions in 1914 in the treatment of benzol poisoning. The symptoms in this form of poisoning were a severe purpura hemorrhagica with a severe anemia of the aplastic type. Several transfusions were performed among these cases but there was only temporary improvement, and the procedure was regarded as of little value. In one instance, however, the family of the donor noticed the enormous immediate value of each transfusion and insisted that the treatment be continued. They produced the donors so that suitable blood was always supplied. Much to the surprise of all this patient soon ceased to require transfusions and made a complete recovery. This led to the conclusion that perhaps carefully planned transfusions, persistently used to prevent the anemia and its results, might be of benefit in pernicious anemia. Repeated systematic transfusions had been carried out only during the past year. The result, however, had been so encouraging that they felt that the life of a patient with pernicious anemia might be indefinitely prolonged if the spleen was removed as soon as the patient was in a condition to stand the operation. Transfusion should be performed until the hemoglobin was as high as 90 per cent. or more, and this should never be allowed to fall below 75 per cent.

Premature Ventricular Systoles and Their Clinical Significance.—Dr. John E. Griewe of Cincinnati presented this paper, which was illustrated by a number of polygraphic and electrocardiographic tracings. He said he wished to demonstrate the first principles in the recognition and treatment of this form of heart irregularity. While it was desirable from the standpoint of the clinician that graphic tracings should be made when practicable; nevertheless such abnormalities in the heart action could be distinguished by careful palpation of the pulse and auscultation of the heart sounds. In the great majority of instances premature ventricular systole was a functional disturbance. The real seat of the trouble was usually extrinsic to the heart. In the majority of cases auscultation of the heart would prevent errors in diagnosis since these premature contractions of the lower chamber of the heart usually gave rise to a very characteristic sequence of heart sounds. Cases showing premature ventricular systoles and no other sign of organic disease of the heart or kidneys should not be considered a bad life insurance risk. In a certain number of cases digitalis seemed to have a good influence. However, in a general way the immediate use of digitalis in premature ventricular systoles should not be looked upon as good practice. The prognosis should be based not on premature ventricular systoles but rather upon the underlying cause.

The Significance of Pulse Form. — Dr. Albion W. Hewlett of Ann Arbor read this paper. He called attention to two fundamental types of pulse form, the sustained and the collapsing. The latter might be produced by nitroglycerine and occurred frequently in fevers and less frequently in other conditions. Low blood pressure did not necessarily produce this type of pulse. The writer discussed the relative importance of the heart and blood vessels in its production.

The Relation of Changes in the Form of the Electrocardiogram to Functional Derangements of the Heart Muscle.—Dr. G. Canby Robinson of St. Louis presented this communication. He stated that the electrocardiogram clearly revealed disturbances of the cardiac mechanism, but it had not yielded many facts which might be taken as a measure of the functional capacity of the heart. The object of this paper was to point out certain abnormalities occurring in electrocardiographic curves which apparently accompanied functional deficiency of the ventricles. This was done with the hope that the electrocardiographic method might sometimes prove of value in determining changes in the functional capacity of the ventricular musculature. The abnormalities in the series of cases reported consisted in changes in the initial portion of the complexes, the Q—R—S group, and different from those yielded by contractions caused by the ectopic stimuli and from those changes which occurred with bundle branch block. These abnormalities were apparently dependent upon derangement of the intraventricular conduction which prevented the passage of the excitation wave either along the usual paths or at the usual rates throughout the ventricles. The normal spread of the impulse was hindered because the impulse reached the ventricles before the conducting system had recovered from the preceding contraction, and the records indicated in some cases that this derangement disappeared with prolonged ventricular rest. These observations were taken as evidence for the belief that in cases in which the ventricular complexes constantly showed certain abnormal forms there were functional changes in the heart which prevented the normal recovery of intraventricular conduction during diastole. It was shown that changes in form of the ventricular portion of the electrocardiogram might occur synchronously with functional changes in the heart, and evidence was offered for the belief that certain abnormalities in the form of the electrocardiogram indicated functional derangement of the ventricles.

Some Factors in the Production of Cardiac Dyspnea. —Francis W. Peabody of Boston read this paper in which he stated that a full realization of the significance of dyspnea, and a properly adapted therapy, could only be the outcome of a much more complete understanding of the pathological physiology underlying it than was possessed at present. Dyspnea implied an element of discomfort or of difficulty in breathing, which might depend on an increase in the rate or in the depth of respiration, but usually it was associated with an increase of both, and depended fundamentally on a hyperpnea or increase of the total amount of air breathed in a given unit of time. It might therefore be said that in patients with heart disease a decrease in the vital capacity of the lungs was an important and practically constant feature in the production of dyspnea. Associated with this and apparently depending on it, there was usually a hyperpnea in the more severe cases. In many severe cases further causes of dyspnea might be the presence of acidosis, and to a less extent, an increase of body metabolism. An accurate index of the degree to which the depth of respiration was limited might be had by the measurement of the vital capacity of the lungs. This was regularly below normal in cardiac patients who complained of dyspnea. In a large series of cases in all staegs of cardiac disease the decrease in the vital capacity has been found to run almost constantly parallel to the degree of physical disability.

Roentgenocardiograms — Polygraphic Strip Tracings of Heart Chambers by the Roentgen Ray. — Dr. Augustus W. Crane of Kalamazoo, Mich., presented this communication. He stated that Roentgen-rays passing through multiple slits would record simultaneously on a moving film the pulsations of several chambers of the heart. Tracings might be taken simultaneously from the aorta and pulmonary artery. The interpretation of such tracings was not obscured by the transmission of the impulses through the body tissues or by instrumental inertia and adjustments. Roentgenograms should be compared with electrocardiograms and sphygmocardiographic tracings.

Contribution to the Physiology of the Stomach: the Newer Interpretation of the Gastric Pain in Chronic Ulcer. —Drs. Harry Ginsburg, Isador Tumpowsky and Walter W. Hamburger of Chicago presented this contribution which was read by Dr. Tumpowsky. The writers reviewed current theories as to the hunger pain in peptic ulcer. They stated that there was a significant similarity between the condition of the stomach in hunger and in ulcer. The difference appeared to be largely a matter of degree of sensitivity caused by hyperacidity and hyperesthesia. Ten cases under the care of one of the writers at the Cook County and Michel Reese Hospitals diagnosed clinically as peptic ulcer were examined. The findings of strong contractions of the stomach accompanying the pain of gastric ulcer seemed to confirm the idea that the pain was due to tension. It was shown that the marked hunger contractions caused pain in a hyperirritable condition of the stomach by increasing intragastric pressure. The conception that gastric pain was due to tension would explain

many obscure conditions simulating gastric ulcer, such as achilia gastrica, chronic appendicitis, and gall-bladder disease. Hyperacidity alone might be a factor by reflexly causing hypertonous, hyperperistalsis, and pylorospasm, allowing greater tension to be produced. The subjective relief of pain by alkalies did not necessarily prove that acid was the cause of pain but might be interpreted on the basis that alkalis prevented the development of pain producing hypertonus by neutralizing the causative factor of such hypertonus, namely acid. Pituitrin stimulated contractions as was to be expected from its property of stimulating smooth muscle. Amylnitrite in the case reported abolished the contractions, probably by stimulating the inhibitory nerves or by lessening the reflex excitability. From the results obtained hydrochloric acid, from the strength that it might occur in the stomach, about 0.5 per cent., caused no appreciable effect. The authors stated that they did not feel justified in drawing final conclusions regarding the effect of acidity until more cases were studied whose emptying time and condition of the pylorus was more thoroughly observed.

Carbohydrate Restriction in the Medical Treatment of Gastric Hyperacidity and Ulcer.—Dr. Willard J. Stone of Toledo, Ohio, presented this paper in which he stated that it was safe to say that in the present state of our information, ulceration of the stomach or duodenum rarely occurred without long standing hyperacidity. Moreover the medical treatment and cure depended to a large degree upon neutralization of the acid secretions by the administration of appropriate food and sufficient alkali. It seemed that in the type of carbohydrate digestion, manifested by breads and cereals, there existed a slightly lower hydrochloric acidity but a more protracted secretion. Since there was no provision in the stomach for carbohydrate digestion it had seemed plausible, in this day of excessive sugar consumption, that this common dietetic fault might be responsible for the altered gastric secretion found in a large majority of patients suffering with hyperacidity, pyloric spasm, and ulcer. The point to be made was that the excess consumption of carbohydrates under normal digestive conditions was a different matter than excessive consumption when hyperchlorhydria was present. In patients with pyloric spasm or ulcer the excess was required to remain in the stomach during the process of protein digestion of the other constituents of a mixed meal, with the result that bacterial fermentation followed and the symptoms of amylaceous dyspepsia become evident. Their distress appeared to be due primarily not to the hydrochloric acid content of the stomach but to the bacterial elaboration of organic acids from carbohydrate fermentation. Later in the process of gastric digestion, usually after one hour, hypersecretion of hydrochloric acid occurred as a result of the stimulating effect of such organic acids as butyric, lactic, acetic, and proprionic. The Skaller meal had much to commend it. It consisted of five grams of Liebig's extract in 200 c.c. of water. It was more palatable and gave a truer picture of gastric secretion than the Ewald meal. Patients with hyperacidity, delayed motility, and ulcer did better when their intake of carbohydrate food was lessened. The writer said he was also convinced that restriction generally to those articles of food which containd more than 20 per cent., such as bread and potato, together with sufficient alkali to limit the secretion of hyperchloric acid had given better results than hitherto obtained. A general diet list was presented which the writer had found useful. In addition the patient was requested to take one glass of milk between meals and at bedtime. After each meal and after each glass of milk, a powder consisting of heavy magnesium oxide, soda bicarbonate, and bismuth subcarbonate was to be taken in from one-half to one teaspoonful doses in one-third glass of water. If evidences of hypersecretion were present the powder was given every two hours.

Syphilis as a Probable Factor in Vague Stomach Disorders.—Dr. Cabot Lull of Birmingham, Ala., read this paper. He said that nothwithstanding modern methods for thorough diagnosis of stomach conditions there still was too large a class of so-called "functional diseases" of the stomach which in reality were made up largely of sufferers from visceroptosis, pyogenic infections, early myocardial or valvular disease, hyperthyroidism, latent tuberculosis, and syphilis. There was a rapidly growing literature of organic syphilis of the stomach, diagnoses now being based on positive clinical *x*-ray and selological findings in spite of the contention of pathologists that the disease was rarely demonstrable in tissue examinations after operation or post mortem. Since Warthin found spirochetes in cardiac muscle, as well as in other organs which showed no lesion, which according to the older knowledge would be classed as syphilitic, one might accept his theory for the period of latency in persons who though free from symptoms for decades showed abundant organisms in their tissues. he assumed that a symbiotic relation existed between the organisms and the body cells. This view of latency in symbiosis would explain more satisfactorily such phenomena as the late parasyphilitic manifestations and the negative complement fixation test which became positive after provocative doses of antiluetic remedies. Several illustrative cases were cited and, in conclusion, the essayist expressed the opinion that the recognition by laymen and physicians of the widespread prevalence of syphilis, often of mild type and non-venereal in origin, with a more definite and satisfactory interpretation of the Wassermann reaction would lead to the relief of many cases of functional stomach disorder now neglected.

Syphilis in the Southern Negro.—Dr. H. L. McNeil of Galveston, Tex., presented this communication, in which he stated that it was the belief of the majority of physicians working among negroes in the South that the greater percentage of them were syphilitic. On the other hand it was the belief of physicians working among the better class of negroes, especially in the North, that such an estimate was not correct. Most of these opinions were based solely upon clinical observations and not upon scientific investigation. The work here reported was carried out on the negroes of the city of Galveston, the majority being of the laboring classes. The Wassermann and the luetin tests had been employed. The series consisted of some 1200 adult negroes, in 600 of whom both the Wassermann and the luetin reactions could be successfully followed, while in the remaining 600 only the Wassermann tests could be obtained. Of these 1200 negroes, 34 per cent. gave positive Wassermann reactions. Of the 600 negroes upon whom both the Wassermann and the luetin tests were done, 35 per cent. gave definitely positive Wassermanns, and 18 per cent. gave positive luetins, while the total percentage giving positive reactions to one or both of these tests was 42 per cent. Such statistics were of comparatively little value in arriving at a true idea of the prevalence of syphilis among a race of people, for it was a well known fact that the percentage of syphilis among patients applying for treatment to clinics was always much higher than among the healthy working classes. In order to determine the actual prevalence of syphilitic infection among the healthy working negro, they had made a special study of some 200 such cases. Among these cases were included all negroes admitted to the surgical wards of the hospital suffering from accidental injuries, and all were ruled out who were otherwise diseased. Of these apparently normal cases, 24 per cent. gave positive Wassermann reactions, 12 per cent. gave positive luetin reactions, and 28 per cent. gave positive reactions to either the Wassermann or the luetin tests. They had also made observations to determine what percentage of syphilis might be hereditary and what acquired. It seemed that the majority of cases of syphilis among the negroes were of the acquired type. Tests were made on patients having different diseases, and these seemed to show that certain diseases seemed to be directly connected with previous syphilitic infection, as shown by the extremely high incidence of positive reactions. In other diseases moreover, syphilis, although apparently not being the direct. or at least the sole cause of the disease, would seem to be connected with its occurrence in some way, chief among these being the characteristic form of acute or sub-acute diffuse nephritis, which was one of the most common causes of death among negroes. The occurrence of syphilis among whites of the same social class as the negroes would seem to be about the same as among negroes. In the better class of whites the occurrence was much less, while in the best classes, young and healthy medical students, it was almost *nil*. Syphilis was undoubtedly one of the chief causes of death and disease among negroes, ranking as high or higher than tuberculosis, Bright's disease, and pellagra which were the three other chief causes of death or disability among that race in this community.

SECTION ON SURGERY.

Wednesday, June 14—Second Day

Some Technical Features of Spinal Surgery, with Re-

port of Results in 150 Spinal Operations (Lantern Demonstration).—Dr. C. A. ELSBERG of New York read this paper and illustrated it with lantern slides and moving-pictures. Of the methods of approach to the spinal cord; namely, hemilaminectomy and complete laminectomy, the latter was the simpler and more reliable. He removed the spinous processes with forceps and resected the vertebræ so as to leave a tunnel 1 cm. across. For spinal decompression, he made the opening 1½-3 cm. wide. The results of spinal decompression were as good as cranial. He recommended the removal of the tips of the adjoining spines. The normal color of the spinal cord was creamy white. In meningo-myelitis, the color was pink and the veins were congested. Congested veins sometimes pointed to obstruction higher up. In multiple sclerosis, the cord was thin and pale and the vessels small. When tumors were situated under the intraspinal portions of the nerves it was better to sever the nerves and lift out the tumors than to drag them out while the nerves remained intact. Adhessions occasionally demanded relief. Large tumors were soft and less injurious to the cord than the small hard ones. He had performed 150 laminectomies with 15 deaths. Of the 15, 10 were about to die at any event. He used fine silk to suture the dura and interrupted sutures for the fascia and skin.

Dr. SACHS of St. Louis said that Dr. Elsberg had passed over several of his contributions to spinal surgery. The approach to the anterior surface of the cord was difficult. By severing the ligamentum denticulatum and pulling on the stump, the cord could be displaced to expose it. The differentiation of the circulatory disturbances was of diagnostic value in determining the nature of the cord lesion. Opening of the dura was sufficient to produce distention of the cord veins. He emphasized the importance of securing a dry field before opening the dura. He was accustomed to use hot cotton to absorb the blood; he had never tried the suction apparatus recommended by Elsberg. He made a subperiosteal section instead of cutting the muscles and protected the sides of the wound with gauze. He endorsed the resection of the spines. The least possible traumatization to the nervous system was desirable. There was a danger, he thought, in moving-pictures giving the impression of rough handling.

Dr. ELSBERG said, in reply, that he cut the muscles against the spines without cutting into them. Although the spinal nerves distended when the cord was exposed, the distension never equaled that of obstruction or of meningo-myelitis.

Surgery of the Brachial Plexus.—Dr. ARTHUR A. LAW of Minneapolis read this paper. He said there were many such injuries coming out of the war. He described the mechanisms that were responsible for them. They were not only due to direct but, as Horsley has shown, to indirect violence. The successful surgery of spinal nerves demanded a knowledge of the regeneration of the nerves. It had been shown that nerves grow across a gap. Wrapping the interval with fascia or fat prevented throttling with connective tissue. Regeneration occurred if the ganglia were intact. In avulsion, nerves were torn and frayed, there were endoneural hemorrhage and fibrous tissue replacement. There were 21 cases of avulsion of the brachial plexus up to 1911, as proven by operation. Hartwell and Murphy reported two cases. None of the avulsions occurring in adult age showed complete recovery after operation. He considered the improvement sufficient to justify operative intervention, however. He reported two personal cases in one of which he had repaired a three-inch loss in the musculospiral nerve.

Dr. DEAN D. LEWIS of Chicago said that 36 per cent. of nerve sutures were satisfactory. The results of secondary were about the same as primary nerve suture. He held that the neuro-tropism did not exist in the axis-cylinders for if it did one should get regeneration from a severed cord. There was 5/6 proliferation from the central and 1/6 from the peripheral end. The auto-transplant was the best bridge. Law was to be congratulated upon the results he obtained in these two cases.

Dr. LAW, in conclusion, spoke briefly upon the subject of neurotropism from an experimental point of view.

Free Transplantation of the Omentum Subcutaneously and Within the Abdomen.—Dr. CARL B. DAVIS of Chicago read this paper. Omental grafts did well where transplanted. There was considerable adhesion formation about the raw edges which indicated the turning in of the cut edges. He had lacerated the liver and used omentum as a plug and as a flap over the lacerated portion with the result of hemostasis. He illustrated the results of omental grafts to stomach, intestine, liver, and spleen by lantern slides.

Dr. ALFRED STRAUSS of Chicago said that the advantage in leaving the omental flap intact was that it was kept alive. He drew attention to his method of pyloric occlusion with fascial transplant. He had resected stomachs of 26 dogs and placed fascia in the gaps. In both series he kept the fascial grafts alive with omentum layed over them.

Dr. JOHN S. DAVIS of Baltimore said that Stone of Boston had scraped intestine, applied omentum over the scraped portion, and observed adhesions only at the cut edges of the grafts. Senn had used omentum freely in 1888! The use of omental grafts prevented adhesions and hemorrhage and reinforced suture lines.

Dr. A. T. MANN of Minneapolis had removed a large overian cyst and left an extensive raw surface which developed a mass of adhesions for which he had to reoperate within one year. He transplanted the entire omentum over the raw area. Within a year from the first operation, he had to operate upon the same patient again for ovarian cyst in the remaining ovary and found at this time the intestines free and the fat gone. He concluded it was feasible to transplant the omentum.

Operative Treatment for Threatened Gangrene of the Foot, with Special Reference to Reversal of the Circulation (Lantern Demonstration).—Dr. JOHN S. HORSLEY of Richmond, Va., read this paper. The essayist recognized four forms of circulatory disturbance: the arteriosclerosis of wear-and-tear of old age, of syphilis, etc.; intermittent claudication (arteriosclerosis with spasm of the vessels), Renaud's disease (with spasms on the arterial or venous or both sides of the capillaries), and thromboangiitis obliterans (the German endarteritis). Berger had shown occlusion of toxic origin. Thromboangiitis occurs in young people between 20 and 40 and usually in Russian Poles. The treatment is local and general. Kocher used Ringer's solution; so did Willy Meyer. Five hundred c.c. of the solution were given repeatedly. Carrel and Guthrie performed an arteriovenous anastomosis and observed the circulation always reversed (during a three-hour observation). The author thought the fallacy of Carrel's observation arose from his dependence upon the color of the blood for the veins often carried red blood (as after conditions of arterial constriction). He believed the blood traveled down the large veins past the valves into the small valves where after its resistance is spent, the blood is arrested by one of the small venous valves and forced to return by a collateral circulation. He showed slides representing the circulations in birds and dogs following anastomoses. He believed tying the femoral offered as good results. In either case, the clinical improvement was not entirely successful.

Dr. DEWITT STETTEN of New York said that arteriovenous anastomosis gave improvement by shunting the blood back through the venous trunks but that it was difficult to perform; the anastomosis might not remain open, and the operation should be abandoned. Ligation secured whatever results were obtainable by anastomosis. His treatment consisted in hygiene, posture, rest, moist dressings, and alternate hot and cold. He believed that he causative factor was similar in nature to that in hemophilia, an abnormality of the blood, a hereditary character.

Dr. CHARLES GOODMAN of New York replied in favor of arteriovenous anastomosis. He said that they had waited 200 years for saline solution although formerly plain salt solution was used. Still the present solution was not identical with blood. It was not known how much blood reached the periphery after anastomosis but there was evidence of relief of symptoms and the impending gangrene was averted. Bernheim had collected 56 cases, 15 being successful. He reported 6 satisfactory out of 14. Others were reported since. The experiments offered did not contraindicate the operation of anastomosis. Endarteritis and thromboangiitis were of infective origin. He had several instances of 3 plus and 4 plus Wassermann reactions.

Dr. N. GINSBURG of Philadelphia had seen many cases. They had come from Jewish people. There was no operation indicated except in thromboangiitis obliterans. He believed femoral vein ligation and crossed anastomosis palliative, only. Both procedures engorged the extremities. He had noticed a preponderance of the disease in male Russian Jews, many of whom were cigarette smokers. The origin was probably toxic.

Dr. Carl Beck of Chicago said that Horsley's inference that Carrel depended upon the color of the blood in tracing the course of the blood after anastomosis was incorrect. He had worked with Carrel and knew that he had drawn his conclusions from the position of the vessels. He reported a case of his own with a prompt filling of the vein. Bismuth injections were in his opinion illusive.

Dr. La Place of Philadelphia said that thromboangiitis affected certain people only. Specific treatment availed in some of these cases. After amputation, a black line formed about the end of the stump. It was wrong to sew up the wound. There was something defective in the healing process. He found bathing the end of the stump with serum beneficial in every case of his.

Dr. J. F. Corbett of Minneapolis said that collateral circulation sometimes accomplished much and deserved some credit. The rate of flow in a normal dog differed from that in senile gangrene of man. Animal experimentation in this particular condition was of little value. Sugar and urea increased as did the viscosity of the blood in these cases. Viscosity increased in other conditions as well. He could not offer anything operative but amputation.

Dr. Horsley, in conclusion, replied that he had not proposed any operation for gangrene. Ligation helped in some instances. There might be a metabolic toxin in the condition. He thought gelatin injection and animal study reliable.

Stab Wounds of the Chest Involving the Diaphragm with Diaphragmatic Hernia.—Dr. Charles C. Green of Houston, Tex., read this paper. Evisceration through the diaphragm occurred most often on the left side, for the liver acted as a barrier on the right. One report of 64 cases gave 45 protrusions of the outer wounds; one of 13.5 herniæ; one of 16, 9 protrusions at wound; and in 190 instances there were 98 or 52 per cent. eviscerations. He enumerated personal case-reports. Diagnosis was often not made until obstructive symptoms intervened. The mortality in the complicated cases was 64 per cent.; that in the uncomplicated was 20 per cent. In doubt, to save life, exploratory thoracotomy should be done.

Dr. James E. Moore of Minneapolis said that this paper was up to the minute and that the advances in the next decade in surgery would be in thoracic work. With intratracheal insufflation, the thorax could be opened with impunity. After a stab wound of the chest, the thorax should be opened; it would be perfectly safe, and might save life.

Dr. Charles C. Green of Houston, Tex., said that the main danger was collapse of the lung which caused shock. But pneumothorax had already developed in some instances. As soon as the ruptured edges of the diaphragm could be seized and held together, there was no danger.

Thursday, June 15—Third Day.

This was a joint meeting with the Section on Medicine.

The Immediate Effects of Splenectomy in Pernicious Anemia.—Dr. Heinert of Boston read this paper for Dr. Roger I. Lee of Boston. There was a typical blood count in 15 cases of pernicious anemia. After splenectomy, 4 improved in red cell count, 3 were unchanged. Ten were living after 10 months. Of these five had relapses and five did not. Three died one year postoperative. The leucocytes varied from 2,000 to 5,000, subsided in a few days, and tended to increase. The platelets were low after operation for 3 to 7 days and increased after, which increase often persisted. (9,000). Many showed an increase, especially in the large platelets. Platelets were known to be increased in thrombosis and in this series three were thrombosed. Howell-Jollie bodies occurred in 2-10 per cent. of the red cells after splenectomy. These bodies were supposed to be related to changes in the bone marrow. The blasts fluctuated. Of the red cells 0.8 per cent. were pigmented. A high percentage of these indicated activity of the bone marrow. There was a rise in the reticulated red cells after operation. The temperature improved and was associated with activity of the bone marrow and improvement in the blood picture. The cause of stimulation of the bone marrow was not known. Operation did not alter the essential course of the disease. Evidently, such a stimulation can be obtained but once. Transfusion did not modify the destructive agents at work.

Late Results of Splenectomy in Pernicious Anemia.—Dr. E. B. Krumbhaar of Philadelphia read this paper. In 1913 Eppinger and von Decastello independently applied splenectomy to the treatment of pernicious anemia. The prompt improvement in the early cases led to a widespread trial. Of 117 cases reported, 34 had died (mortality 29 per cent.). Of these, 18 died within six weeks of the time of operation (15.2 per cent.). In most of the other 99 cases there was a marked improvement for a varying length of time and in some during the whole period of observation. Of 19 patients, alive at the end of a year, 6 had died subsequently, 8 were still improved, and 5 were the same as before operation. Eighty-four cases, studied in respect to duration of the disease before operation, showed 11 improved and 4 deaths in 15 of six months' duration; 18 improved and 7 deaths in twenty-five one-half to one year cases; 25 improved and 10 deaths in 32 one to two-year cases; and 6 improved and 8 deaths in 13 two-year cases. The earlier cases gave the best results. In respect to the size of the spleens, of 19 cases of large organs, 1 died and 18 were improved; in 23 normal or diminished spleens, 9 died and 14 improved. The diagnosis of pernicious anemia was not perfect. The average duration of all cases was one and a half years. The most suitable for operation were the short duration cases with large spleens (or those with marked blood destruction showing increased unrobilin destruction). Contraindications were cases with symptoms of spinal cord disease, with no signs of blood destruction, or with aplastic bone marrow.

Splenectomy in Chronic Anemia, Exclusive of Pernicious Anemia, and in Chronic Icterus.—Dr. Joseph L. Miller of Chicago read this paper. The value of splenectomy in splenic anemia was unquestioned. Since this disease was improved, operation improved hemolytic jaundice and the cirrhosis of Hanot. All were characterized by chronic icterus, chronic anemia, or both, and splenomegaly. The stools were stained with bile. There was an hereditary tendency in icterus, and in splenic anemia. Anemia was not present in Hanot's Disease; this differentiated it from icterus. In hemolytic icterus, there was a disturbed resistance of the red cells; there were hemolytic crises. Splenic anemia was thought by many not to be a distinct entity; it was not a logical entity etiologically but might be so considered for therapeutic purposes. The anemia improved following operation. Banti's report covering the past ten years gave 44 per cent. mortality; since 1910, 19 per cent. The fatality at the Mayo clinic for eighteen cases was 11 per cent. Antisyphilitic treatment helped some but *x*-rays seemed of no avail. Splenomegaly occurred early in hemolytic icterus or it had not occurred at all. After splenectomy the hemolytic function (of the spleen) disappeared. Three or four cases of the cirrhosis of Hanot had been treated by removal of the spleen; it was impossible to foretell the efficacy of this treatment.

Splenectomy for Hemolytic Jaundice.—Dr. Charles H. Peck of New York read this paper. Splenectomy was beneficial in hemolytic jaundice. No bile appeared in the urine after operation. The symptoms of the congenital and familial types were the same. The author's case of congenital hemolytic jaundice was the first American case operated upon. The patient had jaundice at 20 which became intermittent from 20 to 30. She had a fragility of 70 which dropped to between 35 and 40 three years after operation. The leucocytes rose, then became normal in number. The spleen was moderate in size, its surface was roughened, it showed interstitial hemorrhage and follicles somewhat crowded out. The return to normal of the red cell fragility was especially noteworthy. The second case was of the acquired type. There was slight fragility before and no change after operation. The secondary anemia was moderate in amount. There were urobilin and urobilogen in the urine. The spleen weighed 800 grams. This case had been well since operation. The third case was of the congenital type and was operated upon by Dr. Warren. Jaundice disappeared and improvement followed after splenectomy.

Indications for Splenectomy in Pernicious Anemia and the Technique of the Operation.—Dr. Donald C. Balfour of Rochester, Minn., read this paper. Of four cases splenectomized for pernicious anemia, two improved. Three syphilitic spleens had been removed. The advocacy of splenectomy for pernicious anemia was stronger as the anemia approached other forms with recognizable indications for the removal of the spleen, as hemolytic jaundice. Pernicious anemia was in-

curable. There was, however, no better therapeutic remedy for the disease than splenectomy. The indications were (1) splenomegaly (which means overactivity, and palpability of the spleen. Thirty-seven cases weighed over 400 grams); (2) icteroid types; (3) activity of the disease (preferably the intermediate rather than the acute or terminal stages of the disease); and (4) duration of the disease (preferably short). In separating the spleen from the diaphragm, especially where adhesions were present and hemorrhage was liable, it was well to pack well up under the diaphragm with hot gauze. The spleen should be drawn toward the midline and its pedicle dissected back. The vessels were clamped and ligated. There was no recognizable advantage in tying, first, the artery to allow more blood to return to the body. In favor of splenectomy were the low operative mortality, the improvement, and the lack of superior therapeutic measures.

Pernicious Anemia Treated by Splenectomy and Often-Repeated Blood Transfusions. — Dr. RAY MCCLURE of Baltimore read this paper. The essayist said that blood might not mix, it might clump, hemolyze, or agglutinate. In the selection of a donor, a proper test required the elimination of such blood. It was the rule to allow one hour for the testing of each blood, and it was often necessary to try out eight to ten individuals before a proper donor could be decided upon. He reported one case in which syphilis was transmitted because the donor's history was relied upon instead of waiting for a Wassermann reaction. Benzol cases were treated by repeated transfusions; one with a hemoglobin of 20 was raised to 95. They had performed sixty-four transfusions in 17 cases. These were harmful in seven and helpful in the others. Those harmed suffered from the lack of good donors.

Dr. FRANK SMITHIES of Chicago said in the past three years they had performed multiple transfusions and splenectomies in 27 cases. The study brought out the toxic or infective nature of the ailment. There were foci of infection in the blood-making organs and in tonsils, teeth, throat, appendix, or elsewhere. There might be foci in the blood-destroying organs as Balfour had pointed out spirocheta in the spleen. Splenectomy was the less essential part of the treatment. Transfusions supplied antibodies and while these were being given possible foci of disease should be eradicated. They had had two operable deaths. It was their practice never to hurry. Ninety per cent. showed active or past appendicitis, gall-bladder disease, or perisplenitis. The average gain in the hemoglobin after operation was 43 per cent. and over 3,000,000 red cells. The improvement in the general condition equaled that in the blood, the longest case remaining better twenty-seven months.

Dr. BETH VINCENT of Boston said that the amount usually transfused was 600 c.c. The mortality in splenectomy should be low in pernicious anemia. The spleen should not be removed during a relapse. Certain forms did not improve after transfusions; others did not after operation. For relapses, transfusions were the best treatment. Both supplying new blood and the removal of the spleen were palliative measures which secured temporary and uncertain benefits.

Dr. H. Z. GRIFFIN of Rochester said that thirty-nine splenectomies gave a mortality of 7.6 per cent. There was no reason for high mortality. Three of the deaths were operative and four postoperative. One case lived three years. Twenty-seven survived. The longest time of good condition after operation was one year (two cases). They transfused to improve the patient's condition for operation and during relapses after operation. In thirty-three cases, examinations of the duodenal pigments showed high value before and low values after operations (in pernicious anemia). The mortality in splenic anemia was 15 per cent. Hemolytic jaundice and syphilis should be differentiated. The mortality in hemolytic jaundice was 10 per cent. There was no decided drop in fragility in any of these cases following operation. He was interested in the hemolytic jaundice cases with pernicious anemia blood counts.

Dr. W. S. THAYER of Baltimore said that the symposium was of great value. He had seen his first case three years ago, a case with cord changes that improved (although others reported none with cord changes improved). It was important to acquaint the patient with his chances under operation for pernicious anemia. The disease was ultimately fatal; the remissions were variable in length; in one, five years, terminating in death from another malady. In splenic anemia, operation was advisable. In hemolytic jaundice, the results of operation appeared to be beneficial. In the congenital type, the symptoms were not grave, life was endurable and he did not feel justified in recommending splenectomy. In the acquired form operation might be imperative. In splenic anemia, splenectomy might give good results. He had waited six months for one individual to improve and finally operated and transfused at the same time.

Dr. G. A. FRIEDMAN of New York said that he had seen the case at the Vanderbilt Clinic on whom Dr. Peck operated. She was more enteric than sick. She complained of dyspeptic symptoms. He advised sending such cases to the surgeon for operation.

Dr. S. J. MELTZER of New York said the rule was for the red cells to run in the middle of the blood streams. Forty years ago he had seen a case with the red cells at the periphery and thought they had been subjected to shock (which they might have received in passing through the spleen). In the last year Dr. Gates of the Rockefeller Institute had splenectomized dogs and had shown the effects of shaking upon them. He did not wish to claim or deny traumatic effects of the spleen in pernicious anemia. Splenic traumatism might explain the greater resistance of the red cells after splenectomy.

Dr. W. BREM of Los Angeles gave repeated transfusions. He believed by this means he could keep a patient alive indefinitely or pull him out of a hole. Blood-grouping for the selection of donors could now be accomplished in a few minutes. He had performed 179 transfusions after such tests without a reaction. He had given twelve without previous tests and without reactions. In four instances where the red cells were hemolyzed, severe anaphylactoid symptoms followed.

Dr. LEE of Boston said that the blood picture in pernicious anemia was the balance between blood-making and blood-destruction. He had studied splenectomy and transfusion from the standpoint of stimulation of the bone marrow. The quality of the reticulated red cells gave information as to the result of this stimulation. The benefits of transfusion were the furnishing of blood bulk and to bring about a remission through bone marrow stimulation. Other cases not treated showed the same changes.

Dr. KRUMBHAAR, in conclusion, said that much worse results followed splenectomy associated with a low hemoglobin (20 per cent.). There might be found a set of splenic cases that would give uniformly good results.

Dr. MILLER added that not every case of hemolytic jaundice should be subjected to operation. There had been three cases apparently cured as the result of *x*-rays.

Thursday, June 15—*Third Day.*

DR. F. T. MURPHY OF ST. LOUIS IN THE CHAIR.

Election of Officers.—Dr. W. S. Hagard of Nashville was appointed *Chairman*, Dr. A. A. Law of Minneapolis, *Vice-Chairman*, Dr. E. H. Pool of New York, *Secretary*, and Dr. D. Lewis of Chicago with Dr. J. T. Bottomley of Boston were chosen *Delegates to the House of Delegates* for the ensuing year.

Removal of the Right Colon—Indications and Technique.—Dr. CHARLES H. MAYO of Rochester read this paper. Years were required to standardize the diseases that warranted colectomy. Only those who were toxic from the intestinal contents and in whom there was a delay of three days or more were at present considered proper subjects. The removal of the right colon removed the absorbing surfaces of the colon and was less fatal than the removal of the whole large intestine. The lower ileum developed with the large colon or at least these two parts fell on the same side of the attachment of the vitelline duct. He described the physiology of the intestine and his technique of resection. He removed the terminal ileum with the right half of the colon and joined the terminal end of the ileum with the side of the end of the remaining transverse colon by means of a Murphy button. The extreme end of the colon or the portion protruding beyond the new iliocolic anastomosis was caught up in the closure of the parietal peritoneum and left accessible at the abdominal wound that it might serve as an outlet for gas from the colon after operation, if necessary. Tumors, granulomata, and colons of toxemic origin were resected in this way. Few of the cases had postoperative diarrhea. Appendicostomies might be done to allow escape of gas in operations upon the left colon. There were 262 resections of the left colon for malignancy and 54 per cent. living or 67 per cent. alive three

years after. The last twenty consecutive colectomies were performed without a fatality. There was a 13.5 per cent. mortality in ninety-six hemicolectomies and a 14 per cent. fatality in twenty-seven ilio-colostomies.

Some Results of Colectomy and Exclusion of the Colon in Cases of Chronic Arthritis.—Dr. JOHN T. BOTTOMLEY of Boston read this paper. Chronic infective arthritis was poorly treated by the profession. The intestinal stasis origin of the arthritis was an attractive theory. Ten of fourteen multiple, nontubercular cases were reported relieved by operation by Dr. Rea Smith. Anastomoses, colectomies, and other operations were performed. The toxic symptoms were reported relieved. There were increased joint action and improved bowel evacuation. In the author's cases the relief was temporary. One case remained cured three years after; another ten months (with diarrhea) later. Of thirty-one cases, twelve were cured. Of these twelve five were colectomies and seven iliosigmoidostomies. Colectomy in Lane's hands was more satisfactory than in ours because his experience was wider and his technique better. There was diarrhea in two cases. The joint cases that did not improve followed the natural course of the joint disease and were not aggravated by the operations. It was desirable to exclude infections of the sinuses, ureters, seminal vesicles, vagina, and other possible sources before turning to the intestinal tract. The neuromuscular apparatus of the bowel in intestinal stasis was at fault not the adventitious bands. Smith advised doing colectomy or iliosigmoidostomy. (Operations helped some and not others.) Persons to be operated upon for stasis should first understand the chances of a successful issue.

Dr. REA SMITH of Los Angeles said that Mayo's operation did away with a backing-up into the colon. In Lane's cases of short circuiting adhesions appeared in patches due to infection from his suture during anastomosis. There were less such adhesions after colectomies. Of fourteen cases there were two deaths and three perfectly well excepting for bony ankylosis (due to periarticular inflammation). These lived 18 months, 2 years 2 months, and 2 years, respectively, postoperative. Of the remaining nine, two were uninfluenced and seven were little better. None would go back to former condition. All were better generally, in respect to pain if not to joints. Drainage of the intestine seemed to influence the pain; less aspirin had to be taken for its relief after operation.

Dr. W. R. MAC AUSLAND of Boston said that in ten cases the routine measures failed. Intestinal symptoms and the chronic arthritis were not relieved. Upon relative relief was the only basis of comparing results. The joint cases should be taken before the advanced destructive stages. The time involved in these changes was 1 to 1½ years. Deformities should be prevented or corrected. Stasis was present in all.

Dr. J. M. LYNCH of New York said that the time had come when the iliocecal valve should be recognized as either muscle or valve. If a muscle, operation was of little value. If a valve, then operation was of some avail. Elliott supported by Bayliss, Starling and others, had shown that the arrangement was a muscle. Ten minims of adrenalin shut the valve tightly as a drum; later the same valve might relax into insufficiency. The relations of the internal secretions to the iliocecal sphincter were to be studied. He had performed twenty-eight colectomies (partial) and six cecosigmoidostomies. All the latter had been failures.

Dr. TUCKER of Cleveland asked upon what Mayo based his operability for his colon cases. Were the mechanical changes or the operative feasibility considered?

Dr. J. S. HORSLEY of Richmond, Va., said that Cannon showed that adrenalin caused dilatation of the gut by relaxation of the smooth musculature and did not understand why the valve should be contracted.

Dr. J. W. DRAPER of New York replied that the understanding was that adrenalin caused relaxation of the gut and contraction of the valve. It was an arrangement for estimating the functional disability of the valve. He reported one case of a woman in the terminal stage of polyarthritis who was unable to use her hands to write or handle her knife and fork who was able to turn over in bed in twenty-four hours after hemicolectomy. The rapidity of relief suggested a biochemical in place of or in addition to an infective arthritis.

Dr. JOHNSON of Memphis said that all agreed the area involved was the ilocecal region. It was due to a regurgitation of cecal contents into the ileum, the absorption of which caused a paralysis akin to that of lead-poisoning. The bands over the ileum and cecum denoted inflammation. Patients who developed splanchnoptosis had sick headaches and toxic vomiting in early life. The causes of the ptosis and of the toxic symptoms were the same. He had performed 11 colectomies, one to the sigmoid loop. The fixation of the end of the colon prevented sacculating or sagging. The omentum should be saved: it prevented some of the infection.

Dr. MAYO replied that cases hopelessly metastesized were not operated upon. Cases of parietal fixation were operable, as were all tumors of the colon.

Perforating Ulcers of the Stomach and of the Duodenum.—Dr. R. P. SULLIVAN of Brooklyn read this paper. He said the tenderness of ulcer was acute and easily elicited over the ulcer site. It was in the right iliac region in fifteen duodenal and in the epigastric region in five gastric ulcers. Vomiting was present and gave relief at first and suffering later. The vomitus depended upon the food and the site of the ulcer. Rigidity occurred early. He had relied chiefly upon the pain and rigidity. There was only one case without a preulcerous history. Eleven diagnoses of chronic ulcer had been made. Shock was present late in one case only. The temperature averaged 99.4 and the respirations 34. Appendix and gall-bladder disease should be differentiated if possible, though in either event operation was indicated. The average duration of symptoms before operation was six hours. His cases were fifteen duodenal and five gastric ulcers. Of the gastric, three were anterially placed, one at the lesser curvature, and one on the posterior wall. Gibson disapproved of gastroenterostomy for ulcer. Gastroenterostomy was added in each of ten cases in which the lesion was at the pylorus. He repaired the perforation and performed gastroenterostomy if seen within ten hours.

Dr. C. PECK of New York said that ulcers were acute with immediate leakage, chronic with no considerable leakage, and of the type that leaked a little from time to time. The leakage from an ulcer at the pylorus was slight; gastroenterostomy should be performed for such an ulcer at the first or at a subsequent operation. He had seen a reperforation one year after closing an ulcer. From 1910-1915 he had had thirty perforated ulcers, two-thirds duodenal and one-third gastric. Gastroenterostomies performed mostly in the latter cases, did not add to the operative mortality. Cases seen within the first 10-15 hours mostly survived.

Dr. BOTTOMLEY of Boston said that he did not agree with doing away with the drainage even in the early cases. He had seen turbid fluid in the abdomen in 1½ hours. Drainage increased the margin of safety and should be continued for 48 hours. Liberal diet should not be given after operation. The source of the infection causing the ulcer should be sought and eliminated if possible.

Dr. W. D. JOHNSON of New York said that a chemical peritonitis (which was not severe) preceded a bacterial peritonitis. Rigidity was marked. Absence of liver dullness was a late sign and should not be included.

Dr. SULLIVAN replied that drainage was a matter of opinion. The chemical peritonitis excluded the necessity for early drainage. Absence of liver dullness might be due to gas in the colon.

Plastic and Reconstructive Surgery.—Dr. J. S. DAVIS of Baltimore read this paper. Dr. Davis said that the need for reconstructive surgery had increased as a result of the war. Such surgery required special training in addition to a general surgical experience. Few cases were operated upon for cosmetic reasons, alone; many for economic reasons.

Dr. J. S. MARVEL of Atlantic City reported a case with a large fenestra of the anterior abdominal wall cured by skin-grafting.

Dr. J. S. STONE of Boston said much surgery was indicated in malformations and after trauma. Knowledge of the growth and of the repair of tissues was necessary.

Sarcoma of Intraabdominal Testicle.—Dr. W. W. GRANT of Denver read this paper. Sarcoma was most common in the undescended testicle. Ewing considered most testicular tumors primarily teratomata. He reported a case seen in 1913. He operated upon this case when first seen, administered Coley serum, and *x*-ray treatment; and removed the growth at a subsequent operation (1915).

Dr. W. B. COLEY of New York said that the essayist's success was due to successful treatment with the serum. He seldom injected directly into the tumor as

the author did. Of 64 cases of sarcoma of the testicle, twelve were undescended. He had operated upon fifty undescended testicles and had not seen one sarcoma among them. He believed every case of undescended testicle should be operated upon.

Dr. GRANT replied that after complete removal of the growth the *x*-rays and Coley serum should be used for prophylactic reasons.

Chronic Appendicitis. — Dr. F. G. CONNELL of Oshkosh, Wis., read this paper. He reported operating with unsatisfactory results upon forty-eight cases of apparent chronic appendicitis. There were burning sensation, tenderness in the right lower quadrant, umbilical region or elsewhere, general ptosis, gurgling in the lower right quadrant, no leucocytosis, and a ptosed and dilated ascending colon. Twenty-seven were submitted to a second operation. Of these, fifteen were unimproved and one died. The pain in such cases was due to something besides the appendix.

Dr. H. A. BLACK of Pueblo, Col., said that the *x*-ray, test-meal, hematemesis, and the absence of pain and tenderness did not exclude chronic appendicitis. Pyloric spasm was often present in chronic appendicitis and might be due to a hypertension, rather than a hypersecretion.

Dr. LAPLACE of Philadelphia said that there might be a chronic form of transudation of the toxins through the cecum.

Oration on Surgery—Surgical Aspects of the Industrial Accident Insurance.—Dr. EMMET RIXFORD of San Francisco read this paper. The principle of assessing the employer for the surgical care of the employed was of German socialistic origin. Most of the European countries had passed such laws. Thirty-one of the forty-eight states had made laws for workmen's compensation. Many countries enforced compulsory insurance to be carried by the employer, employee, and the State in favor of the employed. He believed the movement inevitable and that its benefits would include checks on lodge-practice, contract-practice, hospital, and patent medicine evils. The industrial commissions having charge of matters pertaining to the surgical care of injured workmen were powerful. Their tendency was to eliminate mediocre surgery and to encourage careful work. Sixty per cent. of the returns for injury went to the workman and 40 per cent. to the physician. There were only three mal-practice suits on record in the past two years. The unions tended to favor union-chosen physicians rather than men chosen by the State for surgical excellency. Experts were employed by the commissions for the special problems.

Complications and Sequellæ of the Operation for Inguinal Hernia. — Dr. LINCOLN DAVIS read this paper. There were 1,500 herniæ operated at the Massachusetts General Hospital between October, 1908, and December, 1914, by seventy-five different surgeons. There were 1,756 distinct operations. Of these, 834 were Bassini, 15 Halsted, and others according to Ferguson. General anesthesia was administered in 1,309, spinal in 108, local, combined, in 6, and local alone in 75. There were accidents to the bladder in 2, to the vas in 7, to the bowel in 2, and 8 deaths. The mortality was 0.53 per cent. Sixty-six recurred or 3.7 per cent. (or 8 per cent. traced). These were divided about equally between the Bassini and Ferguson methods.

Dr. H. O. MARCY of Boston was one of the pioneers in hernial surgery. He had had about 3 per cent. returns in 1000 cases.

Dr. D. N. EISENDRATH of Chicago suggested using adrenalin, one drop instead of four or five, to the ounce in local work. He thought recurrences were sometimes due to neglecting an occasionally present pantaloon sac, or to leaving a direct or indirect sac when both occur simultaneously. Pain was sometimes caused by the inclusion of nerve fibers in the sutures.

Dr. DAVIS believed there was a preexisting congenital sac in all so-called traumatic herniæ. The figures for the local operations might be too high. The infiltration of the tissues might interfere with firm closure.

The Surgical Problem of Symptomless Hematuria, Its Causes and Surgical Relief.—Dr. R. L. PAYNE, JR., of Norfolk, Va., read this paper. He based his report upon eleven human and five dog instances of hematuria. He found in those cases where the kidney was removed and studied, inflammatory changes in the cortico-medullary portion and dilated veins in the medullary portions. He held that the inflammation interfered with the venous return and forced the already distended veins to empty into the pelves. The treatment included nephropexy for the displaced kidney, decapsulation, nephrotomy, and nephrectomy (too radical). The non-operative treatment included the use of styptics, adrenalin, and sera.

Dr. H. A. ROYSTER of Raleigh, N. C., said a colleague had hematuria only when he used tobacco. The pathological changes might be those represented, or none at all, or incipient tuberculosis. Decapsulation was of no account. Instead of sutures, gut might be wrapped about the kidney after exploratory nephrotomy.

Dr. J. S. HORSLEY of Richmond, Va., said painless hematuria was due to stone, tuberculosis, or hypernephroma and to the changes described. The straight suture caused less necrosis than the mattress and was as efficient.

Dr. PAYNE replied that decapsulation cured probably by setting up a thrombosis.

A Consideration of Fractures and Other Injuries of the Hip.—Dr. A. R. MACAUSLAND of Boston read this paper. He divided the fractures into separations of the upper femoral epiphyses, fractures of the necks, and fractures between the trochanters. He favored Whitman's abduction method for fractures of the neck. The flexion method was not as comfortable, especially for the old. Operative measures (nails, plates, etc.), were not necessary for acute cases. Reduction of fracture without an anesthetic was possible only in those that could be speedily reduced. For the intratrochanteric variety, plaster fixation in abduction was the best. Of fifty cases, he had thirty-two reports which were satisfactory. Slides.

Nail Extension in Fractures of the Lower Extremity. —Dr. J. C. A. GERSTER of New York read this paper. The nail extension was indicated when the usual traction or plaster methods failed or could not be employed; in badly compounded recent fractures with extensive abrasions and injury to the soft parts, and in old malunions with much shortening. Nail extension reduced the number of cases in which open operation was indicated. Pain was prevented by drawing the skin upwards when inserting the nail and infection was prevented by not passing nail into joint cavity or through the epiphyseal line. In thirty cases, the nail holes healed completely under wet dressings.

Nails and Screws Through Joint Surfaces in Autografts and in Fractures into Joints.—Dr. A. T. MANN of Minneapolis read this paper. In twenty experimental cases the author had lost no knee from infection. The dogs did so well that it was difficult to ascertain the operated knee. The cartilage grew into the grooves caused by the screws, appearing first as hyaline and later as the fibrous variety. This was finally replaced by fibrous tissue. He showed slides of the autografts, fractures, and reactions to the nails and screws.

Dr. C. E. THOMPSON of Scranton, Pa., said that fractures of the femoral necks were badly treated. Some believed they should be left alone; others that they would not heal as other fractures. Operation should not be attempted at the time of fracture.

Dr. R. S. SAYRE of New York said the joints presented showed evidences of erosion. The two human cases appeared to be good results. The Steinman pin worked well in some cases as Gerster had indicated.

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventy-Ninth Regular Meeting, Held Friday, May 5, 1916.

DR. JOHN S. THACHER, PRESIDING.

Unusual Paralysis in Upper Spinal Region Following Anterior Poliomyelitis. — Dr. VIRGIL P. GIBNEY presented this patient, who was a boy, 11 years of age, admitted to the Hospital for Ruptured and Crippled, April, 1916, on account of deformity of right foot. Had "fever" at four years lasting 24 to 36 hours. Patient never had braces or operation. Both arms were included in paralysis at onset, but they had so improved that patient had some use of them, under electrical treatment. The reactions now were—right—supraspinatus, infraspinatus, rhomboideus major and minor, latissimus dorsi deltoid, pectoralis major and minor, teres major and minor and levator scapuli, reaction of degeneration; serratus magnus gone; left—supraspinatus, rhomboideus major and minor, deltoid, pectoralis major and minor, serratus magnus, teres major and minor, and levator scapulæ, reaction of degeneration; latissimus dorsi gone altogether; trapezius right and left sides practically normal. The paralysis just took

in the upper group of muscles. The boy now had his foot in plaster of Paris, but would probably have to have a piece of bone taken out of the astragalus to get the ankle straight.

Some Observations on Hemolytic Jaundice. — Dr. GEORGE E. BREWER read this paper (see page 1).

Dr. BREWER added that both patients shown had hemolytic jaundice. Both were jaundiced at the time of operation. One patient had a good deal of pigmentation of the skin. There was very little fragility of the blood in one case and practically none in the other. Dr. Longcope had had the cases a long time under observation. The second case had a blood fragility of 7 which went down to 4. The normal was 4.5.

Dr. W. GILMAN THOMPSON said that the operation of splenectomy used to be considered one of considerable severity, but now it was performed very successfully and the cases remained successful after many years. He would like to ask the size of the spleen in Dr. Brewer's cases.

Dr. BREWER said he did not recall the actual size, but it was about three times the size of the normal spleen, and weighed 11-12 grams. It was an inch below the costal border. One had a slight adhesion, but neither was what would be called an adherent spleen.

Dr. J. S. THACHER asked if the veins were very large, and if the liver was normal.

Dr. BREWER said the veins were very tortuous and extremely friable, and the livers were slightly enlarged.

Dr. W. GILMAN THOMPSON asked if gallstones were usually associated with these cases.

Dr. F. S. MEARA asked if the pain was usually referred to the spleen.

Dr. BREWER said that the pain was sometimes purely epigastric, and sometimes radiated to the left shoulder.

Dr. J. W. BRANNAN said he would like to ask what was meant by fragility of the blood.

Dr. F. S. MEARA said that the cells were more susceptible to being broken down when the normal salinity of the blood was changed. A very little diminution in the normal salt content of the blood would produce breaking down of the red cells. The severity of the condition could be read by the susceptibility of the cell to the changes in the saline constituents.

Dr. BREWER said the test was made by finding the percentage of saline at which hemolysis began. The test was best made with washed cells. The cell surrounded by blood plasma was rather protected. The normal 0.45 solution of salt would hemolyze normal blood, whereas 0.7 showed more susceptibility.

Dr. BRANNAN asked what was the theory of the operation.

Dr. BREWER said it was that normal hemolysis took place largely in the spleen; when the red cells had done their work they became degenerated. The function of the internal secretion of the spleen was to destroy red cells. If there was a condition of hypersplenism, that is, where the hemolysis was more rapid, a larger number of red cells were destroyed than normal. The hemoglobin became split into two substances, hematin, which was deposited in the liver and sometimes bilirubin, which under ordinary conditions was taken up by the liver and excreted in the bile, but if it occurred in excess it entered into the intestine, and there changed to hydrobilirubin. This later became urobilin and was excreted in the urine.

Dr. BRANNAN said then was the spleen overdoing its function?

Dr. BREWER said yes: the pigments were not taken care of normally and were found in the blood.

Dr. BRANNAN asked why this condition caused so much harm.

Dr. BREWER said that the rapid hemolysis was the cause of grave anemia. In some severe cases hemoglobinuria occurred. Eppinger had commented upon the hemolytic activity, and upon the intoxication by means of products being thrown into the blood. There followed fever, chills, and all the symptoms of an intoxication. This might quiet down and the temperature again become normal.

Dr. MEARA said that Pearce had reported decreased fragility of the red cells from splenectomy.

Dr. BREWER said in one case reported the spleen was removed for traumatism. In this instance the red cells rose to 7,000,000, and the hemoglobin to 110 per cent.

Dr. BRANNAN said it used to be supposed that the spleen was very necessary for the body.

Dr. BREWER said it was a good thing to have but when it was pathological it was better to remove it.

Dr. GILMAN THOMPSON said that there must be some modification in the bile which produced gallstones so frequently as a complication.

Dr. BREWER said that the condition was certainly associated with gallstones in a good many cases.

Dr. J. S. THACHER said that it used to be maintained that the bile in cases of hematogenous jaundice was thickened and that the jaundice was due to obstruction of the minute bile ducts by the thickened bile.

Dr. BREWER said he had operated on the bile ducts first, but that did not give the explanation.

Dr. FORDYCE asked what was the ultimate fate of these cases.

Dr. BREWER said that the longest record was 23 years. The patient was perfectly well. A good many cases were never operated on. In the later stages many cases were reported with pernicious anemia. This also was due to excessive hemolysis.

Dr. BRANNAN asked if this was a very recent procedure.

Dr. BREWER said it dated back as far as 1903. The first operation was done for pernicious anemia. The patient also had jaundice. The jaundice entirely cleared up two weeks after operation.

Dr. MEARA said that they had two interesting cases in the ward, of so-called Banti's disease with splenomegaly and anemia. The first patient was operated upon by Dr. Hartwell. It was a very advanced case. There was recurrent ascites and the spleen was very large. The liver could be readily palpated. There was very advanced cirrhosis. He believed the patient was still living. The other case was one of very marked splenomegaly with marked secondary anemia, with 2,000,000 red cells. There was no change in the character of the cells. It was now general opinion that these were early cases of Banti's disease. In this case with ascites the fluid was injected into a guinea pig; the result had not been reported, but the man had evidently a tuberculous spleen. The ascites might be from tuberculous peritonitis. The man was sent for operation as it was justified from the standpoint of the peritonitis.

Dr. BREWER said he had never seen a tuberculous spleen. There were two or three in the records.

Dr. MEARA said it would be called splenic anemia on the old criteria, but this was tuberculosis.

Dr. BREWER said in another case he had to mention, he did a gall-bladder exploration. The patient had had jaundice 20 years, and was then 37. Health had been pretty good until recent years. He had explored the gall-bladder region and had found nothing. There were spots in the liver which were supposed to be adrenal rests, but this was later found to be incorrect. The patient afterward came in on Dr. Evans' service. He diagnosed the case at once as a hemolytic jaundice. Dr. Peck operated on the natient who had been perfectly well ever since. In some cases gallstones were found, and the removal of these gave no relief. The cases cleared up with splenectomy. Another case with a peculiar history, was one where another surgeon explored the gall bladder and nothing was found. The patient was closed up and there was no improvement. At a second operation gallstones were found. Thus in two cases gallstones were found on second operation and not on the first. One case at the Presbyterian Hospital, on Dr. Longcope's service had the symptoms of obstructive jaundice, with high colored urine at times. This patient had also an enlarged spleen. It was finally concluded that she had obstructive jaundice. She was operated on and the gall bladder was very difficult to expose, as it was greatly dilated and full of bile. It took very long to dissect out the gall bladder and the ducts never were exposed so as to be palpated. He did a cholecystenterostomy. The patient made a perfectly good recovery. Bile appeared in the stools. In spite of that for two or three weeks there was no improvement in the jaundice. He thought perhaps it was a double lesion. In some cases, a negative exploration, with the handling involved, might start a small hemorrhage, which acted as a foreign body, and this might account for stones being found on second operation.

Dr. C. L. GIBSON said that he had often not seen any improvement in the jaundice for two or three weeks.

Dr. BREWER said that he felt that there should be an immediate change in the jaundice.

Dr. GIBSON asked what had been Dr. Brewer's experience in regard to this anastomosis.

Dr. BREWER said that he had done very few cholecystenterostomies. In his opinion this was a very dangerous operation.

Dr. THACHER asked if the patients usually died.

Dr. BREWER said yes.

Dr. GIBSON said he operated in a case of this kind six weeks ago and made a perfectly successful anastomosis. It was a case of carcinoma of the pancreas. Six weeks after operation the jaundice began to clear up and bile to go through. He had had that experience two or three times.

Dr. BREWER asked Dr. Gibson if he did not think that chronic obstructive jaundice cases got bronzed instead of bright yellow. There was a difference in the jaundice. He knew a woman who had hemolytic jaundice seventeen years, and was bright yellow.

Dr. THACHER asked if that was not similar to the color of pernicious anemia.

Dr. BREWER said yes, but it was brighter. It was due to hemolysis.

Dr. GIBSON said it was a curious thing in diagnosing cases of pelvic compression; the patient would usually say that he had had jaundice and it had remitted.

Dr. BREWER said that he did not think one could place much reliance on a personal record. In cases of carcinoma of the breast, patients would say that the tumor varied in size. There was one other point to be mentioned in connection with Banti's disease. (He thought the three lesions were closely allied.) There was the theory that the original lesion was a phlebitis of the splenic vein. In some cases of Banti's disease there was a thickening and tortuosity of the veins often with calcarous plates, originating in infection.

Dr. MEARA said he had read one notice lately of such a paper, but that was all that he had seen in the literature.

Dr. THACHER said that it had been suggested that cirrhosis of the liver arose in pylophlebitis. Of all the cases of hemolytic jaundice operated on, it seemed that only two deaths occurred. Were those two attributed to operation?

Dr. BREWER said that in one case death was directly due to operation on a poor subject. The other case was cited as having died from uremia, but as the death occurred pretty quickly after operation, he thought that it might have been post operative.

Dr. GILMAN THOMPSON said in illustration of the difficulties of gallstone diagnosis, he saw a woman last November who had recurrent cramps in the legs. While under observation she suddenly developed an apparent cholecystitis. She had pain over the gall bladder and a distinct mass was palpable. She had fever, leucocytosis and reflex vomiting. She was taken to Roosevelt Hospital. Dr. Peck operated and found nothing in the gallbladder but a cirrhous carcinoma of the liver, which had given no suspicion of its presence and the organ was not enlarged and her nutrition was extremely good. Since the exploration made last January the liver continued to enlarge and now reached the umbilicus, large tumor masses being palpable, but after the patient was sent home she got on fairly well with only occasional attacks of reflex vomiting. She had had continuous high temperature for four months ranging from 99.8° to 102°. The hemoglobin at the time of the supposed gallstone attack was 50 per cent., and it had gone up to 80 per cent. since. She was able to digest a variety of food and she presented an interesting illustration of maintenance of excellent nutrition despite a rapidly growing carcinoma.

Dr. BRANNAN said she was apparently better for the operation.

Dr. THACHER asked Dr. Thompson if he thought carcinomas grew more slowly in elderly people.

Dr. THOMPSON said it depended upon where they were situated. He thought there was often good nutrition for some time in a certain group of hepatic carcinomata.

Dr. BRANNAN asked if in this case any of the growth was removed.

Dr. THOMPSON said no: there was no convenient nodule. Dr. Peck thought the best thing was to make the operation as short as possible. The woman had had a recent broncho pneumonia and it was not thought advisable to keep her under ether long.

Dr. THACHER asked if Dr. Brewer thought if age made any difference in the rapidity of breast carcinoma.

Dr. BREWER said very often in elderly people it grew slowly.

Dr. FORDYCE asked was this case mentioned by Dr. Thompson primary carcinoma?

Dr. THOMPSON said he supposed pathologists would find a nodule somewhere else as a primary focus, but clinically it was solely hepatic.

Dr. THACHER said occasionally it originated in the liver.

Dr. GIBSON said he used to teach that there was no such thing as primary carcinoma of the liver. It was supposed to be carcinoma of the bile ducts. He did not see how one could get it without epithelium, and there was no epithelium in the liver.

Dr. BREWER asked what was the origin of the liver cells. Were they mesoblastic? He said he was much surprised to hear Dr. Gibson say that there was no epithelium in the cells of the liver.

Dr. BRANNAN asked what Dr. Thompson said to that.

Dr. THOMPSON said he was willing to admit that this growth might have originated in the gall-bladder, but there was no jaundice.

Dr. THACHER said that it might be called cancer of the liver even if it originated in the bile ducts.

Dr. BREWER said he would like to mention one case of obstructive jaundice due to pressure of a tuberculous lymph node on the bile duct. He had also seen one case due to Hodgkin's disease.

Dr. MEARA asked if it was adherent to the gallbladder.

Dr. BREWER said it was on the junction of the bile duct and common duct.

Dr. THACHER said he saw the autopsy of a case where the obstruction was due to a mass of cicatrical tissue which appeared to be of syphilitic origin.

Dr. GIBSON said he operated on a case due to lymphosarcoma of nodules on the bile duct. He did a cholecystenterostomy and the patient made a good recovery. He operated on another patient without jaundice and took out the nodule for examination. The pathologist made a similar report as on the first case. One case got well; the other died.

Dr. THACHER said that sarcoma was often the most difficult diagnosis to make, and especially lymphosarcoma.

Dr. J. C. ROPER said that one of Dr. Brewer's patients, Miss L.., was watched for years. She had no free hydrochloric acid at any time.

Dr. BREWER said that she had sour vomiting, and at one time the case simulated gastric ulcer.

Dr. ROPER said that there was not so large a fragility of the cells as in the other patient. The fragility test depended on the amount of water used. It was a question of surface tension.

Dr. BREWER said that washing the cells made a difference.

Dr. ROPER said the patient had an attack of jaundice that looked like an infection. The cells dropped to two million in a short time. She had hemoglobinuria. There was temperature, and swollen joints, which were relieved following salicylates.

Dr. MEARA said the temperature might be accounted for by the hematin.

Dr. ROPER said that one patient showed no excretion of urobilin. It was a puzzling thing how she got rid of it.

Dr. BREWER said that Dr. Longcope had stated that if one could have seen the patient during the febrile attacks, more blood fragility might be noted.

Dr. ROPER said that the patient came to the New York hospital. He did the nitrogen partition and never found anything abnormal. He did not believe that the cholesterin content of the blood and the iodine index was done.

Dr. BREWER said that he had had the cholesterin content done. It was normal. He said he would like to ask Dr. Roper what the vital stain indicated.

Dr. ROPER said that the blood might show more chromophilic degeneration than normal blood.

Dr. BREWER asked if these were degenerating or new cells.

Dr. ROPER said that one man might argue one way and one another. The normal percentage was 1.3.

Dr. THACHER asked if that indicated activity of the hemapoietic function.

Dr. MEARA said it indicated an attempt to restore the cells to the normal.

PHILADELPHIA NEUROLOGICAL SOCIETY.

AT a stated meeting held April 28 Dr. WILLIAM B. CADWALADER presented a communication entitled "Occasional Resemblance of Tabes Dorsalis to Disease of the Pituitary Gland." He referred to observations of this character in the literature, and he related the details of a similar case under his observation. The patient

was a man 51 years old, who presented diplopia, reduction in the visual fields, optic atrophy, and absence of knee-jerks and Achilles jerks. There was, however, an increase in fat-deposition and absence of hair in various situations, enlargement of the breasts, increased hunger and thirst, increased tolerance for sugar carbohydrates. X-ray examination disclosed changes in the sella turcica suggestive of the presence of a new growth involving the hypophysis.

Dr. ALFRED GORDON presented "A Case of Syringomyelia." The patient was a colored man, 58 years old, who presented weakness and wasting in the upper extremities, with contractures and deformity of the fingers and loss of part of one finger by spontaneous and painless amputation. Common sensibility was preserved, while sense of pain and temperature-sense were impaired and the knee-jerks were increased.

Dr. JOHN H. W. RHEIN presented "A Case of Wasting of the Muscles of the Left Side of the Body Following Injury of the Right Side of the Brain." The patient was a man, 24 years old, who at the age of thirteen received a bullet-wound on the left side of the skull, the missile injuring and lodging in the right side of the brain. Several operations were performed but the bullet was never secured, and *x*-ray examination disclosed its presence now at the base of the skull, apparently in the posterior fossa. The striking feature was the notable atrophy of the musculature on the left side of the body, with a corresponding degree of weakness, associated with slight exaggeration of the knee-jerks.

Drs. E. M. AUER and GRAYSON PREVOST MCCOUCH presented a communication entitled "The Pathological Findings in Two Cases of Paralysis Agitans." The changes observed consisted essentially in evidences of rarefaction of the basal ganglia of the brain, apparently not related to the perivascular spaces.

Dr. WILLIAM G. SPILLER reported "A Case of Association of Severe Anemia with Tabes Dorsalis." The patient had been under observation only a few days, and he presented apparently only the ordinary symptoms of tabes dorsalis. He was ill nourished and pallid, but a blood examination was not made. On post-mortem examination, however, in addition to the lesions of tabes there were found the characteristic changes associated with profound grades of anemia. The two processes were entirely independent one of the other.

Dr. FREDERICK P. CLARKE presented a communication entitled "A Study of Acroataxia and Proximoataxia in Tabes Dorsalis." He was unable to demonstrate that proximoataxia preceded acroataxia in cases of tabes in contradistinction to subacute mixed sclerosis due to profound anemia, in which it has been maintained the reverse order of development takes place.

Dr. OWEN COPP presented a communication entitled "The Psychiatric Needs of a Large Community." He pointed out that insanity is evidence of disease, and it must be studied in precisely the same way as are other morbid affections. To this end a well-equipped and well-administered psychiatric clinic and hospital are required, with abundant modern laboratory facilities and an adequate staff of workers in the several fields of medicine. The patients must be treated with a view to their recovery, and after-care must be directed to the prevention of recurrence. Prophylactic work must be done to prevent the ill effects of toxic agents, such as alcohol, as well as those of infectious, such as syphilis, and segregation must be practised in a rational manner to prevent reproduction of their kind by the mentally deficient and the insane. Furthermore, adequate instruction must be given in the medical schools so that the general practitioner shall be competent to make an early diagnosis and promptly apply the appropriate treatment.

Determination of Sex.—J. S. Frecborn states that as a result of study of 1,000 obstetrical cases he was able to foretell the sex previous to birth in 97.5 per cent. Nearly all conceptions during the first half of the intermenstrual period result in female offspring, boys resulting from conceptions in the latter half. Hence sex control should be a simple matter—the mere practice of abstinence at stated times. To formulate a law: have marital relations only during the first ten days after menses when girls are desired, and during the first ten days before menses when boys are sought. There are certain sources of fallacy which must be borne in mind; for example, the woman may wrongly give the date of menstruation.—*Canadian Practitioner and Review.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

STATE MEDICAL BOARD OF THE ARKANSAS MEDICAL SOCIETY.

November 9 and 10, 1915.

ANATOMY.

1. Name the articulations of the frontal and occipital bones. What bones articulate with the radius?
2. Name divisions of the vertebral column, giving number of bones in each division. What are distinguishing characteristics of cervical vertebrae?
3. What are the relations of the brachial artery? Name its branches.
4. What spinal nerves enter into the formation of the anterior crural nerve, and what muscles does it supply?
5. Describe the origin, course and distribution of the renal arteries.
6. Name the cavities, openings, and valves of the heart.
7. Name the coverings of a femoral hernia.
8. Give origin and insertion of the following muscles: Biceps, pectoralis minor, and popliteus. Give blood and nerve supply of each.
9. Name the arteries and nerves which supply the duodenum. What veins drain this region?
10. What structures are severed in an amputation about the middle third of the thigh?

PHYSIOLOGY.

1. (a) Give composition of blood; (b) function of blood as a whole; (c) red cells; (d) leukocytes.
2. Trace the course of the blood, (a) complete cycle, (b) in adult, (c) in fetus.
3. Give the causations and describe the occurrence of dyspnea.
4. Where and how are bread and butter digested?
5. Compare the work done by the liver on a protein diet with that done on a carbohydrate diet.
6. What are the most prominent differences between the composition of the blood plasma and that of the urine?
7. Why is the lymphatic system so essential to the human body?
8. Name parts of (a) the small intestines, (b) large intestines. Give name and location of the glands found in the small intestines.
9. How is the temperature of the body regulated and sustained?
10. What is the function of the medulla oblongata?

CHEMISTRY.

1. (a) What is an element? (b) Name five with symbols.
2. (a) Give two methods of preparing oxygen. (b) Give equation of one method.
3. What is an acid, a salt, a base? Give example of each.
4. Name the elements in the halogen group.
5. Describe Marsh's test for arsenic.
6. What do you understand by specific gravity?
7. Complete the following: $NaCl + H_2SO_4 = ?$ $Zn + HCl = ?$ $AgNO_3 + HCl = ?$
8. Describe Fehling's test for glucose, and explain chemical reaction.
9. What is the reaction between granulated sugar and Fehling's solution?
10. Give the various steps in making a urinalysis.

MATERIA MEDICA.

1. (a) What are antiseptics? (b) Disinfectants? (c) Give an example of each.
2. Define a laxative and tell how it acts.
3. Name the alkaloids of nux vomica.
4. (a) Give the properties of chloroform. (b) Name several preparations of chloroform.
5. What evils may result from chemical incompatibility in prescriptions?
6. (a) What is the source of digitalis? (b) Give symptoms of digitalis poisoning.
7. (a) What is the source of ergot? (b) Give physiologic action of ergot.
8. (a) Name six official preparations of mercury. (b) Give briefly the properties, uses and dose of each.
9. Name the principal alkaloids of Papaver somniferum.
10. Classify the following drugs according to their physiologic action: Sodium chloride, sodium hydroxide,

potassium citrate, adeps lanæ hydrosus, epinephrin, fel bovis (ox gall), and ferri carbonas.

THERAPEUTICS.

1. How do the following drugs act in intermittent malarial fever: Quinine, methylene blue, and eucalyptus?
2. What remedies should be used for hemorrhage from mucous surfaces?
3. What are the conditions in cystitis that contraindicate the use of alkaline diuretics?
4. What drugs would you use hypodermically to stimulate the heart; to produce emesis; to control hemorrhage?
5. Give the therapeutic application of drugs in the different stages of pneumonia.
6. Mention the remedy which will arrest the secretion of milk, and state how it should be employed.
7. What are the therapeutic uses of glycerin?
8. Describe the therapeutic uses and dangers of chloral hydrate.
9. Differentiate the physiologic effects on the gastric juice and on the urine of the administration of potassium bicarbonate before and after meals.
10. What are the therapeutic uses of tartar emetic?

PATHOLOGY.

1. Give analysis of the urine of patients affected with autointoxication.
2. A persistent low blood pressure is pathognomonic of what class of diseases?
3. In what diseases do we find arteriosclerosis, and to what conditions does it predispose?
4. What is the significance of an absence of chlorids in the urine?
5. Explain cause and describe minutely the formation of an epithelioma.
6. Explain the formation of pus.
7. Define leukemia, and discuss briefly the clinical phases in its progress.
8. What pathologic condition is induced by chronic infections of: the nose, throat, teeth, or their accessory sinuses?
9. What is the pathologic significance of vertigo?
10. (a) When do secondary and tertiary symptoms of syphilis appear? (b) What is the significance of nocturnal headaches in syphilis?

ANSWERS.

ANATOMY.

1. The *frontal bone articulates* with: Two parietal, sphenoid, ethmoid, two nasal, two superior maxillary, two lacrymal, and two malar.

The *occipital bone articulates* with: Two parietal, two temporal, sphenoid, and atlas.

The *radius articulates* with: Humerus, ulna, scaphoid, and semilunar.

2. The vertebral column is divided into: Cervical division, with seven bones; dorsal, or thoracic, with twelve bones; lumbar, with five bones; sacral, with five bones, and coccygeal, with four bones.

The *cervical vertebræ* are distinguished by possessing a foramen in the transverse processes. Further, they are smaller than those in the other regions; they have no facets for the ribs; the spinous processes are generally short and bifid; the spinal foramen is large and triangular; the superior articular process is directed upward and backward, and the inferior articular process is directed downward and forward.

3. Brachial artery. *Relations. In front:* Skin, fascia, bicipital fascia, median basilic vein, median nerve, coraco-brachialis, and biceps. *Behind:* Triceps, musculospiral nerve, superior profunda artery, coraco-brachialis, and brachialis anticus. *Externally:* Median nerve (above), coraco-brachialis, and biceps. *Internally:* Internal cutaneous nerve, ulnar nerve, median nerve (below), and basilic vein. *Branches:* Superior profunda, inferior profunda, nutrient, anastomotica magna, and muscular.

4. The *anterior crural nerve arises* from the second, third and fourth lumbar nerves, and (sometimes) also from the first or fifth lumbar. It *supplies* the iliacus, pectineus, sartorius, vastus externus, vastus internus, crureus, rectus femoris.

5. The *renal arteries* arise from the abdominal aorta, just below the superior mesenteric artery; they pass out at right angles to the aorta, and cross the crus of the diaphragm. The right is longer than the left, passes behind the inferior vena cava, the right renal vein, the head of the pancreas, and the duodenum. The left passes behind the left renal vein, the body of the pancreas, and is crossed by the inferior mesenteric vein. Before reaching the kidney each artery divides into four or five branches.

6.

HEART.

Cavities.	Openings.	Valves
Right auricle.	Superior vena cava. Inferior vena vaca. Coronary sinus. Foramina of Thebesius. Right auriculo-ventricular.	Eustachian. Coronary.
Left auricle.	Four pulmonary veins. Left auriculo-ventricular.	
Right ventricle.	Right auriculo-ventricular. Pulmonary artery.	Semilunar. Tricuspid.
Left ventricle.	Left auriculo-ventricular. Aortic.	Mitral. Semilunar.

7. *Coverings of a femoral hernia,* from without inward, are: Skin, superficial fascia, cribriform fascia, crural sheath, septum crurale, subserous tissue, and peritoneum.

8. Biceps. *Origin:* Apex of coracoid process of scapula, upper margin of glenoid cavity of scapula. *Insertion.* Tuberosity of radius. *Blood supply:* Brachial. *Nerve supply:* Musculocutaneous.

Pectoralis minor. *Origin:* Third, fourth, and fifth ribs, and from aponeurosis of intercostal muscles. *Insertion:* Coracoid process of scapula. *Blood supply:* Acromial thoracic, long thoracic, superior thoracic. *Nerve supply:* Anterior thoracic.

Popliteus. *Origin:* External condyle of femur and posterior ligament of knee joint. *Insertion:* Above the oblique line on posterior surface of shaft of tibia. *Blood supply:* Popliteal. *Nerve supply:* Internal popliteal.

9. Duodenum. *Arteries:* Pyloric and pancreaticoduodenal (from hepatic) and inferior pancreaticoduodenal (from superior mesenteric). *Veins:* Superior and inferior duodenal, which pass into the superior mesenteric and portal veins. *Nerves:* From solar plexus.

10. *Structures severed in an amputation about the middle third of the thigh:* Skin, fascia, tensor vaginæ femoris, femoral artery and vein, profunda femoris, external circumflex vessels, superficial obturator nerve, external cutaneous nerve, anterior crural nerve, deep obturator nerve, small and great sciatic nerves, adductor longus, sartorius, gracilis, pectineus, rectus femoris, adductor brevis, adductor magnus, semimembranosus, semitendinosus, crureus, vastus internus, vastus externus, biceps femoris, and the femur.

PHYSIOLOGY.

1. Blood. *Composition:* Plasma and corpuscles. The *plasma* consists of water and solids (proteids, extractives, and inorganic salts). The *red corpuscles* consist of water and solids (hemoglobin, proteids, fat, and inorganic salts). The *white corpuscles* consist of water and solids (proteid, leuconuclein, lecithin, histon, etc.). There are also *platelets,* which are very small, colorless, irregular shaped bodies, about one-fourth the size of the red corpuscle.

Functions: The *red blood cells* carry oxygen from the lungs to the tissues. The *white blood cells:* (1) Serve as a protection to the body from the incursions of pathogenic microorganisms; (2) take some part in the process of the coagulation of the blood; (3) aid in the absorption of fats and peptones from the intestine, and (4) help to maintain the proper proteid content of the blood plasma. The function of the *platelets* is not determined; it is possible that they take some part in the coagulation of the blood. The *plasma* conveys nutriment to the tissues; it holds in solution the carbon dioxide and water which it receives from the tissues, and takes them to be eliminated by the lungs, kidneys, and skin; it also holds in solution urea and other nitrogenous substances that are taken to and excreted by the liver or kidneys.

2. "The left ventricle pumps the arterial blood

through the large arteries, the small arteries, and the arterioles into the systemic capillaries. For the most part between the capillaries and the tissues is the tissue fluid, and across this the tissues acquire the oxygen from the arterial blood, and return carbon dioxide to the blood in the capillaries. The blood which leaves the tissues is venous. The venous blood returns from the capillaries through the small veins into the larger veins, and the largest veins pour the blood back into the right auricle. It will thus be seen that the right side of the heart is occupied with the pulmonary circulation, and the left side of the heart with the systemic circulation. The right auricle receives the venous blood as it returns from the tissues, and transmits it to the right ventricle. The function of the right ventricle is to pump the venous blood through the pulmonary arteries into the lung capillaries, where the venous blood becomes oxygenated. The oxygenated blood returns by the pulmonary veins to the left auricle, and the arterial blood is then received into the left ventricle."—(Lyle's *Physiology*.)

Differences between the fetal circulation and that of the adult: In the *fetus* there is direct communication from the right auricle to the left auricle by the foramen ovule; the Eustachian valves are larger, the heart is relatively larger; there is communication between the pulmonary artery and the descending aorta by means of the ductus arteriosus; there is communication between the internal iliac arteries and the placenta by means of the umbilical or hypogastric arteries; and the presence of the ductus venosus which unites the umbilical vein and the inferior vena cava.

3. *Dyspnea* may be caused by diminution of oxygen or excess of carbon dioxide in the blood. "As soon as the blood in the body becomes more venous than ordinarily, in consequence of the amount of oxygen sinking below normal, the respiratory movements become quicker, and both inspiratory and expiratory efforts are increased by bringing extra muscles into play. This condition of difficult beathing is termed dyspnea. As the blood becomes more and more deficient in oxygen, the respiratory efforts become more labored, the expiratory movements becoming more marked than the inspiratory. The expiratory efforts become convulsive in character and all the muscles of the body presently take part in the convulsions. In the last stage the convulsions cease, coma sets in, the pupils dilate, the conjunctivæ are insensible, while at intervals respiratory efforts, chiefly inspiratory, are made." (Ashby's *Notes on Physiology*.)

4. *Bread* consists of proteid, fat, carbohydrate, salts, and water. *Butter* consists of fat, a little proteid, and water. In the *mouth*, the ptyalin of the saliva changes starch into dextrin and sugar; in the *stomach*, the proteids are changed into proteoses and peptones; in the *small intestine*, the proteids are further changed into proteoses and peptones and afterwards into polypeptides and amino-acids; starches are converted into maltose; fats are emulsified and saponified.

5. *Action of liver on protcid:* It removes the amino group from the amino-acids absorbed, converting these latter into oxyacids and transforming the ammonia into urea.

Action of liver on carbohydrate: It stores glycogen, converts it into dextrose and returns this latter to the blood stream and thus keeps a constant percentage of sugar in the blood.

6. *Composition of urine:*

	(PARTS IN 1000)	
Water	950.00	
Urea	28.00	
Uric acid	0.60	
Hippuric acid	0.35	Organic
Creatinin	0.65	
Extractives	8.00	
Sodium chloride	8.00	
Phosphoric acid	2.00	
Sulphuric acid	1.25	
Lime (CaO)	0.25	Inorganic
Magnesia (MgO)	0.30	
Potash (K_2O) and soda (Na_2O)	0.60	
Total	1000.00	

As compared with urine, *plasma* contains less water and more solids, more organic matter, less urea, gases (oxygen, nitrogen, carbon dioxide), hormones and enzymes.

7. *Function of lymph:* (1) It conveys nutriment to all cells not directly reached by the blood; (2) in the intestines, it absorbs nutrient material (chiefly fat) and pours it into the blood stream for distribution; (3) it takes certain waste matters to the blood to be later eliminated by the lungs, kidneys, and skin.

Without the lymphatic system the above functions would be in abeyance.

8. *Parts of the small intestine:* Duodenum, jejunum, and ileum.

Parts of the large intestine: Cecum (with appendix), ascending colon, transverse colon, descending colon, sigmoid colon, and rectum.

Glands of small intestine: Lieberkühn's glands, in duodenum, jejunum, and ileum; Brunner's glands, in duodenum; solitary glands, in ileum chiefly, but also in duodenum and jejunum; Peyer's gland, chiefly in ileum, but also in jejunum, and a few in duodenum.

9. The normal body temperature is *regulated* and *maintained* by the thermotactic centers in the brain and cord keeping an equilibrium between the heat gained or produced in the body and the heat lost.

Heat is produced in the body by: (1) Muscular action; (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart, and (6) the thermogenetic centers in the brain, pons, medulla, and spinal cord.

Heat is given off from the body by: (1) The skin, through evaporation, radiation, and conduction; (2) the expired air; (3) the excretions—urine and feces.

10. The *functions of the medulla oblongata* are: (1) It is a conductor of nervous impulses or impressions from the cord to the cerebrum, from the brain to the spinal cord, also of coordinating impulses from the cerebellum to the cord; (2) it contains collections of gray matter which serve as special nerve centers for the following functions or actions; respiration, salivary secretion, mastication, sucking, deglutition, vomiting, voice, facial expression; it also contans the cardiac and vasomotor centers.

CHEMISTRY.

1. (*a*) An *element* is a kind of substance out of which we cannot, by any known means, get any other substance.

(*b*) Oxygen, O; Silver, Ag; Mercury, Hg; Carbon, C; Calcium, Ca.

2. (*a*) Oxygen may be prepared by the decomposition of potassium chlorate; also by the heating of manganese dioxide.

(*b*) $2KClO_3 = 2KCl + 3O_2$.

3. An *acid* is a compound of an electronegative element or residue with hydrogen, part or all of which hydrogen it can part with in exchange for an electropositive element, without the formation of a base. *Example:* Nitric acid HNO_3.

A *salt* is a compound formed by substituting a basylous element for the replaceable hydrogen of an acid. *Example:* Potassium nitrate, KNO_3.

A *base* is a ternary compound which is capable of entering into double decomposition with an acid, to form a salt and water. *Example:* Potassium hydroxide, KHO.

4. The *elements in the halogen group* are: Fluorine, chlorine, bromine, and iodine.

5. *Marsh's test for arsenic:* This test depends on the fact that arsenic hydride is formed when nascent hydrogen acts on a compound of arsenic:

$$H_3AsO_3 + 3H_2 = AsH_3 + 3H_2O.$$

A small flask fitted with thistle funnel and a delivery tube, as for the production of hydrogen, is used; pure zinc and hydrochloric acid are introduced, and after a short time the hydrogen is ignited. It is advisable to cover the flask with a cloth before igniting the gas, as an explosion may happen unless the air has all been driven out. If the materials are pure the hydrogen flame gives no deposit upon a piece of cold porcelain brought into it, but commercial zinc usually contains arsenic. When the purity of the gas is proved, a little solution of arsenite may be poured down the thistle funnel, which will produce a more rapid evolution of gas, and the flame will become larger and perceptibly colored. A piece of cold porcelain depressed upon the flame will be covered with a deposit of metallic arsenic. The films of arsenic are metallic looking in the thicker places, brownish near the edges; they are easily volatilized by heat, and dissolve in solution of bleaching powder. A portion of the glass tube from which the gas is burned should be heated to redness; the gas decomposes and a deposit of arsenic appears on the

tube, which may be identified in a similar way, or may be converted into crystals of oxide by cautious sublimation in an open tube.—(Fisher's *Elementary Chemistry.*)

6. *Specific gravity* of a substance is the weight of a given volume of that substance as compared with the weight of an equal volume of some other substance taken as a standard, under like conditions of temperature and pressure.

7. $NaCl+H_2SO_4=HCl+NaHSO_4$.
$Zn+2HCl=ZnCl_2+H_2$.
$AgNO_3+HCl=AgCl+HNO_3$.

8. *Fehling's test for glucose:* Place in a test-tube a few c.c. of the liquid prepared as stated below, and boil; no reddish tinge should be observable, even after five minutes' repose. Add the liquid under examination gradually, and boil after each addition. In the presence of sugar a yellow or red precipitate is formed. In the presence of *traces* of glucose, only a small amount of precipitate is produced, which adheres to the glass, and is best seen when the blue liquid is poured out.

[The reagent must be kept in two solutions, which are to be mixed immediately before use. Solution I consists of 34.653 gms. of crystallized $CuSO_4$, dissolved in water to 500 c.c.; and Solution II of 130 gms. of Rochelle salt dissolved to 500 c.c. in NaHO solution of sp. gr. 1.12. When required for use equal volumes of the two solutions are mixed, and the mixture diluted with four volumes of water.]

9. Cane sugar either does not reduce Fehling's solution, or reduces it very slowly.

10. *An analysis of urine* includes: Estimation of total quantity passed in twenty-four hours, color, odor, reaction, specific gravity, total solids (by aid of Haeser's coefficient). Then examine for albumin by Heller's test, or by heat and nitric acid (HNO_3); then for glucose by Moore's test, with potassium hydroxide (KHO), or with Fehling's solution, which contains copper sulphate ($CuSO_4$), sodium hydroxide (NaHO), and Rochelle salt ($C_4O_6H_4NaK$); then for blood with potassium hydroxide solution (KHO); then for bile pigments by Gmelin's test, requiring nitric acid (HNO_3); then for indican, using lead acetate [$Pb(C_2H_3O_2)_2$], hydrochloric acid (HCl), ferric chloride (Fe_2Cl_6), and chloroform ($CHCl_3$). Then quantitatively for urea, using solution of sodium hypobromite (NaBrO); for chlorides, with silver nitrate solution ($AgNO_3$); for sulphates, with barium chloride solution ($BaCl_2$). Acetic acid ($C_2H_4O_2$) will be necessary to acidify alkaline urines.

MATERIA MEDICA.

1. *Antiseptics* are agents which prevent or hinder the growth of microorganisms without necessarily destroying them. *Example:* Boric acid.

Disinfectants are agents which destroy microorganisms and their spores. *Example:* Corrosive sublimate.

2. A *laxative* is an agent which increases or hastens the intestinal evacuation; it generally acts mildly, and without causing irritation. Its action is due to a slight stimulation of the peristalsis of the intestine.

3. The alkaloids of nux vomica are: Strychnine, and brucine.

4. *Properties of chloroform:* It is a colorless, volatile liquid, with a sweetish taste and a strong, peculiar odor. It is a good solvent for many substances not soluble in water. It is heavy, diffusible, of a neutral reaction, is not inflammable, freely soluble in alcohol and ether, but only in about 200 volumes of water.

Preparations of chloroform: Aqua chloroformi, emulsion chloroformi, spiritus chloroformi, linimentum chloroformi.

5. *Chemical incompatibility* may give rise to: The production of chemical substances not desired by the prescriber; the production of effervescence or explosion or some other process not desired by the prescriber; evolution of gases, changes of color, formation of precipitates; deposit of some strong and lethal preparation whereby a patient's life is endangered; the destruction of the action of a potent ingredient in a medicine by oxidation, reduction, or hydrolysis.

6. *Digitalis* is the dried leaves of *Digitalis purpurea*, the purple foxglove. *Symptoms of poisoning by digitalis:* "Nausea, and occasionally vomiting. Sometimes colic and diarrhea. After two or three hours, marked diminution in the frequency of the pulse, which may fall to 40 or even 25. Dyspnea, attended by a sense of oppression in the chest and coldness of the extremities. Headache, vertigo, and tendency to sleep. Usually attacks of syncope occur, provoked sometimes by the slightest movement of the patient. Death is generally by syncope, sometimes after several hours of coma succeeded by convulsions."—(Witthaus's *Essentials of Chemistry.*)

7. ERGOT. *Source:* The sclerotium of claviceps purpurea. *Physiological action:* Ergot stimulates and causes contraction of involuntary muscle fibers, hence it is a vasoconstrictor, hemostatic, and oxytocic. It is also a cardiac sedative; it raises the blood pressure, it increases peristalsis, and is an emmenagogue.

8. MERCURY. (1) Hydrargyri chloridum mite (calomel) dose gr. ss to x; used in syphilis, as a laxative or purgative, in congested or cirrhotic liver, in diarrhea, and as a diuretic. It is a heavy, white powder; amorphous; tasteless and odorless; it is insoluble in cold water and in alcohol, and very slightly soluble in boiling water; when exposed to the light it becomes discolored (first yellow, then gray) and partially decomposed; it sublimes without fusing. (2) Hydrargyri chloridum corrosivum (corrosive sublimate), dose gr. 1/60 to 1/30; used as an antiseptic, disinfectant, antiparasiticide, in syphilis, interstitial nephritis. It occurs as heavy, colorless crystals, with sharp and metallic taste, and acid reaction; it is soluble in 16 parts of cold water, and 2 of boiling water. (3) Liquor arseni et hydrargyri iodidi (Donovan's solution), dose ♏v; used as an alterative. (4) Hydrargyrum cum creta (gray powder), dose gr. ss to x; used in congenital syphilis, diarrhea of children, as a cathartic and diuretic, and in the beginning of fevers. It is a light gray powder, with a sweetish taste and no odor. (5) Hydrargyri iodidi rubrum, dose gr. 1/50 to 1/12; used in syphilis, rheumatism, and acute tonsillitis. It is a bright red powder and has neither taste nor odor; it is almost insoluble in water, but is freely soluble in solutions of potassium iodide. (6) Hydrargyrum ammoniatum, used as an ointment in 10 per cent. strength; employed for chronic skin diseases.

9. The *principal alkaloids of Papaver somniferum* are: Morphine, codeine, narceine, narcotine, thebaine, and papaverine.

10. *Sodium chloride* is emetic, purgative, and has osmotic power. *Sodium hydroxide* is irritant, caustic, and escharotic. *Potassium citrate* is diuretic, diaphoretic, and increases the alkalinity of the blood. *Adeps lanæ hydrosus* is emollient. *Epinephrin* is cardiac stimulant, vasoconstrictor, and raises blood pressure. *Fel bovis* is a cholagogue. *Ferri carbonas* is a hematinic.

THERAPEUTICS.

1. *Quinine* destroys the parasites of malaria. *Methylene blue* destroys the parasites of malaria. *Eucalyptus;* it is not known how this acts, or if it has any action at all in malaria.

2. In *hemorrhages from mucous surfaces,* the following may be used: Cold, adrenalin, alum, tannic acid, ferric chloride, gelatin, calcium chloride, opium, and ergot (for uterine hemorrhage).

3. Alkaline diuretics should not be used in cystitis, if the urine is strongly ammoniacal, or in advanced cases of the disease.

4. *To stimulate the heart:* Strychnine, atropine, and morphine. *To produce emesis:* Apomorphine. *To control hemorrhage:* Adrenalin.

5. The *treatment of pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent?

"In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset.

"In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset, and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to. Many prescribe it from the outset.

"The diet should consist of milk, beef-tea or broths,

white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential.

"Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated, are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided.

"The results of *serum treatment* are not unequivocally encouraging, but vaccine treatment would seem to be of better promise. Where possible, an autogenous vaccine should be used." (Wheeler and Jack's *Handbook of Medicine*).

6. Belladonna will arrest the secretion of milk. The belladonna plaster is generally applied to the breasts; or the belladonna ointment may be smeared over the breasts.

7. *Therapeutic uses of glycerin:* As an emollient, laxative, and as a vehicle for other medicaments; it is sometimes given for hepatic and nephritic calculi, for trichinosis, and in vomiting of pregnancy.

8. *Therapeutic indications for use of chloral:* As a hypnotic (in absence of pain); as an antiseptic; in cases of acute mania or delirium tremens; in nervous dyspepsia; in fevers with high temperature, excitement, restlessness, etc.; in seasickness; in tedious labor, to relax a rigid os, and for uterine inertia; for nocturnal epilepsy; for infantile convulsions, chorea, whooping cough, and laryngysmus stridulus; in tetanus and strychnine poisoning it is said to be antagonistic; as an antipruritic.

Dangers are: Deep sleep, muscular relaxation, lowering of body temperature, lessening of sensibility and of reflexes, and the formation of a habit.

9. *Potassium bicarbonate*, taken on an empty stomach, enters the blood unchanged, meets the neutral phosphate of sodium and is decomposed, acid phosphate of sodium being formed which renders the urine more acid. On a full stomach it is decomposed by the acids of the gastric juice, increases the alkalinity of the blood, and makes the urine less acid. (From Potter's *Therapeutics*, etc.)

10. *Therapeutic uses of tartar emetic:* Emetic, cardiac depressant, in bronchitis, as an expectorant, a diaphoretic; not much used now.

PATHOLOGY.

1. The urine of patients affected with autointoxication may show either (1) the presence of acetone, diacetic acid, and beta oxybutyric acid; or (2) the presence of an excessive amount of indican.

2. A *persistent low blood pressure is found* in: Many acute infectious diseases, anemia, cachectic conditions, and shock.

3. *Arterioselerosis is found* in: Gout, syphilis, chronic nephritis, alcoholism, lead poisoning, rheumatism, overeating, excessive muscular work, emphysema, cirrhosis of the liver. It *predisposes* to: Monoplegia, hemiplegia, apoplexy, interstitial nephritis, myocarditis, thrombosis, embolism, gangrene.

4. *Absence of chlorides in the urine may indicate:* Starvation, lobar pneumonia; they are *diminished* in many of the acute fevers, anemia, cachectic and malignant conditions, extreme diarrhea and when large effusions are present.

5. *"Epithelioma,* or squamous-celled carcinoma, may arise on any surface covered with stratified epithelium. It usually arises in the middle-aged or elderly, but may also occur in the young. It often results from long-continued irritation, and may arise in old scars or ulcers. It may appear in one of three forms: (1) A wart-like growth with an indurated base; (2) a small circular ulcer with raised, rampart-like edges; (3) an indurated fissure. The growth extends to the deeper structures; the surface ulcerates and becomes foul from contamination with putrefactive organisms. The nearest lymphatic glands always become infected sooner or later, and a fatal termination occurs rapidly unless treatment is early and thorough. Secondary deposits, except in the glands, are rarer than in glandular carcinoma. The glands sometimes undergo cystic change, invade the skin, ulcerate, become foul, and may cause death by secondary hemorrhage from ulceration into large blood vessels. Microscopically, columns of cells are seen extending from the epithelium into the underlying tissues, and interlacing with one another. In some of the columns concentrically arranged masses of flattened, cornified cells may occur; these are called 'cell nests.' The tissues immediately surrounding the new growth are infiltrated with small round cells." (*Aids to Surgery.*)

6. *Formation of pus:* "When pyogenic bacteria are introduced into the tissues there ensues an inflammatory reaction, which is characterized by dilatation of the blood-vessels, exudation of serum, migration of large numbers of leucocytes, and proliferation of connective tissue cells. These wandering cells soon accumulate around the focus of infection, and form a protective barrier which tends to prevent the spread of the organisms and to restrict their field of action. Within the area thus circumscribed the struggle between the bacteria and the phagocytes takes place, and in the process toxins are formed by the organisms, a certain number of the leucocytes succumb, and, becoming disintegrated, set free certain proteolytic enzymes or ferments. The toxins cause coagulation necrosis of the tissue cells with which they come in contact, the ferments liquefy the exudate and other albuminous substances, and in this way pus is formed." (Thomson and Miles' *Manual of Surgery*).

7. *Leucemia* is a condition in which there is a great and persistent increase in the number of white blood corpuscles. There are two varieties of the disease: (1) *Splenomedullary* in which the chief changes are found in the spleen and bone marrow; and (2) *lymphatic*, in which the most marked changes are observed in the lymphatic glands.

It is possible for leucemia to be confounded with splenic anemia and Hodgkin's disease. The diagnosis is made by an examination of the blood. In Hodgkin's disease there is either no increase in the number of the leucocytes, or a very slight increase. In *anemia*, there is a marked diminution in the number of the red blood corpuscles and there is no leucocytosis. In *splenomedullary leucemia*, there is an enormous leucocytosis, and myelocytes are present. In *lymphatic leucemia*, the lymphocytes form the main part of the leucocytosis, and there are no myelocytes. The disease is of gradual onset, and may be accompanied by weakness, palpitation, dyspnea, and dyspepsia; the face is pale or sallow; the spleen or lymphatic glands will be found enlarged; fever and dropsy may occur later in the disease; the abdomen is generally swollen and emaciation is observed; the urine is high-colored, scanty and may be albuminous.

8. *Chronic infections of nose, throat, and teeth may induce:* Periostitis, ostitis, caries, and necrosis of the neighboring bones, thrombosis of the cavernous sinus, and even so serious a condition as intracranial abscess; infection of bones at a distance and polyarthritis may also occur.

9. *Vertigo* may indicate: Neurasthenia, congestion or anemia of the brain, eyestrain, disease of the internal ear, meningitis, tumor of cerebrum or cerebellum, gout, indigestion, heart disease, arteriosclerosis, autointoxication. It may also be caused by certain drugs.

10. The secondary symptoms of syphilis appear at about the end of the 45th to the 90th day; the tertiary symptoms begin at about the end of the second year. Nocturnal headaches in syphilis are suggestive of cerebral syphilis.

(*To be continued.*)

Disturbances of Ossification in Endemic Cretinism and Goiter.—Wegelin believes that in countries in which goiter is endemic, a distinct arrest of ossification is noticeable even in the fetal period, this phenomenon being attributable to hypothyreosis, and expressed as a lack of bone nuclei in the inferior epiphysis of the femur in the newly born. This intrauterine arrest of development is an inversion of conditions when there is hyperthyroidism of the maternal organism. Thus when gravid animals are fed with thyroid substance, the litter is less numerous while the individual young are better developed. In fowls thyroid feeding cause not only larger eggs but more eggs, while after thyroidectomy these results are reversed. This law justifies the systematic wholesale use of thyroid feeding for cretins and cretinoids.—*Correspondenz-Blatt für Schweizer Aerzte.*

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RADIUM EFFICIENCY IN NON-MALIGNANT SURGICAL CONDITIONS.*

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NEW YORK,

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IT will refresh our minds to divert attention from the popular hue and cry after a cancer cure by radium, by considering a few of the interesting list of non-malignant troubles which this remarkable agent has helped. It will be consistent with the aim of this most practical society that its members should be informed on practical results.

One interesting demonstration of the prompt curative action of radium and its permanent benefit is in *vernal catarrh*, in a disease considered intractable by oculists, as well as physicians. This affection of the eyelids is a conjunctivitis recurring each spring, and often lasting through the year when it has become established. The lids are hot, swollen, red, and itchy. Photophobia often compels the patient to stay in a semi-dark room. The lids gum up and are glued together in the mornings with a sticky, often mattery secretion. On everting the upper lid there is seen a mass of granulation tissue standing far out from the under surface, and often grouped in bunches. This condition does not occur in the sulcus above the cartilage of the lid. By this it can be differentiated from trachoma.

I have treated in all ten cases which were recurrent for many years and can assert that the

FIG. 1.—Typical vernal catarrh; this inveterate case had resisted every variety of scientific treatment by specialists, but was cured by radium.

improvement always begins soon after the first treatment. Most cases had had extreme treatment by slicing off the masses, cauterization, and caustics before I saw them, and had become the *bêtes noires* of the oculists.

A uniform benefit and ultimate cure follow the judicious use of radium. Technically, a fifteen

FIG. 2.—Best method of exposing the under surface of the eyelid to strong radium; this is placed in a groove at the end of a long lead cylinder covered by a celluloid holder. The cornea is protected by the lead beneath the groove holding the radium tube.

minute application of a tube of strong radium under the eyelid, moved back and forth, with a lead device to protect the cornea, repeated every month or two, constitutes the simple and rapidly helpful method. With a drop of cocaine, the most sensitive eye feels no pain. The cases I have so treated have now remained cured up to ten years, as shown in the case to-night. The method of its action is specific, in altering the hypertrophied cells of the mucous surface, which have made a veritable tumor structure.

The second interesting condition in which radium has no rival is in reducing *lymphoid tumor* tissue such as is found in tumors of the tongue called hemolymphangioma, and in other parts of the body. I have reported a series of these in a paper read before the American Surgical Association last spring, and will not even quote further from it here, but merely say that it is a triumph in a small group of formerly hopeless cases. Its selective action on the lymphoid cell growth is emphatically specific.

This overgrowth of one element of skin structure in the scheme of tumor formation is not unlike papillary warty growths which subside, like all *vocal cord papillomas* as you have seen to-night in the brilliant and permanent restoration of voice with perfect vocal cords five years after apparently hopeless conditions.

Warts, in places delicate as the edge of the eyelid, or the tender vermilion of a child's lip, or the coarse skin of the sole of the foot, or under the finger nails, or in the scalp, where scars are not desirable, radium has cured for me a hundred times

*Read at a meeting of the New York Clinical Society, April, 28, 1916.

with usually no scar. I would class this with specific action inasmuch as a retrograde of wrong-growing cells takes place after this atomic bombardment, causing them to return to normal growth.

Leucoplakia, considered as a simple overgrowth of surface cells of the tongue or mucosa lining the cheeks is not unlike the keratosis of the skin, heaping up in places and making a veritable new growth, often precancerous and tending to extend downward and become a cancerous invasion. This is seemingly as capable of cure by radium within the mouth as it is in skin hyperkeratosis, whose disappearance can be predicted with as much certainty as the treatment is easy. In the mouth, however, the time and method of application require much more judgment and skill to attain good results. It is associated with a transient painful irritation which is essential to success. We face the fact, however, that before radium was available no cure was known. Mr. Butlin once told me that "if radium would cure leucoplakia, it would do what neither cutting out, or shaving off, or caustics, or cautery had ever done in his hands."

An allied condition of the lips presents another phase of the successful use of this energetic agent. There is occasionally seen a weak spot of the skin

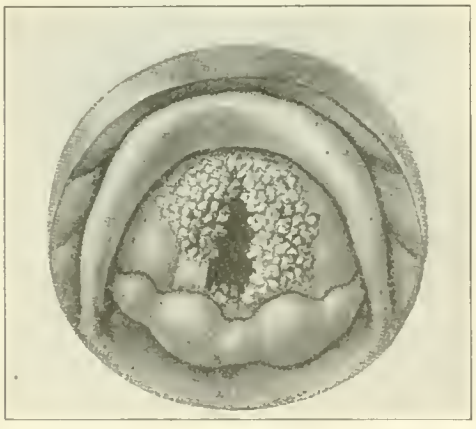

Fig. 3.—This patient with papilloma of the larynx remains perfectly cured after one radium application, and sang with perfect voice five years after the treatment.

of the lip, a chronic thin surface ulcer or abrasion. The skin refuses to heal, or if it heals with a thin surface, it quickly breaks down and a *chronic abraded ulcer* remains, not with cut-out edges, but, as ice freezes, with a thin blue edge always looking as if it might heal. There seems in these cases to be a lack of force in the epithelial cells at the edge. It often lasts for years, and is in striking contrast to the hypertrophic conditions on the lip, both of which I illustrate, and both are equally well cured by radium. The same is true of the chronic painful crack of the lip.

It seems paradoxical that the same agent can cure an overgrowth keratosis and a deficient growth, as in these abrasions, and until we know why cells grow, we may not explain it. Some satisfaction, however, may be had in a hypothesis which I offered some years ago which argues backward from the known output of beta radiation of radium, an enormous charge of negative electron particles driven into the disorderly growing cells. Inasmuch as there follows a retrograde change in the overgrown cells, it must be due to something supplied to them by this treatment. If, hypothetically, we surmise that the vital force actuating a normal cell growth, is a balance of electric action established within it, and we conjecture that a riotous overgrowth may be due to loss of balance, may it not be that the preponderance of positive or negative charge is responsible for the disturbance which is corrected by the new supply of nascent negative electrons. Sci-

Fig. 4.—Chronic abraded ulcer of the lip.

ence is about ready to concede that the actuating force of nerve and cell activity is electrical, and singularly enough this new agent is almost wholly a discharge of material particles each bearing a charge of electricity, some positive and some negative. It is not easy to explain, for instance, the recovery of the destructive myeloid tumor of the jaw, which I showed you to-night, as a fortuitous reassembling of disordered cells to orderly rearrangement to form a normal jaw again which has endured for twelve years. This I would designate

Fig. 5.—Small typical true keloid of the chest; it had been once cut out, and returned, as they all do, before coming to me for radium treatment. This cured it with a smooth skin scarcely depressed.

specific action. In what the specific action consists, we can only speculate.

By contrast, there is an action of radium which is curative by irritation only, as in *nevus.* The endothelium of veins or arteries undergoes hyper-

plasia and partly or wholly obliterates the lumen, so as to induce a gentle fibrosis and cure of the birthmark. Patience and discretion are needed to keep a velvety skin and not produce a cicatricial atrophy from overtreatment.

FIG. 6.—Extensive keloids following two years after an acid burn.

The active irritation of these intense penetrating rays is absolutely necessary to a successful result, in any of its many uses. This provokes a kind of inflammation, except that it has no bacterial origin. Especially noticeable is this in *keloids*, one of the most useful fields of its work. It was Wickham of Paris in his early work who first showed me cases of keloid cured by radium, and told me there was no difference between so-called true and false keloid; both were equally easy to cure. I have verified this in a great number of patients. Cases which no surgeon would dare cut out are perfectly cured by inducing, first, a sharp radium inflammation which transforms the hard keloid masses of cells and fibrous tissue. This is followed by an atrophy of the mass as the inflammation of the fourth week subsides. This is especially grateful in the so-called true keloids of the front of the chest, often seen in young women, which recur with terrifying certainty when cut out, but which invariably leave a thin, flexible cicatrix after radiumizing properly.

In the terrible case of face keloid from acid burns, which you have seen to-night, the condition two years after the accident was one of progressive very dense hard masses much as if leather were drawn tight over a golf ball. Several sharp radiumizations were induced in all, and each was followed by marked softening and atrophy until now they are all soft and pale and nearly flat.

But I come at last to speak of the most extraordinary of all the remarkable effects of radium known to me—its cure of the disease known as *uterine fibroids*. It is fair to call this a disease by itself because it has no exact counterpart that I know of, in the body. It is essentially a tendency of the muscular structure of the uterus to grow tumors made up of the same muscle structure. One, or many, they are myomata; some old and fibrosed, some young and of juicy cell structure. Those growing close beneath the lining membrane of the cavity usually induce severe hemorrhages, often very grave. For forty years surgery has had but one answer to the appealing sufferer—"Cut them out, usually with the whole uterus also." It would be difficult to compute the hundreds of thousands so treated in the hospitals of the world.

The surgical results must include not only a great majority of satisfactory cures, but also deaths by hundreds from operative risks and the several sequels of pelvic abscess, abdominal wall abscess, hernia of the scar, cystitis from catheterization, femoral phlebitis, and so on. Add to this the four or six weeks of hospital care—which in private means often a continual surgical attendance of many weeks more, where the patient is often more frail. The absence from work or home duties, in women who can ill spend the time, completes a long list of essential incidents associated with the customary surgery of uterine fibroids.

Let us imagine, now, that a remedy for all this is found in so simple a treatment as the introduction of a small tube of radium into the uterine cavity, without ether, for two hours on two or three occasions, without entering a hospital, and that, following this, the excessive hemorrhage stops and the tumors progressively shrink until they disappear. Is this possible? It is not only possible, but has come to the point of complete demonstration. Accumulated cases now show that it may be depended on for permanent cure, with apparently no risks, no delay, no hospital, small cost to the patient

FIG. 7.—Same patient as shown in Fig. 6, after radium treatment.

in time and money; and to the surgeon, small cost of time. It sounds like a Münchausen tale. It is one of the most beneficent actions of this unique agent.

My experience with it dates back to 1905, which is the first case as far as I know in which it was used to arrest a hemorrhage and for its hoped for good effect on the tumor. That and another which followed soon after were recorded by me in 1906, and have been watched ever since. The tumors shrank year after year until they remained but very small, inert buttons on the uterus. Since then I have applied it in more than thirty cases and have yet to see a case which did not shrink, some completely, some rapidly—all in large measure. It may truly be called a specific for uterine fibroids, and must supplant operative treatment as fast as conviction and the accession of radium come to operators.

Its special value shows in the many cases of violent hemorrhages from fibroid disease. Here the uterine lining is overgrown and highly vascular, or stretched out thin and bleeding from open mouthed veins. The contact of radium with these blood vessels seals them up by occlusive inflammation, due to

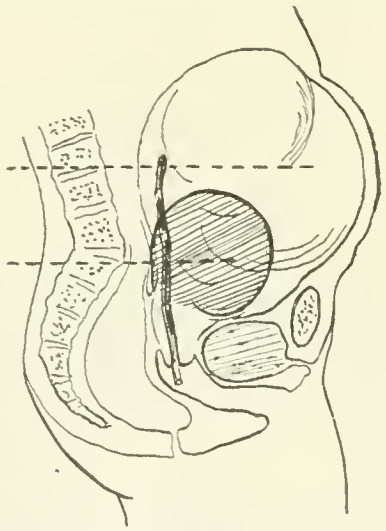

FIG. 8.—To illustrate the action of radium on a large uterine fibroid. *A*, tumor before the application of radium; *B*, tumor ten months later.

the active beta rays, while the penetrating gamma rays go through the whole disordered cell mass, and produce a retrograde change in the conduct of each cell so that it begins its retreat at once, and the growth's shrinkage is measurable in from two to six months.

The very large tumor in a desperate case of hemorrhage, published by me last June, has shrunk from a diameter of ten inches to four, in ten months, and will disappear probably within a year. Meanwhile the exhausting hemorrhages ceased in six weeks and have never recurred. The patient has enjoyed perfect health since. This may be said of all the cases treated.

One patient whom I have shown you to-night with the most extensive *lupus erythematosus* of the entire face, ears, and side of the neck, and of his hands, was cured by one thorough radium treatment. This case does not stand alone.

It is probable that every case will yield to proper radiumization, judging by five cases of this disease on the face which have yielded excellent results which seem permanent. The first case was of a man who had typical patches on both cheeks. He remained cured after my treatment in 1904.

Time has limited me in this paper to speaking of only a few of the non-cancerous cellular growths in which the action of this comparatively new agent—radium—has a character of its own.

13 WEST FIFTIETH STREET.

RADIUM IN THE FIELD OF LARYNGOLOGY.*

BY D. BRYSON DELAVAN, M.D.,

NEW YORK.

THE past year has brought distinct advances in the knowledge of the use of radium, in no department with more encouraging results than in ours. To-day many observers are studying its effects in an ever increasing variety of disorders, some of which are far beyond the limits of previous conjecture. Additions are being rapidly made to the number of conditions in which the treatment is effective, and substantial encouragement is being given to the hope that there has been found in radium a truly valuable therapeutic agent. Several of our institutions, notably the General Memorial Hospital, New York, have been fortunate in acquiring amounts of radium large enough to meet all of the probable demands of treatment, while those in whose hands it has been placed for administration are gaining experience in its application and learning how it may best be utilized and controlled.

Some contributions have been made to the literature of the subject in general, but in the department of the diseases of the upper air passages little has yet appeared. This is not surprising. The study of radium is in its infancy. Few investigators at present are ready to issue formal reports of their work, wisely refraining from announcing results until their deductions can be placed upon a stable basis of well proved fact. Any attempt to drag it before the medical public at the present time would be premature. What is needed is not publicity, but rather the development of scientifically proved data upon which, and only which, reliable reports of progress are possible. The securing of such data requires *long-continued and painstaking study of the action of radium, under conditions favorable for accurate observation, in the hands of men especially qualified for the work.* When these conditions have been fulfilled, and not until then, we may hope for the beginning of a literature at once valuable and instructive. Meanwhile, however, even the most conservative observers are willing to admit that encouraging progress is being made. Were the actual experiences of different institutions devoted to the study of radium to be quoted the truth of the above statement would be plain.

A few fragmentary contributions and reports have appeared, some of which are worthy of notice. From these it is again evident that the progress being made in the knowledge of radium efficiency in non-malignant surgical conditions and in certain nonsurgical affections of the upper air passages continues to be gratifying. This is shown by the work of various observers in the United States, particularly by that of Dr. Robert Abbe of New York, and by the reports of the two leading British institutions, the Radium Institute of London and the Royal Infirmary of Edinburgh.[1]

Thus the London Institute reports excellent re-

*Read before the American Laryngological Association at its thirty-eighth meeting, Washington, D. C., May 10, 1916.

sults in the treatment of "vernal catarrh," patients treated for it by radium having in a large proportion of cases been cured without recurrence, although under observation for a series of years.

In the treatment of nævus by radium remarkable results are being obtained.[2] The most brilliant of these are seen in young children where conditions of unusual severity in the vicinity of the lips and nose, far beyond the limits of surgical relief, are being successfully reduced.

Rhinoscleroma, according to Kahler,[3] has been treated with good effect. Good results have been claimed from the application of radium in goiter and in tubercular glands.[4] For the latter Bissell[5] of New York is particularly impressed with its value. Under his observation proper radium treatment has often and completely restored such glands to their normal functions. Abbe believes that leucoplakia of the tongue is not unlike a keratosis of the skin, often pre-cancerous and tending to extend downward and become cancerous. He considers that it is as capable of cure by radium as is the skin keratosis. Delavan[6] has called attention to the same thing. Serra[7] reports a successful case.

Much attention is also being given to the study of radium as applied to new growths in general and many highly interesting and important facts are being obtained. This is especially true of growths of a non-malignant character. In the treatment of nasopharyngeal fibroma the use of radium has proved encouraging, particularly so in view of its success in the treatment of fibromata in other parts of the body.[8] Abbe[2] has shown a case of myeloid tumor of the jaw, completely cured.

In the treatment of non-malignant intralaryngeal growths many highly interesting results have been obtained, tumors of various histological structures having disappeared, in a number of cases with complete restoration of the singing voice. The treatment of papilloma of the larynx by means of radium is one of the most interesting phases of its use. In view of the success already attained with it, as well as with warty growths in general, the outlook for it is most promising.

Weil[9] reports a parotid tumor (adeno-cystic-epithelioma) of seven years' standing, which was treated for six weeks by the insertion of radium into it. The growth disappeared, and at the end of two years has not recurred. Freudenthal[7] reports a case of fibrosarcoma of the right antrum cured. He also reports a case of sarcoma of the tonsil, in which the growth disappeared and remained in abeyance for six years. Then it recurred and the patient died. In another similar case the growth disappeared for six months.

In this highly specialized department, laryngology, radium promises to occupy a wide and important field.

While the treatment of these various lesions has been attended with interesting results, the final value of radium in certain of the more serious affections has yet to be proved. Especially is this true of its use in carcinoma, for while a considerable number of cases have been placed under treatment it has been claimed by some that the effect of radium has in certain instances been unsatisfactory; and even in some in which its influence has been temporarily beneficial the good effect has not always been lasting, or else too little time has elapsed to prove its final value. In a few cases it is said that not even temporary benefit has resulted, while in some of these the advance of the disease seems to have been hastened. Again, while parts of the region exposed have undoubtedly improved, other parts have retrogressed. Admitting that these several objections may contain more or less of truth it is, nevertheless, encouraging to know that the causes of more than one of them are understood and that diligent effort is being made to discover the means by which they may be prevented.

In this connection, recent British experience and opinion is interesting.

The report of the Radium Institute of London[1] states that "epithelioma of the buccal, lingual, and pharyngeal mucous membranes usually proves refractory and disappointing in its response to radium," but, it is significantly added, *"under new methods of application better results may be expected.* Thus far, the treatment does not seem to have much effect in arresting the disease."

The report of the Royal Infirmary[1] gives a far more sanguine outlook. Thus: "While in advanced malignant cases a cure may not have been effected, yet in practically all treated more or less benefit was produced, through the relief of pain, the cessation of discharges, the healing of ulcerative surfaces, the removal of local growths, and the prolongation of life.

"Malignant disease of the posterior nares, buccal cavity, pharynx, and larynx seems less amenable to radium, but this may be from the difficulty of administering a sufficient dose in such positions."

Several cases that have come under my own observation have shown effects worthy of notice. Two of them were epithelial carcinoma, originating in the left side of the throat close to the wall of the larynx and, as far as could be ascertained, extralaryngeal. Both patients were men in the early fifties, hitherto in perfect health, active, vigorous, and of excellent antecedents. When first seen, the disease in both had invaded the interior of the larynx, the left lateral wall of the pharynx, the pyriform sinus, the tonsil, and the base of the tongue. In both, ulceration was present and there was marked aphonia and dysphagia. Operation was impossible. Both were subjected to the radium treatment at the same institution and large doses were applied. In both the results have been materially the same.

The first effect of the radium locally was an almost immediate control of the secretions of the throat. From having been abundant and fetid they promptly ceased. Following this the areas of ulceration rapidly diminished in extent, and in the less severe of the two cases they disappeared; while in the other case they seemed to do so, although it has not been possible to prove this owing to the difficulty of examination. The swellings which had appeared over extensive areas of the affected parts decreased markedly, and the infiltrated tissues were reduced in size, became soft to the touch and more natural in appearance. Accompanying these changes extraordinary improvement took place in the various functions of the throat. Thus, the voice became clearer, and deglutition, which before the application of radium had become almost impossible, showed such improvement that both patients were able to swallow without pain and to largely increase the variety of their food.

Together with these local changes, the improvement in general was remarkable. Digestion became normal and sleep more prolonged and restful; while with the improved nutrition a steady increase of strength was apparent and a rapid return

to an almost normal condition of good spirits. One of these patients, a physician, was able to resume his office practice and for two months remained steadily at work.

These patients, as well as all who have seen them, admit that even if from now on the progress of the disease should ultimately be unfavorable the benefit already gained in the relief of suffering and the added comfort afforded, would well repay them for any inconvenience the radium had caused. This is an important concession, for the superficial burn sometimes resulting from radium may be an unpleasant feature. Compared, however, with the results of any serious surgical operation, it is but a slight annoyance. And yet how gladly will the patient submit himself to the knife and to weeks and perhaps months of disability and suffering following its use for the sake of cure, quickly forgetting all the harrowing details of his surgical experience and even its resulting mutilations in the joy of being restored to life and health! Any method which will cure carcinoma, at the same time leaving the normal parts intact, with no worse penalty than a slight superficial burn, should surely be welcomed with acclaim.

The present is no time for the adverse criticism of radium. The study of the radium treatment of carcinoma is but just begun. Some, at the very threshold, are already discouraged, and are announcing themselves as unwilling to believe in its efficacy. To these we may repeat that the knowledge of the use of radium in general is still in embryo.

The failure to gain uniformly reliable results in carcinoma is due to our imperfect knowledge of the methods by which the radiations can be controlled, of the amounts of radium which should be used, and of the correct duration of the exposures. The all-important basic principle has certainly been proved, namely that, under proper application, *radium will destroy a superficially located cancer cell.* Granting this proposition, it is by no means impossible that with increased knowledge of its action, and skill in its application, deeply seated cells may be successfully reached and destroyed, while at the same time the surrounding tissues are effectively protected.

Already, results worthy of profound consideration have been obtained. Far from being discouraged, there is every reason why persistent and continued effort should be made to finally solve the existing problems and give to the world a cure for one of its most grevious scourges. Fortunately, there are some who, in the face of many difficulties are earnestly and hopefully striving to obtain this end. Let such gain inspiration from Trudeau[11] that noblest of humanitarians: "Optimism is a mixture of faith and imagination, and from it springs the vision which leads one from the beaten paths, urges him to effort when obstacles block his way, and carries him finally to achievement when pessimism can only see failure ahead. Optimism may, and often does, point to a road that is hard to travel, or to one that leads nowhere; but pessimism leads to no road at all. * * *

"Let us not therefore quench the faith nor turn from the vision which, whether we own it or not, we carry * * * and thus inspired many will reach the goal," as have all whose hopeful imaginings and courageous efforts have been the basis of every noble success the world has ever seen.

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40 EAST FORTY-FIRST STREET.

FRACTURES IN CHILDREN.

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NEW YORK.

FRACTURES in children vary from those in adults not only in severity and variety, but also in their management. The bones in children are soft and elastic, they have in their ends cartilaginous discs which give way to traction and bending. Where in adults an injury will produce a dislocation, this same injury in children will usually produce a fracture. The degree or severity of the injury bears very little relation in the production of fracture in a certain percentage of children. At times a mild trauma as falling on the floor and striking upon the affected part or a slight knock against a chair will produce a fracture. Occasionally a severe trauma such as falling down a flight of stairs, will not produce more than an injury to the soft parts or an injury which is very often overlooked, namely, intraperiosteal fractures.

A great many fractures seen by the orthopedic surgeon are fractures which are overlooked and are often diagnosed as "sprains," contusions, "twisted tendons," etc. The absence of the cardinal signs of fracture, *i.e.*, crepitus, false mobility, deformity, and ecchymosis probably accounts for the mistakes in diagnosis. The absence of these signs can be accounted for in one of the following ways:

1. An impaction of the fragments may be present.
2. One fragment may be too small or too firmly attached to the neighboring structures.
3. Finally the fracture may be an incomplete one, being of the fissure or torsion variety.

It is this latter cause of error which is commonly found in the care of children. These fractures are incomplete and are known as subperiosteal or intraperiosteal fractures. The most constant and what can almost be called diagnostic sign, is the localized bone or "pencil tenderness." The way to map out this localized or pencil tenderness is to palpate or make pressure with the back of a pen or the rubber tip of a lead pencil. By tracing the point of maximum tenderness one can in a vast majority of the cases trace the line of fracture, besides making the diagnosis. We have confirmed our clinical findings by means of Roentgen ray pictures, a few of which will be found elsewhere in this paper. Although there is general pain in cases of fracture, still firm pressure about the seat of injury will, in a vast majority of cases, reveal a definite, constant point or line of pencil tenderness over the fracture. This tenderness is at times very exquisite. Many parents are surprised to learn that their children had sustained fractures, so trivial had been the suffering, both subjectively and functionally. The diagnosis in these cases was made by tracing the line of pencil tenderness. The duration

of this sign varies, sometimes persisting for weeks. At a recent meeting of the Alumnæ Society of Lebanon Hospital, the writer demonstrated several cases of intraperiosteal fractures, all diagnosed by tracing the line of pencil tenderness and all confirmed by subsequent Roentgen ray pictures. The complete reports of these cases follow.

Fig. 1.—Case I. Fissure fracture of the tibia.

Case I.—Dorothy E., five years of age. A few days before coming to the Lebanon Hospital Orthopedic Clinic, the child tripped and fell down the stairs, a distance of a few steps. The mother thought nothing of the injury as the child was able to get about. She applied home remedies with very little success. For the following few days the child complained of having pain only when she walked. It was on account of this pain that the patient was brought to us.

Examination: The child walked with a slight limp on the left side. The left leg was slightly swollen, there was no deformity or ecchymosis. Crepitus and false mobility were also absent. A line of maximum tenderness was traced along the shaft of the left tibia for a distance of three inches. A diagnosis of an intraperiosteal fracture of the tibia was made and proper treatment instituted. The mother could not understand how it was possible for the child to have a fracture and still be able to get about. A subsequent Roentgen ray picture showed an intraperiosteal fracture of the tibia, corresponding to the line of pencil tenderness, which we had traced. Fig. 1 is an *x-ray* picture of this case, showing the location and type of fracture.

Case II.—Sarah S., nineteen months of age. A few days before coming to our clinic, the baby fell out of her carriage, striking upon her left leg. After the accident the child was unable to walk, and was very tender at the site of the injury. She was brought to us on that account.

Examination: The child was unable to bear any weight on her left lower extremity. There were slight ecchymosis and swelling over the site of injury. Crepitus, false mobility and deformity were absent. A line of maximum tenderness was traced along the shaft of the lift fibula for a distance of two inches.

A diagnosis of an intraperiosteal fracture of the fibula was made. A subsequent Roentgen ray picture confirmed our diagnosis. (Fig. 2.)

Case III.—C. H., three years of age. One week prior to his visit to our clinic the child fell, striking upon his right forearm. The mother thought that the child had only bruised its forearm, hence the delayed visit to our clinic.

Examination: The child refused to move his right arm. There was slight swelling and ecchymosis over the palmar surface of the right forearm. Crepitus, deformity and false mobility were absent. A line of maximum tenderness was traced running transversely over the lower end of the radius, about one inch above the articular surface.

A diagnosis of greenstick fracture of the radius was made and a subsequent Roentgen ray picture (Fig. 3) confirmed our diagnosis.

Fig. 2.—Case II. Fissure fracture of the fibula; another photograph, taken in a different plane was negative. This shows the importance of taking Roentgen-ray pictures in more than one plane.

The treatment of this type of fractures is the same employed in complete fractures, differing only in having a shorter period of immobilization.

Many authors report loosening or separation of the epiphysis as a common occurrence in children. In our series there were just two cases or about 1 per cent. of epiphyseal separation. In these cases both were at the lower end of the radius, the result of a severe trauma. In a vast majority of these so-called epiphyseal separation cases, were Roentgen ray pictures to be taken a fracture just above the epiphyseal line would be revealed.

Fig. 3.—Case III. Greenstick fracture of the lower end of the right radius.

These peculiarities of the bones in children make

the diagnosis quite difficult, especially in intraperiosteal fractures, when one looks to make a diagnosis on the cardinal signs of fracture. We must always think of fracture as a possibility when children refuse for any length of time to use a

FIG. 4.—Case IV. Figure of eight dressing for fracture of the clavicle.

limb, especially if they do not use it when their attention is distracted from it or when they are at play. Many cases diagnosed as contusions, twisted tendons, or bad sprains eventually turn out to be fractures. In this series fully twenty-five per cent. of them were treated as sprains, twisted tendons and contusions.

In general the treatment of fractures in children is much simpler and easier than it is in adults. The thick periosteum which is usually partially intact prevents any considerable dislocations, nor are the muscular tractions quite as strong and are easier overcome than in adults. The tendency to heal is much more intense in children and hence the time of union is much shorter, and immobilization is of shorter duration than that of the adult. An exception to this is found in rachitic children, where on account of the pathological condition in the bones, there is interference with the healing process and hence it takes a longer time for the fracture to unite.

The scar which forms is usually a soft one and only becomes solid when the rickets is cured. In this type of cases a slight push, a jump or even a sudden strong contraction of a muscle will suffice to break completely a bone which is already bent. This is also true in any process which softens the bones, *i. e.*, osteomalacia, atrophy of the bone through disuse (as in paralyses and inflammations), and in osteogenesis imperfecta in which condition the bones are very brittle.

This paper is based on the study of 200 cases of fractures, divided as follows: Fracture of the clavicle, 50. Fracture of the humerus, 48; (*a*) surgical neck, 3; (*b*) shaft, 5; (*c*) lower end, 40. Fractures of the forearm, 92; (*a*) shaft of the radius, 20; (*b*) shaft of the ulna, 5; (*c*) olecranon, 3; (*d*) both bones, 24; (*e*) lower end of the radius, 40. Fractures of the leg, 10; (*a*) tibia, 5; (*b*) fibula, 5. There were 130 in males and 70 in females. The ages were between fourteen days to eleven years. The cause in the majority of the cases was a direct injury.

Fracture of the Clavicle.—This was a fairly frequent fracture in the series of cases, there being 50 cases, or 25 per cent. The common cause was a fall upon the shoulder and the common site was at the junction of the middle and outer third of the bone. Some of the cases were incomplete, being of the intraperiosteal variety, with no displacement of the fragments. The diagnoses in these cases were made by tracing the maximum point of tenderness. The remainder were complete and were accompanied by severe pain and a lowering of the shoulder. The pain was especially evident when the arm was abducted above the horizontal position. Deformity, crepitus, false mobility, and marked tenderness were all present.

Treatment: In treating fractures in infancy and childhood one must always remember the differences between the infant, the child, and the adult. The tender skin of the infant, its round, agile body, the movable cover of fat which envelopes the soft bones offer considerable difficulty to an exact therapy.

In fractures of the clavicle the dressings at our disposal are (*a*) the figure of eight bandage and (*b*) adhesive plaster.

Figure of eight bandage: Before applying the bandage it is very important to subject the axillæ to preliminary treatment. This consists in dusting them with boric-acid powder and the insertion of a pad of boric-acid lint in each to absorb the perspiration and keep them dry. The deformity when present is then reduced and the fragments are retained in their proper position by an assistant. A flannel bandage about two inches wide is then applied in a figure-of-eight manner so that the figure-of-eight is behind and the shoulders are held back by the two loops of the eight. The forearm is then supported by a sling about the neck.

Fig. 4 shows the back view of this dressing.

CASE IV.—Josephine B., four years of age, fell and struck her right shoulder a few days before coming to our clinic. This accident was followed by severe pain and disability.

Examination revealed a complete fracture of the clavicle at the junction of the middle and outer third

FIG. 5.—Case V. Fracture of the upper part of the humerus.

of the bone. The outer fragment was displaced downwards accompanied by the shoulder and the inner fragment was displaced upwards. There was complete disability, attempts at passive abduction being accompanied by severe pain.

Adhesive plaster dressing: After the preliminary preparation of the axillæ a strip of adhesive plaster about one and a half inches wide and about seven inches long is applied, starting in front of the affected shoulder, continued outward around

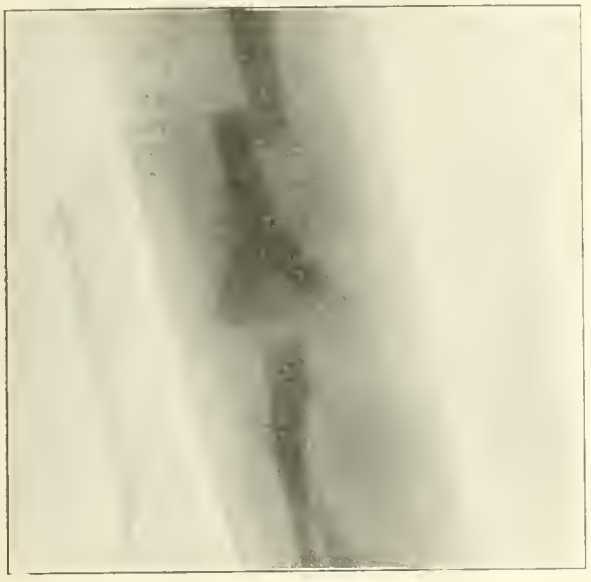

Fig. 6.—Case VI. Fracture of the shaft of the humerus.

the shoulder and then backward and downward over a pad (which is placed between the scapulæ) to the opposite anterior axillary line. It is important to make traction on the affected shoulder and draw it backward while this strip of plaster is being applied. A second strip of plaster, about the same width and length, is then applied, starting from the middle of the arm on the affected side (not completely encircling it) and continued backward (drawing the arm back) to the anterior axillary line on the opposite side. The wrist on the affected side is to be supported in a sling about the neck.

The advantages of this dressing are: (*a*) Its simplicity; (*b*) we can always have the parts under observation without removing the dressing; (*c*) there is very little danger of compressing the blood vessels or nerves.

The dressings are usually retained for a period of ten days, when they are removed and after-treatment is begun. This consisted of massage and passive movements of the shoulder. After a few days active movements and exercises are begun.

In infants and younger children we usually employed the figure-of-eight dressing. In older children it is a good plan to use the adhesive plaster dressing previously described. The time of union in all the cases averaged about two weeks. There were practically no deformities or complications.

The adhesive plaster dressing was advocated by Dr. S. Kleinberg of this city.

Fractures of the Humerus.—Fractures at the upper end.

Of these we had three cases, all fractures of the surgical neck of the humerus. The cause was a fall upon the shoulder. In treating this type of fracture one must always bear in mind that the loss of abduction interferes most seriously with the function of the joint. Hence we have treated these cases with the arm in abduction and retained it there by means of a plaster of paris bandage spica. The spica was removed after three weeks and the patients were discharged after a few days after-treatment, after which time abduction, adduction, and rotation were free and painless. The following is a report of one of these cases:

Case V.—Yetta G., four years of age. Eight days before coming to our clinic, the patient fell, injuring her right shoulder. She was brought to us an account of the loss of function of the shoulder and slight pain.

Examination: Swelling and slight ecchymosis about the right shoulder. The right upper extremity was held limply at the side. Marked tenderness over the upper part of the humerus. Limitation of all movements of the joint, especially abduction.

Diagnosis: Fracture of the upper part of the humerus, confirmed by a subsequent Roentgen ray picture. (Fig. 5.)

Fractures of the shaft of the humerus: There were five such cases in our series. Two of these were in infants where the fractures occurred during delivery; one was in a child who had fallen from a wagon, striking upon his shoulder. In the former two the site of the fracture was near the center of the bone, just below the insertion of the deltoid muscle. The deformities were lateral displacement, the fragments lying parallel (Fig. 7). The lines of fractures of all three were practically transverse. In the two infants there was an accompanying wrist drop, probably due to some injury to the musculospiral nerve at the time of the fracture. This wrist drop gradually disappeared during the first two weeks.

The older child who had fallen from the wagon sustained transverse fracture, without displacement of the fragments. His history follows:

Case VI.—Sam M., eight years of age. One day previous to his visit to our clinic, he fell from a wagon and hurt his left shoulder. He suffered very little pain thereafter. He was brought to us on account of the loss of function of his left shoulder.

Examination: The left upper extremity was held limply by the side, there was swelling of the left shoulder. Crepitus, false mobility, deformity and ecchymosis were absent. All the movements of the shoulder were limited. A line of maximum tenderness was traced running transversely across the upper part of the humerus.

Diagnosis: A diagnosis of fracture of the humerus was made, and a subsequent Roentgen ray picture (Fig. 6) confirmed our diagnosis.

Treatment: Where there was a deformity (as in

Fig. 7.—Fracture of the humerus.

Fig. 7) it was reduced. Then strips of adhesive plaster were passed about the chest fixing the injured arm to the side of the body. The forearm was flexed upon the arm, the hand brought towards the opposite shoulder, the axilla protected by means of boric acid lint, and the fractured humerus pressed firmly against

the lateral chest wall by means of the encircling bands of adhesive plaster.

This method prevents the usual external angular deformities, and has the great advantage both of simplicity and security. This dressing is retained for about a week, when it is removed and replaced by a

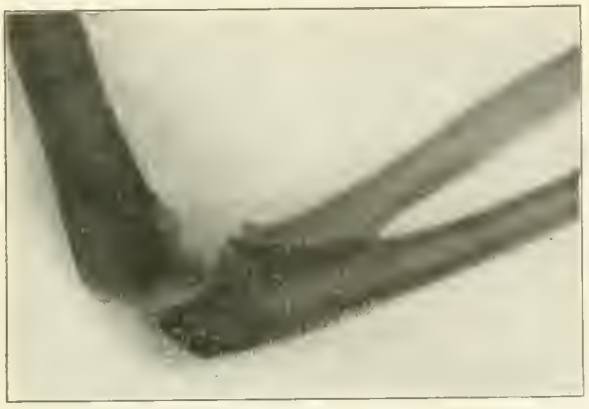

Fig. 8.—Case VII. Fracture of the external condyle of the left humerus.

new one. After another week it is dispensed with entirely. After-treatment was not necessary in these cases, but it is a good plan to give massage and movements to the shoulder before discharging the patients.

(*c*) Lower end of the humerus and in the elbow joint. There were forty-three cases of these fractures, divided as follows: Supracondyloid fractures, 10; internal condyles, 20; external condyles, 10; olecranon process of the ulna, 3.

The supracondyloid fractures were commonly caused by a fall upon the hand, the elbow usually being extended. The fractures were generally oblique, occasionally transverse. Very often there is a displacement backward and upward of the lower fragment. The condyles and the olecranon process were generally fractured by direct violence, as a fall, striking upon the elbow. The torn piece of bone in many cases remains intact, being held there by the periosteum; in other cases it is torn away and displaced (Fig. 9). The fragment may be dislocated in any direction.

The diagnosis in these elbow fractures is very difficult at first on account of the marked swelling and severe pain which are generally present at that time. Motion in the joint is painful and limited, occasionally abnormal mobility and crepitus may be present.

There were three cases of fracture of the olecranon process, all transverse, with slight displacement of the fragments. All responded to the treatment which will subsequently be described.

Case VII.—Anthony D., six years of age, fell and struck on his left elbow. Complained of pain and disability.

Examination: The left elbow was held in flexion at an angle of about one hundred degrees. Deformity, ecchymosis, crepitus and limitation of all movements were present. Tenderness was excruciating and localized to the external condyle of the left humerus.

Diagnosis: Fracture of the external condyle of the left humerus. A subsequent Roentgen ray picture confirmed our diagnosis. (Fig. 8.)

Case VIII.—Sidney E., eight years of age, fell on the outstretched palm of his left hand. This was followed by pain and disability.

Examination: The forearm was held in flexion of about one hundred and twenty degrees. There were swelling and ecchymosis about the left elbow. Deformity, crepitus, and false mobility were present. Tenderness over the lower part of the left humerus was excruciating. All movements of elbow were limited.

Diagnosis: A supracondyloid fracture of the left humerus, with upward and backward displacement of the lower fragment. A subsequent Roentgen ray picture confirmed our diagnosis. (Fig. 10.)

Case IX.—Alfred M., five years of age, fell and struck upon his right elbow. He complained of pain and disability.

Examination: The elbow was held in extension of about one hundred and forty degrees. There were swelling, ecchymosis and tenderness in the region of the olecranon process. Slight crepitus and false mobility were present.

Diagnosis: Fracture of the olecranon process, with a slight upward and backward displacement. Our diagnosis was confirmed by a subsequent Roentgen ray picture.

Treatment: The supracondyloid and condylar fractures were treated by the acute flexion position.

After the fracture has been reduced, the arm is fully flexed, so that the hand on the affected side rests upon the opposite shoulder and the elbow is carried well forward on the chest. In the majority of cases this position keeps the fragments in position. The forearm is now bandaged to the arm by figure-of-eight turns. Before applying the bandage the arm should be dried and powdered and a piece of boric acid lint placed in the elbow crease and axilla to absorb the perspiration and keep the parts dry. The wrist is kept in position by a sling about the neck. It is very desirable to take a Roentgen ray picture after a few days to see if the fragments are in good position. Should the Roentgen ray show a bad position the dressing should be removed and the deformity corrected.

At the end of a week or ten days the bandage is removed and passive movements are begun. In performing passive movements grasp the elbow with one hand and flex, extend, pronate, and supinate the forearm to its full extent. This should be done once only and repeated three times a week. Massage should be given once or twice daily. Grad-

Fig. 9.—Case VII. Fracture of the external condyle of the left humerus; forearm extended. Note the displacement of the fragment.

ually diminish the acuteness of flexion and at the same time lengthen the sling. Flexion must be maintained for at least three weeks. When the limb can be used, exercise should be added. These are described fully by the writer in a previous paper,

"Fractures of the Elbow," MEDICAL RECORD, January 15, 1916.

Treatment of fractures of the olecranon process.—These cases were treated by mechanical means and responded without resort to operation. The

FIG. 10.—Case VIII. Supracondyloid fracture of the left humerus. Note the posterior and upward displacement of the lower fragment.

method used, a very simple one, is one in which a straight plaster of paris splint is placed along the front of the arm and forearm, with a pad in the elbow bend so that the limb is not fully extended. The fragments of the olecranon are kept in position by means of narrow strips of adhesive plaster applied with their center above the fragment and the ends are brought obliquely downward to the sides of the splint below the elbow. The strapping requires daily inspection and frequent renewal. The marked effusion which was present necessitated the use of an ice bag.

Subsequent treatment should be begun as early as possible. The limb is retained in the extended position for three weeks. From time to time the splint is removed and passive movements are given. Care must be taken to avoid separation of the fragments. In spite of this early passive movement there was considerable stiffness, which was eventually overcome by persistent, careful massage, baking, active and passive movements, and exercises. It is very important in giving passive movements to remember that one can aggravate a synovitis of the elbow stretching the limb too vigorously, and in that way produce fresh adhesions and more limitation of function. A good way to prevent this is to stretch the limb within the painful limits, that is to flex the forearm up to the point where the patient complains of pain, and to extend it up to the point where the patient begins to complain of pain repeating within these limits.

Fractures of the Forearm.—There were 92 of these cases, of which 40 were fractures of the lower end of the radius, 20 were fractures of the shaft of the radius, 5 were fractures of the shaft of the ulna, 3 of the olecranon, and 24 were fractures of both bones.

Fractures of the lower end of the radius. The usual cause was a fall upon the outstretched palm of the hand, the elbow being somewhat flexed. Occasionally direct violence was the cause. The site of the fracture was generally about three-quarters to an inch above the articular surface. There were very few that showed any impaction and the deformity in these cases was very slight. Those that were impacted showed the characteristic deformity of Colles' fracture, *i.e.*, the silver forked deformity. Case X illustrates the average type of fracture present in these cases. The history of the case follows:

CASE X.—(Fig. 12.) Daniel P., seven and a half years of age. One day before coming to our clinic the patient tripped and fell on the outstretched palm of his right hand.

Examination: There was marked swelling and ecchymosis on the anterior surface of the lower part of the right forearm. Crepitus, false mobility and excruciating tenderness were present about three quarters of an inch above the articular surface. The movements of the wrist were all limited.

Treatment: If the fracture is an impacted one, complete reduction is essential before any treatment can be satisfactory. Subsequent adhesions and stiffness of the wrist must be guarded against. The adhesions and stiffness result from a tenosynovitis of the tendon sheaths in the neighborhood of the fracture.

Reduction: When possible reduction should be accomplished under an anesthetic. Extension and forcing the lower fragment forward is all that is necessary. Where no anesthetic can be given, reduction is effected by grasping the hand on the affected side, flexing and adducting it until the impaction is undone. Care must be taken to see that the displacement is rectified completely. After the fracture has been reduced, the fragments can be retained in their proper position by grasping the lower end of the bone between the thumb and fingers; the thumb is placed on the back of the wrist and presses the lower fragment forward, while the fingers press the lower end of the upper fragment backward.

Splint: A circular plaster of paris bandage extending from the elbow to the metacarpo phalangeal

FIG. 11.—Case IX. Fracture of the olecranon process of the right elbow. Note the slight backward displacement of the fragment.

joints, that is to the knuckles behind and the transverse crease of the palms in front, is now applied. The fingers should be left unconfined and the patient encouraged to move them, so as to prevent adhesions of the tendons to their tendon sheaths.

The forearm should be supported in a sling. A Roentgen ray picture should be taken as soon as possible after the bandages have been applied, so as to ascertain as to whether any displacement has occurred. If any has occurred the bandages should

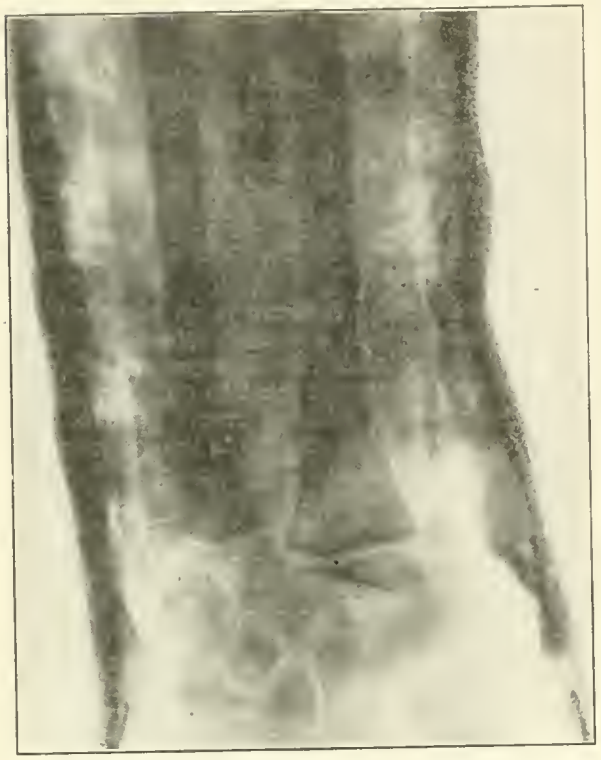

Fig. 12.—Case X. Fracture of the right radius.

be removed, the deformity corrected and the bandages reapplied.

Subsequent treatment: Where the Roentgen ray shows no displacement the bandages should not be removed until the end of ten days. At this time the bandages are cut laterally, so that there are two parts—an anterior and a posterior—which subsequently can be used as anterior and posterior splints. Passive movements of the wrist, combined with pronation and supination, are now begun. Care must be taken to avoid displacement of the fragments. For one week passive movements and massage should be given every other day. After this week has elapsed the anterior splint is dispensed with and massage, passive and active movements of the wrist and fingers given daily. At the end of the third week the posterior splint is dispensed with and the forearm supported in a sling for a few days, when this is discontinued and gradual use of the limb is permitted. Where marked edema and pain remained, baking and persistent massage usually overcame them.

The entire treatment averaged three weeks and the majority of the patients were discharged with no stiffness in the fingers or wrist. There was no atrophy of the thenar muscles, which atrophy we have found in a number of cases sent to us for treatment to overcome the weakness and stiffness of the wrist and fingers. To facilitate early return to the normal, we recommend that the limb be immersed first in hot water for ten minutes, then in cold water for three minutes, followed by massage, using olive oil while massaging. This is to be given twice daily.

Shaft of the ulna. There were five cases. Most of them were at the middle of the shaft and were caused by direct violence.

Shaft of the radius. There were twenty cases of this type, most occurring at the middle of the shaft, the result of direct violence (see Fig. 17).

Fractures of both bones of the forearm. There were a few of these cases that presented a fracture of the shaft of both bones, the site generally being about the center of the shafts. The vast majority were lower down, about an inch above the articular surfaces of the wrist. The former were generally the result of direct trauma, while the latter variety was a result of a fall upon the outstretched palm of the hand. Figs. 13, 14, 15, and 16 illustrate the fractures of both bones, low down, and middle of shafts, respectively. The report of one of these cases follows:

Case XI.—Milton F., six years of age. One day before coming to our clinic he fell, striking upon the outstretched palm of his left hand.

Examination: Swelling, ecchymosis, deformity and crepitus at the lower part of the left forearm. Distinct tenderness over the lower part of the radius and ulna about three quarters of an inch above the articular surface. There was absolute loss of function in the wrist joint.

Diagnosis: Fracture of both bones of the forearm, confirmed by a subsequent Roentgen ray picture (Figs. 13 and 14).

Treatment: As the treatment of fractures of the shaft of the ulna, radius, and both bones are the same it will be discussed under one heading. After reduction of the deformity, if one is present, apply a plaster of paris bandage extending from the middle of the arm above to the metacarpophalangeal joints below, leaving the fingers unconfined. The elbow should be held at right angles and the forearm midway between pronation and supination. The patient should be encouraged to exercise the fingers actively from the very first.

Subsequent traeatment: This dressing is retained for ten days, at the end of which time it is divided laterally, so as to form anterior and posterior splints. These are removed and passive movements and massage to the fingers, wrist, and

Fig. 13.—Case XI. Fracture of both bones of the forearm low down. Anteroposterior view.

elbow begun, care being taken to avoid displacement of the fragments. This massage and passive movements are to be repeated every other day for one week. After that every day, for about a week, active movements and exercises being gradually

added. The splints are gradually discarded and the patient permitted to assume his normal duties.

A few words about the management of fracture of the shaft of both bones. There are two important points to remember in the treatment of these fractures.

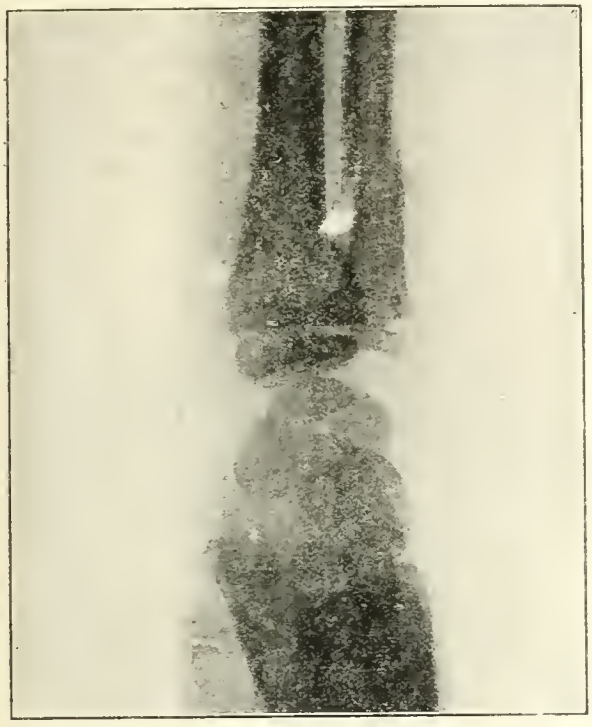

Fig. 14.—Case XI. Lateral view. Note the lateral displacement of the fragments.

1. Ununited fractures of the radius are fairly common, undoubtedly on account of improper fixation of the elbow, movements of pronation and supination being insufficiently guarded against.

Fig. 15.—Case XII. Fracture of both bones of the forearm. Lateral view. Note the deformity.

2. There is a tendency for the four fractured surfaces to be drawn toward one another and union may take place between them with complete loss of pronation and supination. This can be avoided by fixing the forearm so that pronation and supination are impossible. Fusion of fractured ends can be avoided by preventing all lateral pressure on the bones after proper coaptation. To be successful one must obtain proper reduction and proper immobilization. A pad between the shafts of the two bones is unnecessary as it could not separate the bone ends without exerting injurious pressure on the circulation.

The treatment of fracture of both bones low down, as far as the dressing and subsequent treatment are concerned, is the same as that for fracture of the lower end of the radius alone. They have been described fully under fracture of the radius.

Fractures of the Leg.—Shaft of the tibia. There were five such cases in our series. All were of the intraperiosteal variety, being the result of direct violence. Before coming to our clinic they were treated as contusions. The cardinal signs of fracture, namely, deformity, crepitus, and false mobility, were not present. Ecchymosis was slight and

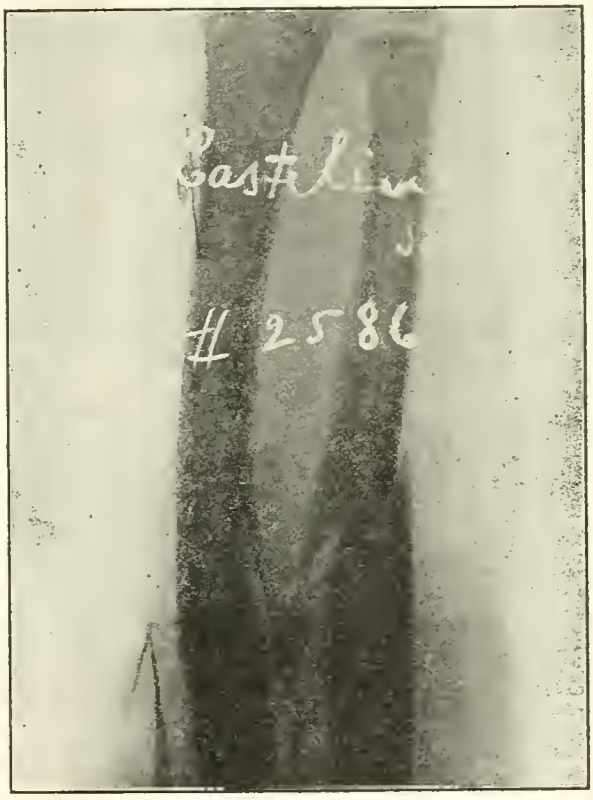

Fig. 16.—Case XII. Anteroposterior view.

appeared late, hence it was of little value in making an early diagnosis. The diagnosis was made by tracing a line of maximum tenderness. There was no loss of function in any of these cases, all having walked to the clinic with very little difficulty, the only complaint being of a slight pain when bearing the body weight on the injured limb and there was also a slight limp.

Treatment: The treatment consists of the application of circular plaster of paris bandages, extending from the base of the toes to just below the knees. After ten days the bandages are removed and passive movements of the ankle begun. The limb is then replaced in the bandages, which are removed daily thereafter for massage and passive movements. After four days the bandages are discontinued and active movements are instituted. These active movements are continued until the normal function of the limb is restored, which is usually within a week.

Fracture of the fibula. There were five cases in our series. One was of the linear type. The others showed a fracture of the lower end of the fibula; in some cases with a displacement backward of the foot. The fibula was fractured from an inch to an

Fig. 17.—Case XIII. Fracture of the shaft of the radius. Anteroposterior view.

inch and a half above the base of the malleolus, complicated in some of the cases, with a tearing away of the internal lateral ligament and the malleolus (Pott's Fracture).

Treatment: It is very important to obtain a very accurate reduction, followed by proper retention. Where possible, an anesthetic should be used. After proper reduction the limb should be fixed with the foot firmly inverted. This is best accomplished by means of a circular plaster of paris bandage extending from the ball of the toes to a point just below the knee.

We begin massage and passive movements early, and in that way we obviate the possibility of stiffness of the ankle. Owing to the readiness with which displacement recurs, the greatest care must be taken to fix the fragments while the joint is moved.

After about two weeks the plaster of paris bandages are cut laterally so that they can be used as anterior and posterior splints. Massage and passive movements are then begun. The limb is then replaced in the splints, which are removed daily so that massage and passive movements can be given. After one week of this treatment active movements are gradually added. The massage, passive and active movements should be given for three weeks before the patient is permitted to bear the body weight on the injured limb. If the body weight is borne too soon, the strain may produce a persistent condition of valgus.

It is a good plan after the patient is permitted to walk, to prescribe shoes with an eighth to a quarter of an inch lift on the inner side of the sole and heel. This shoe is similar to the one which we prescribe for weak feet and has proven of value in the subsequent treatment of Pott's fractures. These shoes are made for us by Mr. Max Deutsch of this city.

Where through faulty treatment a persistent valgus results and where the valgus is not overcome by the shoe alone, it may be necessary to supplement the shoe with strapping and later with a Whitman brace.

The patient should not be discharged until all movements in the ankle joint are free and painless. This is usually about six weeks after the onset of the injury.

Summary and Conclusions.—1. In treating fractures in children and infants one must always bear in mind the tender skin of the infant, its round agile body, and the movable cover of fat which envelopes the soft bones.

2. The tendency to heal is much more intense in children than in adults, the time of union is much

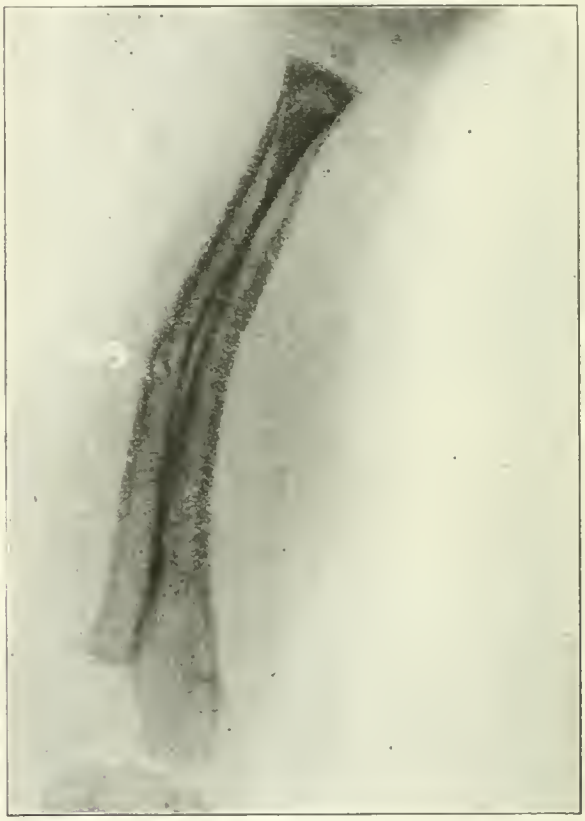

Fig. 18.—Case XIII. Lateral view. Note the deformity.

shorter, and immobilization should be of shorter duration.

3. A certain percentage of fractures in children do exist with the cardinal signs of fracture lacking, the diagnosis being made in these cases by tracing the point or line of pencil or maximum bone tenderness.

4. Where following an injury children refuse for any length of time to use a limb, especially if their attention is distracted from the injury, or when they are at play, bear in mind the possibility of a fracture.

5. One must always bear in mind the necessity of proper retention, as it is just as important as proper reduction in securing favorable results.

6. Early massage, passive and active movements are very important adjuncts in securing satisfactory results.

7. I wish to express my indebtedness to Dr. Samuel Kleinberg for his kind suggestions, and Dr. Jacob Bower for the Roentgen ray pictures.

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WOMAN'S DUTY IN THE ANTITUBERCULOSIS CRUSADE.*

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It is not an easy task to say in fifteen minutes what can be done in the antituberculosis crusade by the woman, poor or rich, married or single, young in years and experience, or rich in experience but young in heart, because her sympathies go out to her suffering sisters and brethren. I have, therefore, written down what I have to say so as not to overstep the time limit and so as to express at least the essential part of what I have in mind on this subject.

Every American woman should know that her sex does not disbar her from exercising the best qualities as a worker for the common good. Although she is not as yet privileged in all our States to have a direct voice in making the laws, she is required to obey. Her duty in the combat of tuberculosis, the disease of the masses, is primarily to acquire knowledge; secondarily, to use this knowledge for the prevention of the disease, and, thirdly, to render whatever personal service she can for both prevention and cure. She should know that in spite of all our efforts we are still losing annually well-nigh 200,000 people from tuberculosis in the United States; that of these nearly 50,000 are tuberculous children, and these children, figuring their average length of life at 7½ years and their cost to the community as only $200 per annum, represent a loss of $75,000,000. Such children have died without having been able to give any return to their parents and the community. Besides all this, many a tuberculous mother has had her life shortened because she bore one of these children.

The annual economic loss caused by the death of 150,000 adults, most of whom have died between the ages of 15 and 45, when their earning capacity should have been greatest, in addition to their maintenance during their years of illness, amounts to about $900,000,000 annually. Every woman should know that in spite of the great prevalence of the disease, and this fearful death rate, tuberculosis has been declared again and again by the highest medical authorities to be preventable and curable.

Women can help in the prevention of the disease by bearing in mind that although it is very rarely directly inherited, the tuberculous parent nearly always transmits to his or her offspring a weakness, a physiological poverty, which predisposes the children not only to tuberculosis but also to other diseases, particularly those of infancy and childhood. When in addition to its inherited weakness the child is exposed to close contact with the tuberculous father or mother, postnatal infection is sure to follow. For a tuberculous person in the active stage of the disease to kiss a child or to expose it to the spray ejected during a coughing spell (droplet infection); to have the child use the same spoon or cup used by a tuberculous individual before these utensils have been thoroughly cleaned; to expose the child to the inhalation of tubercle bacilli laden air, that is to say, to the inhalation of tuberculous dust coming from the dried and pulverized matter coughed up by the consumptive; or to feed the child milk from tuberculous cows, are some of the many ways by which the child born free from disease may surely become tuberculous.

What can women do to overcome these sources of infection? One thing is not to marry when actively tuberculous or in danger of becoming so, and not to marry a tuberculous man. If tuberculosis develops in either parent after marriage they should seek the advice of a competent physician, for if birth control ever has a *raison d'être*, it seems to me that it is when the parents are actively tuberculous, and particularly the mother; for in such instances prophylaxis not only means the prevention of a child coming to this world destined to invalidism, but it also means the saving of the life of the mother who so often succumbs as the result of the strain of the child-bearing period when she is herself afflicted with tuberculosis.

If there are already children in the family, they can be protected by scrupulous care and may remain healthy and strong. This care must consist not only in avoiding the above-mentioned source of infection, but by developing the child into a physically strong being which can resist the invasion of the tubercle bacillus. The mother should make an open-air baby of each of her children, feed them carefully and plentifully, keep their skin scrupulously clean, following the warm bath for the babies with a rapid rubbing with her hands dipped in cold water. The open-air kindergarten and the open-air school are the only proper places to educate a child predisposed or exposed to tuberculosis. Teach such a child breathing exercises; do not bundle it up, but dress it comfortably according to the season. At the time the girl grows into womanhood do not compress the organs in the chest and abdomen by tight lacing. It goes without saying that the mother, in no matter what station of life she may move, should also dress sensibly, and never again wear the trailing skirt which collected from the sidewalk tuberculous sputum and dirt containing the germs of diphtheria, pneumonia, and consumption, to be later on deposited on the carpets of the children's playroom.

A child born with a tuberculous predisposition should always sleep, if not in the open, at least in a window-tent or in a bed moved near the open window. Mother and teacher must watch such a child, and for that matter all children, to see that they do not overdo in physical and mental exercises. Our boards of education—and you women should always be represented on such boards—should see to it that the mental training of our children is not carried on to an extent to impair their healthy, vigorous physical development. To my mind in many schools there are too many useless studies, too much cramming, too much homework, and not enough play, outdoor life, and outdoor instruction. Let singing, recitation, geology, botany, and physical training alike for boys and girls, weather permitting, be carried out always in the open, and last but not least let the open-air school become the rule and the indoor school be the exception—at least for the lower grades. You would be surprised how much less tuberculosis, and other infectious and communicable diseases of childhood, we would have among children and how much better they would be prepared for civic and, if necessary, for military duty, and how much higher type

*Read by invitation before the General Federation of Women's Clubs, at their Biennial Conference in New York City, May 30, 1916.

of American men and women this change in our old-fashioned curriculum in the public schools would bring about.

Besides individual and family hygiene, outdoor life, and physical training, we must also have hygienic factories, workshops, stores, and offices, and must prevent overwork and malnutrition. It is obvious that these reforms must be obtained through legislation. But, alas! woman is as yet not a legislator. Nevertheless, you women of influence and power can do a great deal even before you are legislators. Make your influence felt so that dark bedrooms, congestion, overcrowding in cities and country, unsanitary workshops and sweatshop shall be done away with. Oppose with all your might that curse of child life known as child labor, which is still permitted in many States, be it said to the disgrace of our nation. Do not patronize industrial concerns when you know that their policy is to underpay and grind down your unfortunate sisters and brethren.

Our great Surgeon-General W. C. Gorgas was recently asked what he regarded the most important health sermon he could think of. I know that I cannot honor my illustrious friend, teacher, and superior officer better than by quoting before this distinguished assembly of American women his exact answer to this question: "I believe that all health officers should turn their attention to those measures which would tend to increase the wages of the poorest class of laborers. I favor that, as one of the basic cures of existing health evils, because it will have the effect of producing more thoroughly good sanitation than any more direct measures they adopt. How can the laborer earning $500 a year learn the benefits of good sanitation? He and his family must sleep in one little squalid room; the wife must cook and wash and the family must eat in the other room. It does not matter how much you would teach the process of sanitation, nor how much learning they receive on the subject of preserving health and preventing disease, it wouldn't do any good, because he hasn't the facilities to carry them out. But give him a better wage, so that he can add another room and remove the congestion and the breathing of the whole family in one sleeping room, and then you go to the very foundation of the health problem."

There is little for me to add to this message except to say that it should have been addressed not only to the health officers but to all physicians; not only to them but to all the men and women of the nation. Let me say in passing, and I believe I do not violate any confidence by making the statement, that our dear Major General Gorgas is a single taxer and I, too, consider myself an humble disciple of "Saint" Henry George. Higher wages, better feeding, and better housing will do away with much disease and misery. I venture to say that it will even help to combat alcoholism, for let it be remembered that the overcrowded, underfed, and badly housed laborer often seeks comfort and consolation in the cup so that he may forget his misery. But even as things are now, a great deal can be done by those of you who really wish to help in the prevention of both the direct and indirect causes of tuberculosis. The underfed school children should be able to purchase a substantial luncheon which can be furnished for very little cost; paying even ever so little for it will prevent pauperization.

Besides seeing that the underfed children receive at least one good meal while attending school we should provide also more playgrounds, small parks, and breathing places for them. Where land is expensive, as, for example, in our great City of New York, there are the thousands of acres of roofs that could be transformed into playgrounds and breathing places for children and tired-out mothers. Multiply public baths and see to it that swimming is made a part of the curriculum of every school and catastrophes like the Slocum disaster of twelve years ago will be accompanied by less loss of lives. See to it that more comfort stations are installed in our great cities.

Now, as a last word, what can you do toward the cure of the disease? Bear in mind that although I have said tuberculosis is curable, it is not curable in all stages. It is when the disease is recognized in the early stages that the tuberculous patient has the best possible chance of recovery. Let every mother remember the early symptoms: a long-continued cough, loss of flesh, a little fever in the afternoon, a little chill in the morning, frequent hoarseness, easy tiring, great susceptibility to catching colds, increased irritability, little streaks of blood in the sputum. These symptoms are often indicative of an approaching pulmonary tuberculosis. When in addition to some of these symptoms, even if no cough is present, you notice swelling of the glands or joints, lameness or difficulty in walking, running of ears, frequent nasal catarrhs, flabby skin, a general anemic appearance and pain on pressure over enlarged joint, the child is probably suffering from a local tuberculosis. Early discovery and timely and judicious treatment may prevent the child from becoming a cripple for life.

Any one, father, mother, relative, or friend, noticing the just mentioned symptoms in any individual, should endeavor to bring about a careful examination which may be the saving of a valuable life.

What else can the woman of power, wealth, and influence do in any community toward the cure of a tuberculous patient? Aid the community, in which there are not sufficient tuberculosis dispensaries, special hospitals, preventoria, and sanatoria for tuberculous adults and children, to establish these institutions and see that they are well equipped, well managed, and the patients well taken care of. There should be no uncared-for tuberculous patient in any civilized community. The untrained and uncared-for tuberculous individual, whether he lives in a palace or in a tenement house, in a first-class hotel or a lodging house, will constitute a center of infection. There are not nearly enough institutions for the care of the tuberculous in the majority of our cities and towns. Melbourne in Australia has given us the example by the community taking care of all tuberculous patients who cannot be or are not properly taken care of at home, and by enforcing all reasonable, humane, and sanitary precautions to prevent the further spread of tuberculosis. This disease, heretofore considered the most prevalent and most fatal, the City of Melbourne has succeeded in eradicating. Of course, Australia is a country where woman does not reign supreme, but where she is the equal of man. She labors and works for the good of the community side by side with man. I hail the day when her position in this country will be the same. But in the meantime she can do much by promoting all movements which tend to better the condition of the child and her less fortunate sister, the woman

of the laboring class, and thus help both directly and indirectly in the combat of tuberculosis.

I have only been able to give you some hints as to how you can help. But I am aware that you are all familiar with the opportunity for service which is offered in almost every field of human endeavor to the woman who truly wishes to be helpful. One of our greatest philanthropists, a man who has given away millions for the betterment of his kind, the venerable Andrew Carnegie's favorite saying is, "Service to man is the highest service to God." To modify this for the occasion, I would wish to say that the service which the modern woman, that is to say, the woman of highest ideals, imbued with the greatest desire for service to her fellows, is destined to render to mankind, is nothing less than the salvation of the human race. Woman once in the council of city and State, there will be less social injustice, disease, and pestilence; woman once in the council of nations, there will be, it is hoped, no more desolation and no more war.

16 West Ninety-fifth Street.

THE REQUIREMENTS OF THE GONOCOCCUS FOR ITS NATURAL AND ARTIFICIAL GROWTH.

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The successful growth of the gonococcus on artificial culture media is one of the most uncertain procedures with which the average bacteriologist has to deal. A few men, after careful study of the subject, have had uniform results in obtaining scanty growth on special media. Carrying out the directions of these men, others have had little or no success. From this it would seem that some variation must exist in the different food ingredients as well as in the environmental influences recommended as necessary for the artificial growth of the organism; and that up to the present time we have found no medium which may be used by all investigators with satisfactory results. Because of the present demand for complement fixation tests and vaccines, as well as a necessity for further study of the organism itself, a uniformly successful growth of the gonococcus is absolutely essential.

This paper is based upon preliminary work which has been done in an endeavor to answer the following questions:

A. Why should the gonococcus grow so rapidly and abundantly in the human urethra, and on other mucous membranes of the body, and not at all in the test tube on ordinary media, and only fairly well on special media?

B. What is the essential constituent of the human body which is necessary for the growth of the gonococcus?

C. How can we best take advantage of this necessary material in artificial media?

The subject is divided; the first part dealing with the requirements of the gonococcus for its natural growth, while the second part has to do with the requirements of this organism for its artificial development outside the body.

No extended discussion is necessary as to the requirements for the natural growth of this diplococcus. It is common knowledge that the mucous membranes of man or woman are the sites of predilection for the development of the gonococcus. The mucous membranes of the male and female genitals and their adnexa are the ones usually involved, although in rare instances gonococcus infection has been noted on the membranes of the mouth, nose, ear, conjunctiva and rectum. The infection is common, also, as a secondary process in joints and tendons. The organism in the human body, as is demonstrated by its prodigious growth, finds what it needs in regard to moisture, uniform temperature, proper chemical reaction, and specific food substances. As regards the environmental conditions of light, temperature, reaction and moisture, the gonococcus should find what it needs in the lower animals, with the possible exception that the normal temperature of some animals may run from one to three degress (centigrade) higher than that of man. Growth of the gonococcus and typical gonorrhoea have practically never been found in the genitals of lower animals, as a result of natural infection or artificial inoculation. It hardly seems reasonable that the slightly higher temperature in these animals is sufficient to always inhibit the growth of the gonococcus. It is evident that the important thing which the gonococcus needs for its growth and multiplication is probably a specific food substance, and that this is present in the human body but absent from or in a different form in the body of lower animals. The only other explanation is that there exists in the lower animals some substance, or substances, of a metabolic nature which antagonize and inhibit the gonococcus in its growth, and that these substances do not exist in the human body.

Of the principal food substances which occur in the human body upon which bacteria may thrive, there is none more important than protein material. We know that a certain amount of protein is necessary in artificial media for the growth of most microorganisms. Bacteria seem to differ as to the kind of protein required. Most organisms are not concerned over the special quality of protein needed and will grow with simple proteins from various sources as food. A few bacteria seem to require something more than simple protein. It appears that the chief food substance which the gonococcus requires is protein in nature, that this protein is more complex than simple protein, and that it has special qualities characteristic of man and not of lower animals. (The study of precipitation reactions has demonstrated that there are definite biochemical variations between even the same proteins of man and of lower animals.)

According to recent classification, proteins may be divided into three groups: (1) Simple proteins; (2) conjugated proteins; (3) derived proteins. Members of the first group are always found in the body as constituents of muscles and blood serum, and tissues in general. Conjugated proteins are more complex and consist of a combination of protein and a non-protein substance. Combinations of protein with a carbohydrate or its derivatives are known as glucoproteins, or glycoproteins. Nucleoproteins are combinations of protein and nucleic acid. The other conjugated protein of importance is hemoglobin, a combination of globin and hemochromogen, the latter being an iron-containing substance. The third group, or derived proteins, we will not here consider.

It will be noted that the conjugated proteins are characteristic of certain localities and tissues of the body, while the simple proteins are much more general in their distribution throughout the body

tissues and cells. It has been found also that there are specific differences between the conjugated proteins of man and lower animals, as well as between the simple proteins of man and animals.

Let us fix our attention on the exact localities where the gonococci grow in the human body. The mucous membrane is the best soil, and membranes upon which the larger mucous glands open is the best field, while small areas surrounding the openings of these glands, or even inside the glands, are the spots where these gonococci grow the most luxuriantly and persist for the longest time.

Gonococcus infection may be classified under two heads: (1) Primary; (2) secondary. Primary infection is almost always confined to the mucous membranes which open to the external surface of the body, such as the urethra in the male, the vulva, urethra, vagina in the female, and the conjunctiva, rectum, mouth, nose, and ear in both sexes. As a rule infection takes place by direct contact of the diseased mucous membrane, and its infectious secretions, with an uninfected mucous membrane. Secondary infection is spread by either (*a*) direct continuity of mucous surfaces and direct extension to other tissues and organs (a more or less localized process), or (*b*) a general systemic infection. It should be mentioned that the usual sites of primary infection may be involved in a secondary way. Cowperitis, prostatitis, epididymitis, in the male; Bartholinitis, metritis, salpingitis, ovaritis, peritonitis, in the female; periurethral abscess, cystitis, and nephritis, in both sexes, are illustrations of the first group of secondary infections, while septicemia, pyemia, endocarditis, and arthritis are examples of systemic infection.

What specific substance in the body, common to all these localities, serves the gonococcus for its growth? It has been stated above that this substance is probably protein in character. What protein is characteristic of epithelial mucous membrane and glands (as well as of their secretion, mucous) and is present in variable amounts in connective tissue (as found in tendons), and in cartilage (as found in joints), as well as in blood and synovial fluid? Although other proteins are present, it seems to the writer after a careful study of the subject that human glycoproteins, especially the human mucins and related compounds, are the specific substances which the gonococcus requires for its growth in the body. As mentioned above, the glycoproteins belong to the class of conjugated proteins and have a protein group and a non-protein group, the latter being a carbohydrate or a derivative of a carbohydrate. This carbohydrate compound was the first to be isolated from an animal tissue and is called "glucosamin." It is a nitrogen-containing derivative of dextrose. Of these glycoproteins, the mucins and mucoids are the most important for our consideration.

The mucins and mucoids are acid in character, contain no phosphorus, have a low carbon and nitrogen content, a high percentage of oxygen due to the carbohydrate group, and an increased amount of sulphur. The amount of carbohydrate may vary to a great extent. Unlike most of the other proteins the mucins and mucoids are not coagulated by heat. They may be precipitated by acetic acid and are only slightly soluble in an excess of acid. True mucins are derived from epithelium, while mucoids are derived from connective tissue. "True mucins are found," as Mann says, "in most of the slimy fluids of the body. They are excreted by the goblet cells on the surface of mucous membranes and by the larger mucous glands which are found in different parts of the body." Besides its presence in the secretions of the above-mentioned cells and glands, mucin is found in bile and a so-called "pseudomucin" is found in ovarian cyst contents. This pseudomucin differs from true mucin in not being precipitated by acetic acid. Of the connective tissue mucins, or so-called "mucoids," the ones which most resemble true mucin, are the mucoid in tendons, the "osseomucoid" in bones, the "chondromucoid" in cartilage, and the mucoids of the cornea, vitreous humor, and umbilical cord. Embryonic and young connective tissues in general have rather high percentages of mucoid substances. The white of egg contains a considerable amount of a glycoprotein called "ovimucoid." A mucoid is also found in human blood serum and urine. Investigators have found variable amounts of mucoid in ascitic, hydrocele, and synovial fluids, and have given to it the name "serosamucin."

Is it not of considerable significance that where mucins and mucoids are present in greatest amount there we find the gonococcus thriving the best? Is it not because of the mucin or mucoid present that the gonoccoccus grows readily on mucous membranes (especially in the genital tract where additional large mucous glands are found), as well as on the conjunctiva, cornea, and vagina in infants (where cells are greater in number and connective tissue is still more or less mucoid in character), and in tendons, cartilage, and synovial fluid?

Now that the *theoretical* requirements of the gonococcus for its natural growth in the human body have been considered, let us proceed to a brief discussion of the *practical* requirements for its growth in artificial media.

It is a fact that the gonococcus will not multiply in our ordinary culture media which contain simple animal proteins, and that our best artificial culture media for this diplococcus are largely composed of those human fluids, such as ascitic, cystic, or hydrocele fluids, blood-serum, or urine, in which these human mucoid substances, of the conjugated protein group, are found to a greater or lesser extent. Another suggestive fact is that by adding glucose to any medium its value as a soil for the growth of the gonococcus is considerably enhanced. We have already stated that a carbohydrate, glucosamin, is characteristic of mucins. Even egg-white, which contains considerable ovimucoid, has been used by investigators with some success in growing this micrococcus.

Like other bacteria, the gonococcus requires a certain amount of moisture for its proper development. Its resistance to drying, as well as to light, variations in tempeature, and other external conditions, is rather less than that of most bacteria. Authorities differ as to the extremes of temperature which the gonococcus may stand. The temperature of the body is probably the best for its growth. The upper extreme is generally given as anywhere from 38° C. to 42° C., while the lower extreme varies from 25° C. to 30° C., according to different workers. Most bacteria require a neutral or slightly alkaline reaction in artificial media. A few seem to grow best in an acid medium. Varied advice concerning the best reaction for the gonococcus is met with, although the consensus of opinion seems to indicate that a slightly acid reaction to phenolphthalein, or a neutral or faintly alkaline reaction to litmus is the most desirable.

To determine further the value of human mucins and mucoids as specific food substances for the gonococcus, the writer has been carrying on preliminary experiments, using human umbilical cords as the source of human mucin for artificial media. So far as the work has gone, the results are encouraging, though not complete enough for publication at this time.

ESOPHAGEAL STRICTURE.

By HENRY FRENCH GOODWIN, M.D.,
AND
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A CASE of impassable stricture (esophageal), reported in the *Journal A. M. A.* April 15, 1916, preceded by the caption "of interest because of the age . . . and the medical things devised in the case, which may be of help to others," leads us to report the following case.

The case we present is not unknown to the staffs of Wesley Memorial Hospital, of the Children's Memorial Hospital, of the Charity Hospital, and of the Chicago Postgraduate Hospital, where the patient received treatment. The case, after recovery, was presented before the South Side Branch of the Chicago Medical Society some years ago. The patient is alive and in good health. In stature he is not below the average for his age.

Lawrence R., then aged three years, drank lye some time during the summer of 1909. He was attended by Dr. H. F. Goodwin during the month of January following and thereafter. Dr. A. B. Kanavel was then brought into the case. He performed a gastrostomy. Through the ventral opening the patient was fed liquid food through a tube for many months, as the esophagus had become impassable to all food solid or liquid. Even colors in solution failed to appear in the stomach by way of the stenosed esophagus. Men skilled in the use of the esophagoscope were not successful in their efforts to penetrate the stricture. Dr. Goodwin then invited Dr. Keogh to join him in the case as his colleague, and together they went to work to try and save the little patient.

The child was given an anesthetic. Failing with other methods, a Fenger flexible sound was passed by one of us through the adventitious opening in the stomach, through the cardiac opening and up through the stricture to the fauces. A silk thread was tied to the tip of the sound and drawn down and out through the opening in the stomach. This thread was kept in situ, until a better substitute was found—one which a child could not sever by biting—a piece of soft flexible rubber-covered braided tinned copper wire, in caliber about the size of wrapping twine. The Abbe saw was not used. Knots and small spheres were drawn through the stricture from below upward. Later, cylinders, modified with hemispherical ends, were used. There was some difficulty in slowly dilating the stricture by this retrograde method. There was also considerable difficulty in passing the dilator through, from above downward by this traction, even after the stricture was fairly well dilated, and upon the whalebone or flexible shaft commonly used all of the so-called olive tips which were tried, from above, failed to pass the stricture. It is to explain the form of tip then used by us, with success, that this article is written. These tips were home-made, of brass, plated. The mechanics of the idea will appeal to the good sense of anyone.

It had been shown by radiograph that a small diverticulum above the stricture possibly impeded the progress of the olive-shaped tips of general usage. So one of us made a tip in the form of a simple cylinder. Upon a flexible shaft, from above, this made a triumphal journey through the stricture to the stomach and back again. After that the conduct of the case was quite simple. The gastrostomy opening was allowed to heal by granulation. From time to time, for several months, the stricture was dilated. During the treatment we used oxychloride of bismuth and olive oil. At no time was the treatment severe enough to cause the child discomfort. He learned to swallow the cylinder fastened to a flexible shaft—a Fenger flexible exploring sound was made to fit the purpose—the cylinder passed on down to the stricture. Then a piece of piano wire was slipped into the lumen of the sound and the cylinder was gently forced through the stricture.

A pointed olive tip seeks the posterior wall of the esophagus and probably engages the cul-de-sac of a diverticulum; while a cylinder, of proper size, will pass through a stricture complicated by a small diverticulum, for the reason that a cylinder throughout its length has a bearing surface upon the posterior wall of the esophagus and tends to maintain its axis parallel to that of the esophagus.

The literature is replete with cases of esophageal stricture. Perhaps the reports of Guisez in the French literature are as complete as one would wish to find, though the complete record of such cases is not without value. Guisez had reported, at the time this case was presented before the medical society, thirty-five cases. Of these, twenty-eight strictures were the result of caustics. The ages of his patients varied from twenty-one months to sixty-four years.

"Electrolysis Circulaire" was his favorite method of treatment, which, as far as we know, is not extensively practised in this country. Twenty-eight of his reported cases were complete recoveries.

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REPORT OF A CASE OF ADIPOSIS DOLOROSA.

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THE following case seems worthy of a brief report.

S. T., a country girl, single, aged twenty-two, accustomed to general housework.

She had always been robust, but at the age of sixteen gradually took on an increase in weight. At this time she began to have pain in the abdomen similar to that she now complains of. She was taken to a hospital and operated upon for gallstones and appendicitis. She had the usual diseases of childhood. She is the oldest of six children, all of whom are living. There was a vague rheumatic and tubercular history on the paternal side and a nervous history on the maternal side. Specific history could not be ascertained.

She had been confined to her bed for six months previous to her admission in January, 1916, to my service in the infirmary. She refused to try to sit up or work. Her mental condition did not allow any expressions other than pain, which she complained of day and night, and at all times referring to her left abdomen. Her sleep was of short duration only and she moaned almost constantly. She refused to eat except in very modest amounts of liquids. She would not talk.

On examination she showed a ruddy complexion and an extreme degree of adiposity. This fat was evenly distributed over the body, but hanging in huge folds on either side of the abdomen, thighs, and arms. Her weight was 262 pounds, height 5 feet, 3 inches. Her head was constantly turned to the right side. The eyes showd a marked exophthalmus with Stellwag's sign. The teeth were covered with sordes and her tongue was badly coated and breath foul. No enlargement was made out of the thyroid, neither could there be of any other glands.

Her abdomen showed a large scar from the appendical region nearly to the costal margin. Nothing could be felt through the enormous fat layers which were as tumefactions on each side of the abdomen. On the left side she complained of pain on the lightest palpation. Another obvious change in her appearance was due to the adiposity of her hands and feet, greatly enlarging their size and giving them a fan-shape appear-

ance and especially enlarging and flattening their distal ends.

The heart and lungs were negative. Vaginal examinations showed no abnormality of the sexual organs. The reflexes in the lower extremities were depressed. She appeared to have full motor power, but refused to use it, even in an effort to move herself in bed, lying always in the same position. Some soreness was complained of when pressure was made over the deep nerves. Her blood-pressure was normal. The urinary excretion was not increased and examination of it was negative.

The temperature was 98.5° in the mornings; 99.6° in the afternoons. The pulse varied from 80 to 96 and was regular. Hemoglobin was 75 per cent., white blood cells, 6,000; polymorphonuclear, 73 per cent.; small lymphocytes 18 per cent., large 9 per cent.; eosinophiles, 2 per cent.; malaria negative. Skiagraphs of her head did not reveal anything that could be interpreted as a tumor or abnormality. Wassermann and luetin reactions were negative.

When the diagnosis of adiposis dolorosa had been made she was given increasing doses of thyroid extract, but without effect. Opiates at times were resorted to. She was fed only by forcing.

After a time she was given daily doses of pituitary extract hypodermically. Improvement began by the end of the first week. The mental apathy was seen gradually to disappear, the exophthalmus became less and less severe, her pain was moderated, the tongue cleared, and she began to eat with a fair appetite.

No other medication except necessary purgatives were given and in two weeks she began to walk. At the expiration of the seventh week she left my care, at which time she complained of no pain.

Suggestions were given her home physician to continue the treatment and later advices received from him inform us that she has gradually decreased in size, works as a normal girl, and her mental condition has greatly improved.

This case is reported because of the possibility that she may have been operated upon six years previously for the same conditions which she has recently had, namely; adiposis dolorosa with the customary painful fatty tumors (Dercum's) and that there were no gallstones or appendicitis as supposed.

Again there was a close relationship between the thyroid and pituitary gland as evidenced by the physical findings.

Finally, the administration of pituitary extract gave almost immediate and continuous improvement until the present, but the future outcome, of course, is questionable.

Woodward Building.

Medicolegal Notes.

Insufficient Evidence of Malpractice in Treating Fractured Arm.—In an action for malpractice, it appeared that on January 25, 1911, the ulna of the plaintiff's right arm was broken by the kick of a horse. After receiving emrgency treatment he placed himself in the defendant's care. The negligence claimed was that owing to the defendant's lack of care and skill, the fractured bone failed to unite, and also that he failed to discover that the radius was dislocated at that time or later during the treatment. On January 26, after an examination of the fractured arm with a fluoroscope, the defendant set the arm, using splints to retain the broken bone in place. On the following day he discovered that it would be necessary to wire the fractured ends of the bone and had the plaintiff go to a hospital, where the operation of wiring was performed by the defendant. After the operation, the defendant dressed, bandaged, and otherwise treated the arm until March 29, when the plaintiff consulted another doctor, Dr. Rowley. The plaintiff's evidence was to the effect that Dr. Rowley found a dislocation of the radius; that there had been no union of the fractured bones; that the wire used in securing it had broken, and that pus had developed in the wound, all of which conditions, except the formation of pus in the wound, were indicated by an X-ray photograph of the plaintiff's arm taken on that date. At this time the plaintiff placed himself in the care of Dr. Rowley, who treated the injured arm until about May 1, when he and Dr. Lewis operated by cutting off the head of the radius, declared necessary in order to reduce the dislocation, and reset and wired the fractured bone, which, however, as under the defendant's treatment, from some cause unknown to Drs. Rowley and Lewis and contrary to their expectations, failed to unite. This evidence merely showed what the defendant did professionally, but there was no evidence that there had been a want of ordinary care on the defendant's part. Not only so, but the evidence of both Dr. Rowley and Dr. Lewis, who were the only witnesses called for the plaintiff competent to testify whether the defendant had exercised reasonable care and skill, was to the effect that the nature of the fracture was such as to demand the wiring of the bone, and that the wire used was such as surgeons generally used in such cases; that in operating upon the fracture they used like wire, which likewise broke in the adjusting.

No evidence was offered showing that, if the dislocation of the elbow existed at the time the defendant undertook the treatment of the fractured arm, the defendant was negligent in failing to discover it. So far as appeared, he was called upon to set the fractured bone. No intimation was given him of injury to the elbow. Whether or not he should, under the circumstances, in the exercise of ordinary and reasonable care and skill, have discovered such condition, assuming it to have existed, was a question for expert testimony, and none was offered. Conceding that Dr. Rowley, as stated by him, had no difficulty on March 29 in discovering the dislocation, nevertheless this fact did not show a want of ordinary care and skill on the part of the defendant in failing to discover it, since Dr. Rowley, by reason of superior learning and advantages, may have been a man possessing far more than ordinary skill in his profession.

It was held by the court that the evidence wholly failed to show any lack of care and skill on the part of the defendant in setting and treating the fractured bone of the plaintiff's arm, and also failed to show when the dislocation occurred, or that a physician in the exercise of ordinary care and skill, in treating the plaintiff, should under the circumstances shown, have discovered the dislocation and treated it.—Houghton v. Dickson (Cal.) 155 Pac. 128.

Chiropractors Must Be Licensed.—A chiropractor held himself out as being able by adjusting the bodies of his patients to enable them to throw off disease, but sedulously refrained from calling his operations treatments, and notified his patients that he was not a doctor or physician. Texas Penal Code, 1911, Article 750, declares that it shall be unlawful for anyone to practise medicine in any of its branches upon human beings who has not registered in the district clerk's office of the county in which the resides his license for so practising, while Article 753 declares that any person shall be regarded as practising medicine who shall publicly profess to be a physician or surgeon, or shall treat or offer to treat, any disease or disorder, mental or physical, by any system or method, or to effect cures thereof, and charges, directly or indirectly, money or other compensation. The Texas Court of Criminal Appeals held that the accused, who collected fees for his adjustments, not having procured the required license, was guilty of practising medicine without a license.—Teem v. State (Tex.) 183 S. W. 1144.

Evidence in Malpractice Cases.—The plaintiff in an action against a surgeon for negligence in unsuccessfully grafting skin to an empty eye socket for the purpose of permitting the use of an artificial eye, has the burden of proving that the operation was negligently and unskillfully performed. A verdict for the defendant was held to be sustained by evidence that twenty-four years before a similar operation had proved unsuccessful, as did also two other operations which had been performed after that of the defendant.—Nye vs. Clark, 193 Ill. App. 505.

Liability of Charitable Hospitals. — In Pennsylvania the law is well settled that a charitable hospital for the care and treatment of the diseased and injured and its trustees charged with the management thereof are not liable for the negligence of a nurse in administering poison to a patient by mistake, the nurse not being incompetent, nor the corporation or its officers negligent in selecting her. This doctrine seems to be in harmony with the decisions in the federal courts.—Paterlini v. Memorial Hospital Assn. of Monongahela City, 229 Fed. 838.

MEDICAL RECORD.

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ACUTE ANTERIOR POLIOMYELITIS.

THE present rather serious epidemic of acute anterior poliomyelitis in this city again calls attention to our ignorance regarding the nature and mode of spread of this scourge of childhood. The disease, although its causative agency is not known, behaves very much like an acute infectious disease, and, indeed, it is almost universally accepted that it is of germ origin. Inoculation experiments carried out by many workers, by Flexner and Lewis of the Rockefeller Institute and others, have been successful in passing the disease to animals, but not in finding the organism. It probably belongs to a class of organisms, as yet unidentified, that pass through the ordinary filter media.

At one time it was believed by many that this disease is a fly-borne one, and that the large biting stable-fly is the offending insect. It would seem that in large cities the stable would be a negligible factor, but in the congested centers it can play quite a part as a general nuisance and a menace to health. It is more probable, however, that the ordinary house fly is the culprit, yet against this is the fact that the prevalence of the disease is not wholly confined to fly time. Suspicion has also, and with some reason, been directed 'against the flea. A more plausible theory than that of the biting fly, and one that does not exclude the agency at times of the house fly, is that the disease is spread in the same way as influenza or common colds, for it is known that the pathogenic agent is contained in the nasal secretions of the sick.

The high morbidity and the disastrous effects of poliomyelitis certainly demand that every precaution against its spread be taken, and therefore among other things the regulations covering the management of stables should be made very stringent. In view, however, of the more probable means of infection, it is very proper to consider and to treat the disease with respect to quarantine and isolation in the same way as the other acute infections of childhood, and this holds even though instances of apparently direct contagion are rare. The assemblage of children in epidemic localities has been discouraged or forbidden, and although this with the closing of moving picture shows to children doubtless seems cruel to them, in face of the danger now threatening nothing that has been done to conserve the public safety can be accounted too harsh. The amount of infection or even the exact foci of infection are difficult to determine because many of the cases are believed to be abortive without paralytic symptoms, or so slight as to escape detection. On the other hand, there is little doubt that many cases of ordinary convulsions in children are diagnosed, in times of epidemic, as infantile paralysis in the so-called preparalytic stage, and so the prevalence of the disease is made to appear greater than it really is.

The amount of paralysis that will remain permanently after an attack of acute poliomyelitis is hard to estimate. There is usually a great deal of repair, but it is often spread over a long period, even as long as two years. Even in apparently paralyzed muscles, if they retain their faradic irritability to but a slight degree, there is hope of recovery under proper treatment. A great deal of harm is often done by commencing irritative treatment, such as massage and electrical stimulation, too early, that is during the acute stage of the disease. Later this treatment must be carried out relentlessly. Even when the paralysis is permanent the physician can now hold out a good deal of hope if there are nearby muscles that are intact. Transplantation of tendons, so that the healthy muscles can do the work of the paralyzed ones, is an advance in surgery that has come to stay and will help to mitigate the evil of infantile paralysis.

THE PARATHYROIDS.

ABOUT one year ago (May, 1915) Eugene H. Pool contributed, as the "Collective Review" in the *International Abstract of Surgery*, a summary of what was then known regarding the anatomy and physiolog of the parathyroids, their relation to tetany, and the therapeutic measures, experimental and otherwise, which had been employed in tetany parathyreopriva. In view of the disappointing results following medical treatment and homotransplantation in tetany parathyreopriva, Pool strongly emphasized the necessity of giving these structures as wide a berth as possible when operating upon the thyroid. A second publication on this subject appeared in the *Annals of Surgery* for January, 1916, in a paper by Pool and H. C. Falk entitled "The Surgical Anatomy of the Thyroid with Special Reference to the Parathyroid Glands."

In the earlier years of operation for goiter, when the function of the thyroid was very imperfectly understood and that of the parathyroids not even suspected, removal of both lateral lobes of the thyroid at the same sitting was not infrequently practised, and this was sometimes followed by the gradual development of myxedema, occasionally by acute or chronic tetany. Cachexia strumipriva and tetany were for a long time regarded as different phases of but one condition—a condition which was supposed to be dependent upon insufficiency of the thyroid function. Although the normal gross anatomy and histology of the parathyroids were accurately described by Sandstroem in 1880, their physiological significance was not appreciated until Gley, in 1891, demonstrated their relation to tetany. While, normally, there are four parathyroids, occurring in pairs, it has long been known that this

number and arrangement are inconstant. Careful examinations at autopsy have sometimes shown a smaller number, but for reasons which will appear later it is certain that when less than two have been discovered some have been overlooked or the individual has had aberrant parathyroids. Recognition of the parathyroid glandules, none too easy at autopsy, is still more difficult under the conditions that obtain at operation; and there are many operators of large experience in this class of surgery who do not hesitate to say that they have never been able positively to identify parathyroids as such while operating.

Under these circumstances, therefore, it is essential that the manifold relations of these bodies to the lateral lobes of the thyroid be thoroughly understood by the operator. In recent years, since the relation of the parathyroids to the development of tetany has been definitely shown, operators have generally endeavored to avoid them; or, if malignant involvement of the thyroid or other conditions have made it necessary to disregard the danger of removing the parathyroids in relation to one lobe, special pains have been taken to preserve those on the opposite side when operation upon the other lateral lobe was necessary. Then the only parathyroids the individual possesses may be in relation with the lobe that is being operated upon; since it is usually difficult, if not actually impossible, to identify these structures in the course of operation, their safety can be secured only by leaving a slice of the posterior portion of the thyroid substance. In case of the removal of the parathyroids in relation with the thyroid lobes tetany will result unless the individual is so fortunate as to possess aberrant parathyroids. If but one parathyroid is left the development of tetany is probable; for Iversen's analysis of the cases of human tetany apparently showed that at least two parathyroids are, as a rule, essential.

Why is it that so many cases of tetania parathyreopriva have been reported in spite of the fact that practically all surgeons are well aware of this danger? The studies of Pool and Falk throw considerable light upon this question. Under what has been considered normal conditions the parathyroids are sufficiently removed from the thyroid substance so that when a lateral lobe of the thyroid is enucleated in accordance with the usual method (splitting the surgical capsule anteriorly and shelling out the lobe within this, meanwhile keeping strictly to the line of cleavage of the true capsule during this process) the parathyroids remain attached to the surgical capsule or are even posterior to this, in which latter case they should not come within the field of operation at all. So far as Pool and Falk's series of autopsy sections was concerned this happy state of affairs existed in less than 50 per cent. of the cases. In their studies the tissues of the neck anterior to the spine were removed at autopsy in twenty-five cases. The tissues were cut transversely in thin layers and a search was made for the parathyroid glands. As illustrating the difficulty in identifying these bodies it should be stated that these were not cases of goiter, hence the number and relations of the parathyroids may be considered representative; yet in spite of extreme care but 60 parathyroids were found out of a theoretical 100.

But it was the situation of those found with reference to the surgical capsule that is of especial interest to the surgeon. The sixty parathyroids found were grouped as regards their relation with the thyroid and its surgical capsule as follows: Twenty-six, or 43.3 per cent., lay external to the surgical capsule at sufficient distance from the thyroid to be safeguarded in an intracapsular extirpation of the lobe. Nine, or 15 per cent., were so situated in relation to the capsule as to make it doubtful whether they would be saved in an intracapsular removal of the lobe. Twenty-five, or 41.7 per cent., were in such a position that they would almost certainly have been removed with the thyroid in an intracapsular extirpation. In the case of unilateral intracapsular removal of the left lobe, this examination showed that two parathyroids would have been sacrificed twice and two would probably have been sacrificed twice; in the case of the right lobe two parathyroids would have been sacrificed twice and two would probably have been sacrificed once. Thus the operation of unilateral intracapsular lobectomy is attended with a risk that two parathyroids will be removed in 8 per cent., or in 14 per cent. if the doubtful cases are included. They also found that in intracapsular removal of both lobes four parathyroids would have been sacrificed in 4 per cent. of the cases; four would very probably have been sacrificed in 8 per cent., and four would have been at least endangered in 12 per cent.

Among the authors' conclusions are that the relation of the parathyroids to the thyroid and its capsule is not of necessity the same for the whole set of parathyroids in an individual. Also that since usually two parathyroids lie on each side, and inasmuch as two parathyroids apparently can satisfy the demands of the body, the chance that tetany will develop as the result of extirpation of one lobe is extremely remote. It is reasonably safe, therefore, so far as tetany is concerned, to perform complete intracapsular extirpation of one lobe. It is, however, emphasized that for the prevention of tetany the posterior part of the lateral lobe must always be left on at least one side; and even when only one lobe is operated upon safety is better assured by leaving *in situ* the posterior part of that lobe.

STILL ROOM FOR IMPROVEMENT IN THE TRAINING OF NURSES.

In the dark ages of medicine the chief instruction students received was what they were able to absorb from daily contact from a physician whom they accompanied on his rounds. Later lectures and clinics were added where the students were brought into touch with the practice of medicine as illustrated by varying personalities. That was yesterday; to-day he hears lectures for four years, the latter two of which he also attends clinics and then frequently takes a year or two in a hospital. To-morrow he will have a five years' course, the last of which will be almost wholly clinical, and following this he will be

obliged to spend at least one year in a reputable general hospital before he is allowed to practice his profession.

With this increase of efficiency in the training of physicians will come, we hope, more enlightened methods of fitting nurses for their profession. The theory at present seems to be analogous to that held by the parents who advocate throwing babies into the water where they must either swim or drown. The probationer steps from school or counter, or whatever sphere has engaged her activity, into the hospital, dons her uniform and rubber heels, the patients are there, ill, requiring nursing, and she must nurse them forthwith, and often the experienced nurse who is supposed to be her preceptress hurries through a few perfunctory directions to her and hastens away to duties of her own. The bewildered probationer, left to her own devices, potters about and usually avoids making mistakes by doing nothing. A few days later she is left alone on the ward for a while, the resident physician enters, orders an alcohol sponge and is astonished when she tells him she has not the least idea how to give it. Or she is left in charge of a typhoid patient who complains of a severe pain in the abdomen but, fearful of disturbing the doctor unnecessarily, she makes no report of it.

The above is purposely put in a somewhat heightened manner. In many hospitals a sincere effort is made to give instructions in the elementals of nursing before trusting a pupil to her own resources and in many cases the probationer is of a type which assimilates the details almost instinctively and displays a knowledge amounting to intuition in emergencies.

It would seem that a course of lectures and demonstrations should be given to a prospective nurse before she is allowed to enter the wards, instead of some time after. The powers of the superintendent of nurses are usually much too arbitrary, moreover. It may happen that a probationer is dropped at the end of a few months at the pleasure of the head nurse who often acts largely on the reports of nurses in charge of wards, some of whom may not have been in training themselves longer than a year. With such a system it is easy to see how personal animus or lack of patience with a beginner may terminate abruptly a career which would otherwise be successful. We all know successful doctors who showed no great promise in their student days. Following such a course of lectures there should be a carefully graded series of instructions in the wards by experienced nurses and these should follow each other in such a logical sequence that there would be no danger of the nurse being left to execute duties which were beyond the stage of her training.

The nurse having been graduated, the next desirable step would be the universal adoption of laws which prevail in some States, that is, in regard to registration. No nurse should be allowed to practise until she has passed an examination by a State licensing board comprising both theoretical and practical nursing. After the system sketched above had been in operation for a few years we would find an R. N. as significant in its way as an M. D.

A PLEA FOR PURISM IN MEDICAL WRITINGS.

WITH his characteristic love for contention, Dr. Charles A. Mercier, the distinguished English psychiatrist, has again cast his hat into the ring. In a letter to the *British Medical Journal* for May 20, he assails vigorously the style of the average medical writer, who, he claims, shows an extreme paucity of vocabulary together with a lack of accuracy in the use of words. By way of illustration he quotes a recent article in which "marked" or "markedly" was used twelve times in ten lines. This is of course inexcusably tautological, but Dr. Mercier seems to wish to exclude this unfortunate adjective entirely, whereas it may be used quite properly to denote anything which is noticeable, conspicuous, or emphasized in any way. He also objects to a patient "developing" a disease and, strictly speaking, he is right, although medical custom seems to sanction the use of the word in this sense, but when he says that " 'to develop' is not, except in photography, a transitive verb," he is contradicted by Webster who gives seven applications of "to develop" as a transitive verb. Dr. Mercier couches his argument in his usual vigorous style, using such expressions as "shockingly overworked," "vile travesty of English," and "repulsive jargon."

As a matter of fact, while here and there we find instances of inaccuracies or inelegancies of style in medical writing we are practically never at a loss to decide what the writer meant to convey and that, after all, is the principal requirement of this kind of literature. It does not seem that a report on the result of a thousand typhoid vaccinations for example should be judged by the same criteria which we would apply to an essay in the *Atlantic Monthly*. A medical article is valuable if it adds something to our knowledge of disease and is not expected to be a well of pure English undefiled. Now and then we are fortunate enough to have writers who can combine medical worth with elegance of diction, as witness Oliver Wendell Holmes, S. Weir Mitchell, and G. Stanley Hall.

Whatever be the merits of the question raised by Dr. Mercier, who is probably not appreciated at his true value by his colleages in England, it is sure to set medical writers to self-examination and even surer to arouse a storm of protest. In fact the issue of the *British Medical Journal* for May 27, which has just come to hand, contains two letters, one taking exception to all the points made by Dr. Mercier, as well as indicting his taste in the matter, and the second one in the main commendatory, but accusing him of that unpardonable crime of misquotation.

THE CUP THAT CHEERS.

AMONG the incidental matters which are tossed about like uneasy corks upon the stormy waves of international affairs in Europe since the war began, the subject of alcohol is agitated now and then. Germany goes on her way serenely consuming her beer, Russia is vodkaless, France has restricted the heavier liquors, and England is betwixt and between. The "rum ration" still exists although many a wordy battle has been fought over it, but two blows have been dealt the home liquor traffic—the

abolition of treating and the limiting of the hours when liquor may be sold. Everyone reacts to alcohol according to his individual psychology even if we cannot all portray our reactions as vividly as Jack London does in "John Barleycorn." Certainly the optimistic way to look at it is as M. C. Fiessinger does. In a recent address before the Academy of Medicine in Paris he stated that wine activates the internal secretions, stimulates the association of ideas, and excites the affective states. He says that among the moderate wine drinkers mental originality is more constantly renewed and impulses of the heart and active goodness are more often in evidence. He believes that the happy genius of the French mind is due to their national beverage. Dr. Fiessinger's eulogy was taken exception to by some other members of the Academy, notably MM. Linossier and de Fleury, and probably would not be accepted unqualifiedly here. It is true that the effect normally produced at the time of the ingestion of alcohol is somewhat as he describes, but it seems to be rather a question of temporary paralysis of inhibitions and we are all too familiar with the pathology of alcoholism to endorse the effervescence of our French colleague.

Success of Pasteur Treatment of Rabies in the Lyons District.

In contrast with the defective results reported from certain Pasteur institutes throughout the world, the failures being set down to causes beyond control, not a patient treated in the Lyons Institute during 1913-14 was lost. The total number treated was 723. Of this number 122 received the intensive treatment. In 446 cases the animals were proved to have rabies, while in 277 the existence of the latter was only suspected. The report made by Dr. Rochaix in the *Journal de physiologie et de pathologie générale*, which was published only last April although bearing the date September 15, 1915, contains no comments and few control figures. A clean score has been the rule, and but 8 patients have died since the treatment was begun in 1900. In 1912 there were 2 deaths. The morbidity shows a distinct drop in June, while in August it seems at its minimum. It is highest in the short month of February, the antithesis of August. The biting animal was a cat in 32 cases and a cow in 1; in all other cases a dog.

Nyctalopia in Soldiers.

The European war has brought to light the existence of nyctalopia in the troops, most of which is doubtless acquired. It seems to be largely a transitory state due to fatigue or nervous depression. The condition is frequent, about 10 per cent. suffering. The highest incidence is in the winter months when the nights are longest. Some cases are congenital while others seem dependent on trench life. Anomalies of refraction frequently coexist. No doubt the physical fatigue, nervous tension, and moral disquiet play a causal rôle. The treatment consists in correcting anomalies of refraction, and the use of tinted glasses. The men also improve under rest and variety of diet. The above data are taken from an article by Weekers the Belgian ophthalmologist, in the *Archives d'ophthalmologie*, March-April, 1916. The author and others state that the condition is a new one in military medicine. Day vision suffers but night vision more so. Nyctalopia as we know it may occur without hemeralopia; but in most of the cases occurring in soldiers both conditions exist in the same subject. The night blindness is much the greater military disqualification because a soldier is unfit for patrolling or sentry work, and becomes fearful of a surprise.

News of the Week.

Base Hospitals Promised.—As announced last week, the New York Red Cross now has eight base hospitals ready for service whenever they may be called for and wherever they may be required to go. The Red Cross has also taken charge of the Border Hospital at Brownsville, Tex., and has appealed for funds to enlarge, equip, and maintain it. This hospital, which was established for the care of the American troops patrolling the border, treated 350 patients during 1915, many of them wounded Mexicans. It consists at present of only a few frame cottages without the necessary equipment.

The New York State Department of Health, through Dr. A. B. Wadsworth, director of the division of laboratories and research, has placed its facilities at the service of the State military authorities. If it is desired, the laboratory will ship to the surgeon of each regiment and other units in the field, boxes containing typhoid vaccine and serums for tetanus, diphtheria, and spinal meningitis. The department has also offered to send a bacteriologist to the State mobilization camp for the making of diagnoses in the field.

Deaths in New York City.—The Department of Health announces that for the week ending June 24 the death rate in New York City was 12.24, representing a total of 1,311 deaths, as compared with a rate of 12.22 for the corresponding week of last year, when the total number of deaths was 1,277. Twelve deaths due to infantile paralysis were reported, eleven of them occurring in the Borough of Brooklyn, in certain sections of which the disease is epidemic. The other contagious diseases showed a decreased mortality; and in the deaths due to pulmonary tuberculosis a very appreciable decrease occurred, though this was to some extent offset by the increase in the deaths reported from other tuberculous diseases. Owing to the inclement weather during the week there was an increase in the number of deaths due to bronchitis, and the mortality of the degenerative diseases also was increased. The death rate for the first twenty-six weeks of 1916 was 14.82, as compared with 15.10 for the first half of 1915.

Poliomyelitis Still on Increase.—Up to July 5 there had been reported to the Department of Health 623 cases of poliomyelitis, of which about 75 were in Manhattan, 3 in the Bronx, 5 in Queens, 8 in Richmond, and the remainder in Brooklyn. One hundred and thirty-four deaths have occurred since the first of the year, almost all of them during the last three weeks, giving a mortality of over 20 per cent., which is nearly four times as high as during the epidemic of 1907. Of the deaths, all except two were of children under ten years of age. The Commissioner of Health has enlisted the help of the police, street cleaning, and tenement house departments in fighting the epidemic, the police to check violations of the sanitary code in the infected districts, the street cleaners to pay special attention to the streets therein, and the tenement house in-

spectors to keep watch of the houses in which cases have been reported. Placards written in English, Italian, and Yiddish have been printed and posted in certain parts of the city, giving warning of the danger of infection. The Commissioner also has the aid of the staff of the Rockefeller Institute, Dr. Simon Flexner having addressed a meeting of Brooklyn physicians at the Polhemus Clinic on July 1, and both he and Dr. H. L. Amoss having conferred with the members of the Department of Health. As a result of a meeting held at the office of the Commissioner on June 30, the following orders were sent out:

"All patients must be removed to hospitals where the conditions of the home are not equal to those found in the most modern hospitals. These conditions must include absolute isolation, perfect cleanliness, a special nurse who must not come in contact with other members of the family, sunshine and fresh air.

"For those whose homes cannot afford these facilities special pavilions have been set aside in hospitals in each borough. In Brooklyn is the Kingston Avenue Hospital, where there are now forty patients; in Manhattan is the Willard Parker Hospital, foot of East Sixteenth Street. A pavilion has been set aside on North Brother Island for The Bronx and a pavilion of the magnificent new Queensboro Hospital at Jamaica for Queens."

The origin of the epidemic has not been determined, but as the first cases occurred among the Italians in the dock district of South Brooklyn, it is possible that the disease may have been imported from Italy. A special watch is being kept at Quarantine, but no cases have been discovered.

Open New Hospital.—The Queensboro Hospital, representing the result of years of effort on the part of the New York City Department of Health to provide adequate facilities for patients ill with contagious disease in the Borough of Queens, was opened on June 28, with Dr. Charles T. Sharp as resident physician. The hospital has accommodations for eighty patients, and has been built at a cost of $76,000. Several interesting features have been embodied in the construction. The ground floor of the south wing, for instance, contains twenty separate rooms, each opening both on a central corridor and on a porch running around the building. These rooms constitute "The Sieve," and in them will be kept for two weeks all patients entering the hospital, especially when there is any doubt as to the diagnosis or as to the existence of a complicating infection. For "The Sieve" there is a separate diet kitchen and nurses' room, and by an ingenious placing of windows all the patients are under the constant observation of the nurse. The ground floor of the north wing contains three wards with a capacity of twenty beds, to be devoted to diphtheria, scarlet fever, and measles, and the second floor of the building contains two wards in each wing, as well as a small operating room, nurses' room, etc. The third floor contains the dormitories for the nurses and employees. A notable feature of the wards is the introduction of glass partitions between the beds to prevent the reinfection of convalescent patients.

Dispensary Fellowships.—The Harvard Medical School has recently established four fellowships to be awarded to graduates in medicine and to be known as the Boston Dispensary Fellowships. The duties of the Fellows will be to give a portion of their time to clinical work in the district service of the dispensary, treating the sick in their homes, and a portion to such study, teaching, or laboratory, research or clinical work as may be assigned by the Medical School. The stipend of a Fellowship will be $500 when the physician gives part time, or $750 when he devotes his entire time to the work. Appointments will be made jointly by the authorities of the Medical School and of the Boston Dispensary, and the application should be made to the Dean of the Harvard Medical School, or to the Director of the Boston Dispensary, Boston. The Fellowships are open to the graduates of any medical school of good standing who have had a hospital training or its equivalent. Negotiations are now pending between the Boston Dispensary and the Tufts Medical School with a view of making similar arrangements for a Fellow for next year.

Medical School Prizes.—The Yale University School of Medicine announced on June 17 the award of prizes for the year as follows: The Ramsay Scholarship, established in memory of Dr. Otto G. Ramsay, and given to a member of the junior class of unquestioned ability and character, to Harlan B. Perrins of Seymour. The Parker Prize, left by Dr. Frank J. Parker, for the fourth year medical student who, in the judgment of the Faculty, has shown the best qualifications for a successful practitioner, to Lloyd L. Maurer of New Haven. The Perkins Scholarship for the first year student making the best record, to Clifton R. Scott of Bovina Center, N. Y. The Campbell gold medal, in memory of James Campbell, M.D., professor of diseases of women and children from 1866 to 1899, given for the highest rank in examinations during the course, to Joseph Russo of New Haven. The Keese Prize, in memory of Hobart Keese, M.D., for the best thesis at graduation, to Louis H. Nahum of Hartford.

Vacancies in Clinic.—There is an opportunity for two assistants in the department of diseases of digestion and metabolism at the German Polyclinic, Second Avenue and Eighth Street, New York. Physicians who have had some chemical training are preferred. The hours are from 2 to 4 P.M. on Tuesdays, Thursdays, and Saturdays. Application should be made to Dr. A. I. Ringer at the German Polyclinic.

Must Report Tuberculosis.—The Bureau of Tuberculosis of the North Carolina State Board of Health is calling the attention of the physicians in the State to the law requiring them to report all cases of tuberculosis under their charge to the Bureau within seven days after the recognition of the disease. It is estimated that at present only one-third of the cases of tuberculosis in the State are being reported, and since the Bureau can accomplish nothing without the co-operation of the physicians and the heads of institutions for the treatment of the disease, it is prepared to enforce the law, even by prosecution of the delinquents.

London Red Cross Fund.—A dispatch from London states that the Red Cross fund of the London *Times* has reached a total of $20,000,000, the largest amount ever raised in such a campaign by a newspaper.

Dies at 105.—Mrs. Mary Monroe of Binghamton, N. Y., died at her home on June 28, after a short illness, at the age of 105 years and 8 months.

Street Accidents.—The National Highways Protective Association reports that during the month of June, 44 persons were killed by vehicular traffic on the streets of New York, 35 by automobiles, 2 by

trolleys, and 7 by wagons. During the first six months of this year, 152 persons were killed by automobiles, as against 137 during the corresponding period of 1915, while throughout the State, excluding New York City, 100 persons were killed in the same way.

American Hospital Units.—A dispatch from Berlin tells of the departure from that city of two American surgical units which had recently arrived there. One unit, under the charge of Dr. Paul F. Martin of Indianapolis, Ind., has been sent to Budapest, and the other, under Dr. John R. McDill of Milwaukee, Wis., to Cologne. It is stated that the units had to obtain in Berlin all the necessary supplies with the exception of two dozen rubber gloves, because the British Government refused to permit the passage of their equipment through the blockade. The gloves alone were passed.

Pennsylvania Commencement.—At the 160th annual commencement of the University of Pennsylvania, held June 21, the degree of Doctor of Medicine was conferred on seventy-three graduates. Dr. Charles Karsner Mills, formerly professor, and now emeritus professor, of neurology, received the honorary degree of Doctor of Laws.

Dr. Fred H. Albee received the honorary degree of doctor of science from the University of Vermont, Burlington, at the 112th commencement of the university on June 28.

Dr. S. Lewis Ziegler of Philadelphia has been elected a member of the Board of Trustees of Bucknell University.

Dr. Zinke Honored.—Dr. E. Gustave Zinke of Cincinnati, who has recently resigned as professor of obstetrics in the University of Cincinnati College of Medicine, was the guest of honor at a dinner given by his colleagues in the university and among the profession in the city. Dr. Zinke was presented with a silver loving cup.

Broad Street Hospital.—Dr. A. J. Barker Savage has been appointed superintendent of the new Broad Street Hospital, New York, and the following physicians have been elected members of the Board of Directors: Dr. John F. Erdmann, Dr. L. A. McClelland, Dr. George Gray Ward, Jr., Dr. Ralph A. Stewart, Dr. Charles Gennerich, Dr. W. T. Helmuth, Dr. W. H. Crump, and Dr. W. H. Dieffenbach.

Gifts to Charities.—By the will of the late Mrs. Helen C. Juilliard of New York, St. John's Guild and St. Luke's Hospital of this city receive bequests of $100,000 each, and the New York Orthopedic Hospital and Dispensary a bequest of $50,000. In addition, St. John's Guild receives a contingent interest of one-half of a bequest of more than $100,000, the latter to be used for an addition to the hospital of the guild at New Dorp, Staten Island.

An additional gift of $165,000 to Mt. Sinai Hospital, New York, was recently announced by Mr. Isaac Guggenheim and his brothers, the gift supplementing their previous gifts of $500,000 for the erection of a private pavilion to be known as the Guggenheim Memorial. It will now be possible for the hospital to erect a pavilion having accommodations for 122 private patients, making it the largest building of the kind in the city.

By the will of the late Charles W. Kolb of Philadelphia, bequests are made of $100,000 each to the Samaritan Hospital and to Temple University.

Obituary Notes.—Dr. Everett P. Courtright of Newark, N. J., a graduate of Jefferson Medical College, Philadelphia, in 1890, formerly attending physician to St. Michael's Hospital and the Foster Home, Newark, and a member of the Medical Society of New Jersey and the Essex County Medical Society, died at his home on June 28, aged 49 years.

Dr. Rudolph Kindig of Philadelphia, a graduate of the Philadelphia College of Pharmacy and of the Jefferson Medical College, Philadelphia, in 1887, and for twenty-five years physician to the Swiss Benevolent Society, died at his home on June 17, aged 51 years.

Dr. Thomas Kirkpatrick of Garnett, Kan., a graduate of the University of Illinois, College of Medicine, Chicago, in 1883, died at his home on June 11, aged 58 years.

Dr. James Edward Leary of Lowell, Mass., a graduate of the College of Physicians and Surgeons, Baltimore, Md., in 1894, died suddenly at his home on June 11, aged 43 years.

Dr. Thomas Walter Long of Newton, N. C., a graduate of the New York University Medical College, New York, in 1885, and a member of the Medical Society of the State of North Carolina, died recently at his home, aged 58 years.

Dr. Joel H. Rieger of Kansas City, Mo., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1872, died at the German Hospital, Kansas City, on June 14, after a short illness, aged 66 years.

Dr. Joseph E. Caviness of Lillington, N. C., a graduate of Baltimore University School of Medicine in 1890, died at his home, after a long illness, on June 15, aged 70 years.

Dr. Grafton W. Gardner of Atlanta, Ga., a graduate of the Oglethorpe Medical College, Savannah, in 1861, died at his home on June 19, aged 86 years.

Dr. John T. Sweeny of Jeffersontown, Ky., a graduate of the Hospital College of Medicine, Louisville, in 1906, died at his home, after a long illness, on June 16, aged 36 years.

Mr. Joseph Ferris, pharmacologist at Bellevue Hospital for over twenty years, during which time he compounded nearly 500,000 prescriptions, died at the hospital on July 1 from cerebral hemorrhage.

Obituary.

JULIUS HAYDEN WOODWARD, M.D.

NEW YORK.

Dr. Julius Hayden Woodward of New York, professor of diseases of the eye at the New York Post-Graduate Medical School since 1908, and director of instruction in ophthalmology since 1913, died at his home on July 2, aged 58 years.

Dr. Woodward was born in Castleton, Vt., and was graduated from Cornell University in 1879 and from the College of Physicians and Surgeons, New York, in 1882, the same year receiving the degree of doctor of medicine also from the University of Vermont, College of Medicine. After practising for some time in Burlington, Vt., and serving as professor of laryngology, and later of ophthalmology in the University of Vermont, he removed to New York in 1897, where he had since lived. He was a member of the New York Academy of Medicine, the Medical Societies of the State and County of New York, the Vermont State Medical Society, the American Academy of Ophthalmology and Oto-Laryngology, the American College of Surgeons, and the Society of Alumni of Bellevue Hospital, and a life member of the Société française d'ophthalmologie.

Correspondence.

POLIOMYELITIS IN BROOKLYN.

To the Editor of the Medical Record:

Sir:—Perhaps at no time within the present generation has there arisen such a state of public alarm almost bordering on panic as in the case of the present epidemic of poliomyelitis in Brooklyn. The newspapers have published complete reports of the distribution of cases and of the fatalities, and these reports together with the placards posted and the leaflets distributed by the Board of Health have brought home to the population a keen sense of the gravity of the situation. The deep concern of all parents—indeed, of all people who are interested in the well-being of children—is intensified by the fact that the fatal or maiming blow of poliomyelitis does not fall merely upon weak or neglected children but strikes with almost equal force those who are apparently in perfect health and are properly cared for in sanitary homes.

Health Commissioner Emerson is to be commended for the prompt and energetic manner in which he has faced the present crisis. There can be no question that the removal to an isolation hospital of all cases that cannot be isolated at home, as now enforced by the Health Department, is a wise measure and the first important step necessary in combating the spread of this disease. At the date of writing there are about 200 cases of poliomyelitis in the Kingston Avenue Hospital of Brooklyn, and there is provision for 300 more. It is to be hoped that the spread of this disease will be checked long before the resources of the hospital are taxed to their limit, but unfortunately, if we are to be guided by past experience, the ravages of this disease will not be spent until early fall. Before another month New York will probably face the biggest problem which it has had to solve during the fifty years of existence of its Health Department, namely, the problem of providing adequate hospital accommodations for its cases of infantile paralysis.

This brings one to the subject of health preparedness, a timely one indeed, and one demanding of municipal, State, and national authorities as much attention as any other kind of preparedness. Here comes an unseen foe creeping with insidious step into hundreds of homes, killing and maiming the most helpless. The public stands aghast and a dozen or more health inspectors and a dozen or more nurses are added to the forces already mobilized to deal with preventable disease. The irony of the situation requires no comment. If one were to calculate the economic loss to the body politic occasioned by the ultimate incapacity of and the care for dependent cripples, he would find that the appropriation by the city for emergency purposes to meet the present situation of a sum of money far less than the cost of a single superdreadnaught would result in a substantial saving to the public treasury. Although money cannot buy public health any more than it can buy individual health there is an indispensable financial outlay of considerable magnitude required in the prosecution of all public health campaigns. Would it be too much to ask of the metropolis of the Western Hemisphere, indeed, of the richest city of the world, that it summon to its service at once the best sanitary talent that it can command?

Among the distinguishing characters of the present epidemic are the high degree of its virulence and the atypical character of many of the cases. The virulence is attested by the high mortality of 20 per cent. Within a period of two weeks the writer has seen four fatal cases. A striking illustration of the high degree of infectivity of the virus in the prevailing series of cases is afforded by the following experience: There have come under the writer's observation in the Children's Medical Service of Dr. Le Grand Kerr at the Methodist Episcopal Hospital two of the three children of a family, all of whom were infected with poliomyelitis about the same time. The first child, a six-year-old boy, was admitted to the hospital on the third day of his illness, in coma, with widespread paralysis of the limbs, trunk, and diaphragm. The case was one of typical Landry's paralysis. Death occurred within two hours. Two days later the sister of this child, two years of age, was admitted in the preparalytic stage of the disease. A widespread paralysis began on the second day following admission, involving all of the limbs and the muscles of the back of the neck. The mode of progression of the paralysis which began in the legs and then extended to the arms and neck made us apprehensive that we were dealing with another instance of the Landry type of paralysis. Fortunately, however, the disease did not extend to the respiratory muscles. The little patient has survived the dangerous period of her illness. It is impossible to state to what extent, if any, the early diagnosis in the preparalytic stage and the various protective and therapeutic measures instituted may have served to prevent a lethal outcome in this case. At any rate the results emphasize the importance of making an early diagnosis. About the time that this patient was admitted to the hospital, the third child in this family, a boy seven years old, was under the care of the family physician at home. The prominent symptoms of his illness were fever, hyperesthesia, and delirium. Examination of the cerebrospinal fluid showed that this was also a case of poliomyelitis. The patient made a complete recovery without paralysis. This was probably an instance of the abortive type of the disease. The above series of cases constitute an extremely rare, if not singular, instance in which poliomyelitis has affected three members of a family at the same time, and in which each case has represented a different type of the disease.

There may be more than mere accidental significance in the fact that, with possibly one exception, poliomyeltis has tended to prevail in New York City in epidemic type every two years since the great epidemic of 1907 with its 2,500 or more of reported cases. It may be noted, in passing, that the extensive Swedish epidemic so carefully studied by Wickman occurred in 1905. There have been outbreaks of this disease in New York City in 1909, 1911, and 1913, and according to this apparent law of periodicity a return of this disease was to be expected in 1915. Although a number of cases were reported in that year from various parts of the city they did not constitute an epidemic.

The writer had the opportunity of studying at close range seventeen out of a total of fifty-one cases of poliomyelitis reported in the Borough of Brooklyn from January 1 to December 1, 1911. During the same period there had been 171 cases reported in the Borough of Manhattan. The epidemic was far less extensive than that of 1907, and slightly less so than that of 1909. But the distribution of the Brooklyn cases and the circumstances attending them impart considerable inter-

est to them, particularly with reference to the light they throw upon our present experience with this disease. It was noted on comparing the different wards of the Borough in which the cases were reported that the number of cases in each ward was directly proportionate, not to the number of people in the ward, but to the density of the population. Another important fact brought out was the observation that the epidemic of 1911 practically spared the 26th ward, a thickly populated district in which the disease had prevailed extensively in 1909. This accorded with the observation that had been made in other epidemics in different parts of the world, namely, that communities that are visited by poliomyelitis in one epidemic are spared when the disease returns to a city in epidemic form. Poliomyelitis provides an instance of the epidemiological law of community resistance or immunity. According to this law, during an epidemic there are a large number of individuals who suffer from mild or latent types of the disease to which they are thereby rendered immune. In the present epidemic of poliomyelitis in Brooklyn the disease is prevalent in a section of the Borough in which only a few scattered cases occurred during the previous visitations.

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Progress of Medical Science.

Boston Medical and Surgical Journal.

June 22, 1916.

1. Movements in Medicine. Annual Discourse Before the Massachusetts Medical Society. David L. Edsall.
2. Respiratory Exchange, with a Description of a Respiratory Apparatus for Clinical Use. Francis G. Benedict.
3. Cholecystostomy vs. Cholecystectomy. F. B. Lund
4. Report of a Case of Sacroiliac Strain Following Symphyseotomy.

1. **Movements in Medicine.**—David L. Edsall in his address discusses the altered relation of the medical profession to the public at large. He says that as a result medicine has become a much more complex profession, and a new and very important character has been added to the calling. The doctor has always been somewhat cloistered from the world of affairs, and, as a consequence, he has often avoided, and even resented, anything that interfered with his freedom of action; and this, together with the fact that there were few positions of dignity open to medical men in which they were parts of a system, or were subordinate to higher authority, has made the general idea of being a part of a machine moving in necessary coordination with other parts usually distasteful. But the developments of recent decades have shown beyond a peradventure that the broadest and most beneficent activities of medical men in preventing and eradicating disease have in later times, and will continue to be, not individual researches or individual struggles with disease, but organized systems of attack, in which every one, whether in senior or junior positions, will be no longer a free lance but subordinate to the system, and dependent upon it for his success. The character of the medical profession is being everywhere more or less profoundly influenced in another way. For many years it was customary to adopt an attitude almost solely of defense in dealing with disease. In recent times the attitude has become aggressive, and there has been a massive and organized attack upon the immediate causes of disease that are most accessible. As a part of this movement we are now considering compulsory sickness, invalidism, and accident insurance. The financial side of this matter unquestionably needs especial care in this country, not only in its relation to physicians but in its general aspects, and particularly in justice to the insured, because our political morals are admittedly looser in this country than in England or Germany. One of the most successful ways of avoiding disagreements is through not forcing regulations but agreeing upon them; and the more largely arrangements are made with medical men through friendly understandings rather than as bargains, the more successful will they be. It would greatly help in avoiding contention and in establishing in wise form many of the details of the system in which medical advice is highly important, if the local medical men involved had direct representation on the governing bodies of these insurance companies if they come to be formed. Many other factors are tending to make medicine more important as a public profession, and relatively less so in a private relation in its main activities and emoluments. There is already a lessened demand for the family doctor because of the increasing control of infectious diseases. The methods that have done so much for the control of tuberculosis can do similar things in controlling the effects of alcohol and venereal diseases. With a decided drift toward the control of these enormously important causes of disease, a large effect upon the sum total of the doctor's repair work and upon his purely palliative treatment must be exerted. As a result of these tendencies the choice of a medical career, aside from the direct care of the sick, no longer means a distinct shifting of purpose and detachment of one's self from a medical career. The changed point of view is largely due to the change in the character of medical teaching and the increasing complexity of the study and practice of medicine. The higher standards have made many men feel that the standards of practice do not meet what they desire, and that in confining themselves to private practice they are taking a step downward in regard to thoroughness and accuracy of effort. This was probably due to the chasm that existed between the laboratory and the clinical branches of medicine. In order to bring the laboratory and the clinic on more intimate relations the essayist favors the plan of having a group of clinical teachers who practice little or not at all outside of hospitals.

3. **Cholecystostomy vs. Cholecystectomy.** — F. B. Lund refers to the lack of agreement among men of experience and skill as to the indications for cholecystectomy. He reviews the recognized advantages of cholecystostomy upon which surgeons are very well agreed, and believes that cholecystectomy is indicated in the following cases: 1. In cases of very thick, acutely inflamed, bright-red, or gangrenous gall-bladders due to impaction of a stone in the cystic duct. 2. In cases of chemically thickened gall-bladders. Here the thickened walls cannot contract and drive out the bile, so that what bile gets back into the gall-bladder is sure to stagnate there; after cholecystostomy, the walls do not contract, so that we get a mucous sinus for a long time or forever. 3. In cases of gall-bladders very much distended with clear fluid from impaction of a stone in the cystic duct. 4. Whenever suspicion exists of malignant disease. 5. In chronic cholecystitis without stones, but with moderate thickening and ulceration of the mucous membrane, giving little yellow spots on the mucous surfaces, the so-called "strawberry gall-bladder." These do not get well without drainage. 6. In chronic cholecystitis without stones, but with adhesions to the surrounding organs, especially the pylorus, which cripple the latter and cause symptoms. Here, also, drainage alone is only temporarily efficient. The gall-bladders is a constant focus for low-grade infections and adhesions, which will continue to form and

perhaps to spread until its removal, all these processes being attended with discomfort and invalidism to the possessor of the organ.

4. **Report of a Case of Sacroiliac Strain Following Symphyseotomy.**—Charles F. Painter reports this case because the question as to the existence of sacroiliac mobility has so often been raised. In thsi case there was evidence of hypermobility of the sacroiliac joints; this was associated with severe backache, and gave ocular evidence of its existence by the pronounced lipping of the sacroiliac joints, as shown by the *x*-ray. The writer says that it may be maintained that even though one admits the validity of the claim that motion in these joints is evidenced by the lipping of the bones making up the joint, this is due to the fact that there is no connection at the symphysis. There never is a bony connection, and though the abnormal separation in this patient may, and undoubtedly did, aggravate the already existing mobility, still there is abundant evidence that these joints are in existence and are subjected to the same diseases to which other joints of the body are subjected. No better evidence is needed than this proof of the existence of these joints; and if there are joints, motion must follow, in some degree at least. Such a case cannot be of very common occurrence, and goes to prove that the sacroiliac joints, though unlike other articulations, resemble them in their essential features.

New York Medical Journal.

June 24, 1916.

1. The Value of Autoserum Injections in Skin Diseases. William S. Gottheil.
2. Tracheobronchial Syphilis. H. Arrowsmith.
3. Nephritis in the Aged. I. L. Nascher.
4. Colonic Stasis. George H. Evans.
5. Clinical Notes from the First Surgical Division of the Sea View Hospital. Alexander Nicoll and Michael J. Horan.
6. Adenocarcinoma of the Colon. Samuel Ross Crothers and Robert Kilduffe, Jr.
7. A Plea for the Male Nurse. P. Samuel Stout.
8. Pathological Conditions in Hematuria and Pyuria. A. S. Sanders.

1. **The Value of Autoserum Injections in Skin Diseases.**—William S. Gottheil reviews the recent literature in reference to the use of autoserums in skin diseases and states that he has fairly complete records of thirty-one cases of psoriasis, nine cases of various forms of obstinate chronic eczema, seven cases of chronic urticaria, four cases of very bad pustular acne, five cases of furunculosis, five cases of pemphigus and eight cases of florid secondary syphilis, and several cases of chronic lichen planus, leprosy, and other chhronic affections. From his experience with these cases he concludes as follows: 1. In psoriasis the autoserum treatment, while not in itself curative of the disease, is an important factor in the treatment. It cuts down the time required for the troublesome local treatment from weeks to days, and enables us to promise to clear the skin in from two to five days in even the worst and most obstinate cases. It postpones relapses for a long time, possibly indefinitely. In most cases it so influences the type of the disease that the relapsing lesions are few and insignificant, and are readily amenable to mild local treatment. 2. In chronic urticaria, neurodermatitis, pruritus senilis, and other obstinate itchy dermatoses it is worthy of trial. In some cases its action is effective and brilliant. 3. It is of some value in bad pustular acne; but in furunculosis, folliculitis, and other pus infections I have not found it useful. 4. In chronic eczema the same may be said as of acne; the injections are sometimes apparently effective, and at others fail entirely. 5. In pemphigus, lepra, and obstinate lichen planus it is ineffective. 6. In syphilis it is useless.

3. **Nephritis in the Aged.**—I. L. Nascher says that the frequent autopsy findings of interstitial nephritis in senile cases which gave no symptoms of the disease during life, and the frequent diagnosis of interstitial nephritis in senile cases which do not show the pathological condition upon autopsy, force the conclusion that either the pathologist or the physician was careless or ignorant, or else that nephritis in the aged does not present the clinical history or the pathological features that we find in earlier life. We often get a symptom complex in an elderly person which in a younger individual would justify the diagnosis of interstitial nephritis, yet in an aged person every one of these symptoms may be due to a cause which is neither directly nor indirectly traceable to the kidneys. Senile contracted kidney with slightly diminished output of urine, of rather high specific gravity and a trace of albumin without casts, is a physiological condition. It requires no treatment, and efforts to increase the output may cause a mild irritation and inflammation, followed by degeneration of the glomeruli. Chronic interstitial nephritis is a pathological degeneration superimposed on a normal degeneration, and by extension it will involve the glomeruli, producing a diffused nephritis. Parenchymatous nephritis is always secondary, either to an acute nephritis or, by extension, to an interstitial nephritis. By extension it will become diffuse, involving the whole organ. Acute nephritis may be primary, following the ingestion of poisons or renal stimulants, or it may be secondary, the irritation arising from bacteria or products of autointoxication or metabolism. If mild it will pass into parenchymatous nephritis; if severe it is speedily fatal. All pathological degenerations hasten normal degenerations and are therefore incurable. In the severe form of acute nephritis, which is always fatal in the aged, the physician is justified in trying anything which might increase the output of urine. In one case of parenchymatous nephritis with suppression of urine, the author used sodium theobromine salicylate in 42-grain doses three times a day for several weeks. In this case the ordinary diuretics in the usual doses failed to increase the urinary output, but these large doses were effective.

7. **A Plea for Male Nurses.**—P. Samuel Stout presents the following arguments in favor of training young men to the nursing profession, and urges that an educational campaign be instituted in all the high schools informing young men of the advantages of taking up this profession and urges that all hospitals receiving State aid be open to them. He says that male nurses are necessary because of the increasing scarcity of female nurses. Male nurses are more fitted to the work in the male wards than female nurses. Male nurses could attend to all the orderly's duties with much more efficiency than the ordinary orderly. Male nurses could carry out all the operating room technique. Male nurses would become more and more proficient, since their work would be continued as a life work and marrying would not terminate their nursing careers as it does with the female nurse. Male nurses could be trained as professional anesthetists. Male nurses would have a good groundwork for the study of medicine and this would provide a good way for the ambitious man to work his way through medical college. A certain proportion of young men should be trained for nursing in army hospitals. In the event of war they would be invaluable, and could be sent to places where it would be impossible to send a female nurse.

Journal of the American Medical Association.

June 24, 1916.

1. Further Reflections of a Medical Teacher. W. T. Councilman.
2. The Relation of Gout to Nephritis as Shown by the Uric Acid of the Blood. Morris S. Fine.

3. The Treatment of Chronic Colon Bacillus Pyelitis by Pelvis Lavage. Herman Louis Kretschmer and Fred W. Gaarde.
4. Intracranial Treatment of Syphilitic and Parasyphilitic Optic Nerve Affections: Physiologic Evidences; Researches on Intravital Staining of the Optic Nerve. Mark J. Schoenberg.
5. Reactions Following Intraspinal Injections of Mercury. George W. Hall, Hayes Culbertson and Carrie Slaght.
6. The Frequency of Unsuspected Syphilis, with Special Reference to Its Incidence in So-Called Neurasthenia. James S. McLester.
7. Vaccine Therapy and Other Treatment in Acne Vulgaris and Furunculosis. Harold H. Fox.
8. A Case of Granuloma Pyogenicum Affecting the Eyelid. Cassius D. Wescott.

1. **Further Reflections of a Medical Teacher.**—W. T. Councilman says that some years ago he gave an address of "Reflections of a Medical Teacher"; to-day his reflections follow along much the same lines, though the views expressed have in some cases undergone some alteration and repair, and in others have become deeper and stronger. In teaching, one is concerned (1) with the material, just as the farmer must consider first the character of the soil he tills. Continuing the agricultural simile we are (2) concerned with the tiller, his selection and training and his ability for his job. The (3) point is what sort of a crop he wishes to produce, and (4) what methods of culture he pursues. In private school teachers are selected rather on a basis of athletics and social qualifications than on the ability to train and inspire youth. The possession of a "Ph.D." is also regarded as one of the desirable qualifications of a teacher. The character of the work which the degree demands in no way qualifies him to teach. How much better it would be for him to spend the time under a competent master in the study and practical exercise of teaching. Every one engaged in the tillage of the soil must study its character. Harvard having required the A.B. degree as a condition for entrance into the medical school since 1900, so far as he has been able to learn by careful study of results, on the whole the A.B. men are better. The hereditary element also favors the college man. He has been greatly impressed with the evidence which college men often present of a lack of thoroughness in the instruction they have received. He believes that teaching is a calling which if engaged in should be the paramount interest in life, that it is a responsible, serious, and noble calling. Teaching should not be a bar to research, and many of the great teachers he had known have been both teachers and investigators. He thought it would be well if universities could be placed in a wilderness and withdrawn from the environments of idleness and wealth. Medical education must provide constant exercise in the study of disease and practice in methods. One of the most important elements should be the recognition of knowledge and its separation from conjecture. The lecture is an important part of teaching, provided its function is understood. It should be used to expand and coordinate the knowledge which the student has already acquired. Next to the lecture comes the demonstration, a method of overrated value. Oral recitation is also a valuable exercise provided it can be given in such a way as to bring out the conceptions which the student has formed and to correct those that are faulty. The profession of medicine is a career full of interest, the social position of medical men is on the whole good, there is a general feeling of fellowship and comaraderie among them, fostered by frequent meetings in societies.

2. **The Relation of Gout to Nephritis as Shown by the Urine Acid of the Blood.**—Morris S. Fine presents certain data which raise the questions: 1. Is gout merely a stage in the development of interstitial nephritis, whose further progress may be indefinitely delayed? 2. Is early interstitial nephritis merely potential gout, in which the clinical symptoms may or may not eventually appear? 3. Is the uric acid retention of gout due to a specific condition, *gout*, or to a complicating early interstitial nephritis. The two practical points brought out in the paper were these: (1) Since uric acid is the first of the nitrogenous substances to be retained in interstitial nephritis, its determination may give the first indication of this condition when other symptoms are uncertain or lacking. (2) Since gout and very early interstitial nephritis are characterized by essentially the same blood picture, it is necessary to employ every possible test to exclude nephritis before a high blood uric acid may be regarded as evidence of gout in the absence of the typical classical manifestations.

3. **The Treatment of Chronic Colon Bacillus Pyelitis by Pelvic Lavage.**—Herman Louis Kretschmer and Gred W. Gaarde said it was not their object to discuss the various forms of treatment advocated for pyelitis, but to present the results obtained by pelvic lavage in this series of cases. This series deals only with chronic colon pyelitis, and most of the patients had resisted medical management. As a routine, a 1 per cent. solution of silver nitrate was used. The amount injected varied from 5 to 7 cc. as an average. Great care should be taken to avoid a rapid filling of the pelvis and not to use too large amounts. In some of the cases, catheters were passed into the pelvis and, in others, only about one-half way. The treatments were carried out once every five or six days until the urine was sterile and free from pus. In summarizing the results of treatment they reported only on fourteen patients because they were able to follow this number to final results. Of the fourteen cases treated by lavage, bacteriological cures were obtained in eleven cases. In the remaining three it was possible to obtain positive cultures from the ureters, although subjective symptoms and leucocytes in the urine had long since disappeared. In four cases, one injection was given; in five cases, two injections; in three cases, three injections; in one case, four, and in another, eight injections. They drew the following conclusions: (1) From our results in this series of cases we believe that pelvic lavage gives a greater number of bacteriological cures in a shorter space of time than any other form of treatment. It is important that the urine be sterile in order to prevent recurrences. (2) In several instances we obtained sterile urine after one or two treatments of patients who had been on internal treatment for many months. (3) If patients fail to respond to this form of treatment we may be dealing with a condition other than a simple pyelitis, for example, tuberculosis, stone, or stricture of the ureter.

5. **Reactions Following Intraspinal Injections of Mercury.**—George W. Hall, Hayes Culbertson, and Carry Slaght give a summary of the work they have done in the Cook County Hospital, with intraspinal injections of mercurialized serum, mercuric chloride and mercuric succinmid. In fifteen cases treated the following symptoms were noted. Pain was rather severe, localized in the back and extending down the limbs in all of the cases. There was retention of the urine in two cases which lasted for twenty-four hours, requiring catheterization. The patients had no trouble after the first twenty-four hours. There were insomnia and restlessness in four cases. There were headache and pain extending down the back in ten cases. A rise in temperature ranging from 99 to 103 Fahr. was noted during the first twenty-four hours in all the cases. The temperature began to rise about four or five hours earlier following the injections of the mercuric chlorid and succinimid than following the injections of mercurialized serum. The cell count in the spinal fluid during the first twenty-four hours following injection ranged

from 300 to 2,000 cells per cubic millimeter. During this period the polymorphonuclear leucocytes predominated with a gradual return to the lymphocytosis later. The period of increased cell count lasted on an average about 72 hours. Some of the patients expressed a feeling of improvement a week or two after the injections, and requested further treatment, but no statement could yet be made as to the ultimate results following these injections. The writers recommend that in administering mercuric chloride 1/100 of a grain be used when using the spinal fluid as a vehicle. This can be made up in a 1 per cent. solution using 20 c.c. of spinal fluid as a vehicle.

The Lancet.

June 3, 1916.

1. On the Influence of Antiseptics on the Activities of Leucocytes and on Healing of Wounds. C. J. Bond.
2. Notes on Military Orthopedics.—III. The Soldier's Foot and the Treatment of Common Deformities of the Foot. (Continued.) Robert Jones.
3. The Louse Problem at the Western Front. A. D. Peacock.
4. Notes on *Pediculus humanus* (*vestimenti*) and *Peduculus capitis*. A. Bacot.
5. An Investigation of the Best Methods of Destroying Lice and Other Body Vermin. J. Parlane Kinloch.
6. Memorandum on the Treatment of Infected Wounds by Physiological Methods. Almroth E. Wright.

1. On the Influence of Antiseptics on the Activities of Leucocytes and on the Healing of Wounds. — C. J. Bond has devised a method by which he uses an indigo thread placed in a wound which serves as a trap to catch emigrating leucocytes. In this way the cells can be recovered for microscopic examination at various interfals after operation, and the influence of various antiseptics can be observed on the behaviour of the leucocytes towards inert pigment particles, and albuminoid and other oryanic substances introduced into the wound. In this way the writer has made a considerable number of observations under strict aseptic conditions in the human subject, and many antiseptics in different degrees of concentration have been tested by this method of the decolorization of the indigo thread. The outcome of the inquiry seems to be that antiseptic solutions in moderate degrees of concentration exercise less influence over emigration and phagocytosis than many surgeons have supposed. There are, however, reasons for concluding that antiseptics do exert a considerable inhibitive effect on the return immigration of living phagocytes. This aspect of the subject should be borne in mind in descriptions of the effect of different antiseptics in killing off pathogenic organisms in pus and other liquids in vitro and on the sterilization of wounds. Provided efficient drainage is ensured, the surgical application of most antiseptic solutions does not apparently materially prejudice the defensive activity of the tissues in either infected or non-infected wounds. If it can be shown that the use of antiseptic reagents does at any stage inhibit the activities of the pathogenic organisms, then, although these reagents do undoubtedly cause the death of a certain number of body cells and prevent others from again reaching the tissues, this is a small matter if the invading organisms are at the same time materially diminished in numbers or in offensive capacity. The occasional death of even large numbers of phagocytes is well borne if time be given to make up the loss. The experimental introduction of pigmented particles into a wound also throws valuable light on wound infection. In a general way the transportation of the pigment follows the same routes and the same lines of least resistance as those traversed by infecting organisms. The same peculiarities are apparent in the permeation of tissues and organs by pigment granules. The liver, the spleen, the kidney and the brain each presents its own problem in emigration, phagocytosis, and return immigration. Bearing in mind that pigment particles are incapable of intrinsic movement, or multiplication, or growth, any transportation of pigment, insofar as it is not due to currents in the lymph or other fluids bathing the wound, must be due to the action of living cells. The writer points out that several side issues of considerable interest arise out of this problem of the return immigration of the phagocytes. Unless the ingested cocci and bacteria which are carried into the tissues by the phagocytes on their return journey are killed, or sufficiently attenuated to render them incapable of further growth, they may start into renewed activity on the death and disintegration of the cells which contain them. It is possible that some cases of recrudescent local sepsis may owe their origin to this cause.

5. An Investigation of the Best Methods of Destroying Lice and Other Body Vermin.—J. Parlane Kinlock discusses the various methods that have been employed for the purpose of destroying lice and other body vermin and concludes that, as Bacot has shown and as his own experiments also demonstrate, lice do not survive immersion in boiling water. Of the various insecticidal powders that have been tested the N. C. I. (naphthalene, creosote, iodoform) powder is the most destructive to lice. Naphthalene and creosote have each a strong insecticidal action. The insecticidal action of iodoform is feeble. Commercial naphthalene is more actively insecticidal than pure naphthalene and it appears that the lethal power of naphthalene for lice is dependent in great part on the presence of hydrocarbons and coal tar derivatives other than pure naphthalene. The immediate lethal effect of creosote when mixed with naphthalene is less than that of some other insecticide liquids, but the longer period during which creosote continues to act more than compensates for the initial disadvantage. In addition to its feeble insecticidal action, idoform greatly increases the adhesiveness of N. C. I. powder. The insecticidal power of naphthalene-creosote powders gradually diminishes when they are exposed in the open air. The moist nature of such powders precludes their being used successfully in perforated tins and it has not been possible to dry the powders and at the same time retain the moist volatile hydrocarbons and other coal tar derivatives in which the insecticidal effect mainly depends.

6. Treatment of Infected Wounds by Physiological Methods.—Almroth E. Wright criticises the traditional methods of treating wounds by a combination of antiseptics, incision, and mechanical drainage, because it fails to kill the infecting microbes and at the same time fails to give the organism opportunity for ridding itself of the infection. He says the treatment of septic war wounds divides itself into three therapeutic procedures. In the first we have to promote the destruction of the microbes which have been carried into the deeper tissues. We have to re-establish normal conditions in the tissues, resolving the infiltration in the walls of the wound, getting rid of infected sloughs, prevent the corruption of discharges, and inhibit microbic growth in the cavity of the wound. During the whole period occupied by these operations we have to be constantly on our guard to prevent active and passive movements which would propel bacteria along the lymphatics, and carry poisonous bacterial products into the blood. Second, when the physiological conditions of the deeper tissues have been restored and the wound has been rendered to naked eye inspection perfectly clean, the surface infection must be dealt with. Third as soon as this has been suppressed, or all but suppressed, attention must be given to promoting the processes of repair, bringing together the tissues, and covering over denuded surfaces. The ideal object of

physiological treatment is to give intelligent aid to the organism in combatting bacterial infection. Saline dressings supply a means for evoking in infected wounds certain requisite psychological reactions. Hypertonic salt solution will act as a lymphagogue, drawing out from the tissues lymph which has spent all its bactericidal energy, and drawing into the tissues from the blood stream lymph inimical to microbic growth. It brings into direct application upon leucicytes a hypertonic solution (what is in view here is a solution containing 5 per cent. salt), will disintegrate leucocytes, setting free the tryptic ferment they contain. Such a hypertonic salt solution will also exert a number of inhibitory actions. It will inhibit the action of the tryptic ferment set free in the wounds. It will inhibit coagulation and so prevent the sealing up of the orifices through which lymph pours into the wound. It will inhibit leucocytic immigration into and prevent phagocytosis in the cavity of the wound. It will inhibit microbic growth. The writer discusses in detail the various methods of using hypertonic salt solution in the different stages of wound infection and the indications which call for the redressing of wounds.

British Medical Journal.

June 3, 1916.

1. Typhus Fever in Serbia. (Concluded.) R. O. Moon.
2. A Case of Acute Diabetes. With Comments, Especially in Regard to Acidosis. Walter G. Smith.
3. Treatment of Septic Wounds, with Special Reference to the Use of Salicylic Acid. Notes Based on Cases at the Military Hospital, Endell-street. Louisa Garrett Anderson, Helen Chambers, and Margaret Lacey.
4. On the Ill-treatment of Genital Prolapse. W. E. Fothergill.
5. A Factor in the Treatment of Head Injuries and Allied Conditions. T. E. Harwood.
6. A Note on Spinal Anesthesia. D. B. Gadgil.
7. A Note on the Function of the Meduallary Nerve Sheath. C. E. H. Milner.
8. The Cockroach: Its Destruction and Dispersal. A Comparison of Insecticides and Methods. Joseph H. J. Holt.

2. A Case of Acute Diabetes, with Comments, Especially with Reference to Acidosis.—Walter G. Smith records the main facts in a case of diabetes occurring in a boy of seven years, and makes it the basis of comments which he thinks justify the following propositions. There is no simple, direct test for oxybutyric acid at our disposal. Its detection can only be effected indirectly. Barium oxybutyric acid forms long, needle-shaped crystals whcih are doubly refracting. Neither oxybutyric acid nor acetone gives any color reaction with ferric chloride; oxybutyric acid has no reactions in common with acetoacetic acid. Hurtley's method for its quantitative determination by extraction with ether and estimation by titration is described by Plimmer. For acetoacetic acid three tests are available: Gerhardt's, Rothera's, and Riegler's acetoaceticacid. Acetone does not respond either to Gerhardt's or Riegler's test. Its reaction with Rothera's test is similar to that of acetoacetic acid, but is less sensitive. The sensitiveness of Rothera's test is increased by the addition of a solid ammonia salt, as the sulphate of chloride. The writer has confirmed the value of this modification. The amount of acetoacetic acid in urine is usually considerably greater than that of acetone, according to Plimmer from two to ten times as much. There are two sources of acetoacetic acid in the urine, namely, that which is preformed and that derived from intravesical decomposition of ovybutyric acid. There is no simple and reliable test at present known for the detection in urine of small amounts of acetone in association with acetoacetic acid. Many data published in connection with acetonuria are vitiated by ignorance of this fact. Rothera's test differentiates acetone from creatinin. Creatinin reacts with sodium nitroprusside and either liquor potassæ or liquor ammoniæ. Acetone reacts only with nitroprusside and liquor ammoniæ. The term acetone bodies is not a happy one, for it lays stress on the least important member of the triad. Since acetone alone is not infrequently met with in urine, perhaps it would be well to indicate that fact by the term acetonuria, and to use the term acetouria for the cases in which acetoacetic acid occur. The theory of acidosis is still incomplete. The modes of origin of "acetonuria" are complex and are largely influenced by the amount of carbohydrate food assimilated. There is no evidence that either oxybutyric acid or diacetic acid exercise any specific toxic action apart from their acidic character. At present all we are entitled to say is that coma may come about by disturbance of the normal delicate adjustment of acid and basic radicals in the blood and tissues without postulating an excess of hydrogen ions in the blood.

3. Treatment of Septic Wounds, with Special Reference to the Use of Salicylic Acid.—Louisa Garrett Anderson, Helen Chambers and Margaret Lacey have made observations on approximately 1000 cases of septic wounds treated in the wards and operation theaters of the Military Hospital, Endell Street, making large numbers of cultures to determine the bacterial growth in the wounds. From these observations they draw the following conclusions: 1. The bactericidal action of many of the so-called antiseptics when applied to septic wounds is negligible. 2. The majority of wounds heal without the application of an antiseptic, provided free drainage is supplied and dressings are changed frequently. Hypertonic saline, in so far as it aids physiological processes, is preferable to many so-called antiseptics. 3. A strong antiseptic, such as eusol, can sterilize the surface of a wound with which it comes in contact, and, if applied continuously, gives excellent results. 4. Salicylic acid applied in a suitable form can often save cases when other methods have failed. It is particularly useful when dressings cannot be repeated at frequent intervals. 5. In all cases where recovery is delayed and the effect of the reagents of doubtful value the treatment should be controlled by making repeated cultures from the wound surfaces.

4. On the Ill-Treatment of Genital Prolapse.—W. E. Fothergill states that some 600 plastic vaginal operations are done every year at St. Mary's Hospital, Manchester, and they are thus afforded an opportunity of observing the results of many futile operations, and suggests what he considers suitable operations for the common forms of genital prolapse, which are four in number. 1. In true prolapse or complete procidentia, the operator should excise most of the anterior vaginal wall with the front half of the vaginal roof. The cervix should also be removed if it is unhealthy or if the uterus is more than 3 inches long. The writer's method of combining anterior colporrhaphy with amputation of the cervix is useful. 2. Where the uterus is long and loose the cervix appears first at the vulva and vaginal roof is inverted from above downward around the elongated cervix. There is no cystocele. This is a form of prolapse seen in virgins and nulliparous as well as in parous women. The treatment is excision of the front half of the vaginal roof together with the cervix, leaving the uterus 3 inches long. 3. In cystocele the anterior vaginal wall is everted from below upwards as in true prolapsus, but the uterus retains its normal position. Here anterior colporrhaphy is indicated. 4. In rectocele the posterior vaginal wall is everted from below upwards and the anterior rectal wall is adherent to it. This form of prolapse is seen in parous women with torn perineum, but not in virgins or nulliparæ. In this form of prolapse most of the posterior vaginal wall must be removed, the best method being Professor A. Donald's colpoperineorrhaphy, which is done from above downard so as to combine the two operations.

Book Reviews.

HUMAN PHYSIOLOGY. By PROFESSOR LUIGI LUCIANI, Director of the Physiological Institute of the Royal University of Rome. Translated by FRANCES A. WELBY, with a preface by J. N. LANGLEY, F.R.S., Professor of Physiology in the University of Cambridge. In five volumes. Vol. III. Edited by GORDON M. HOLMES, M.D. Muscular and Nervous Systems. Price, $5.00. London: Macmillan & Co., Limited; New York: The Macmillan Company, 1915.

THE third volume of Luciani's Human Physiology deals with the muscular and nervous systems and phonation and articulation. The reader will find in this work a comprehensive, but by no means exhaustive (or exhausting), discussion of these various topics. The author's method is to give an historical sketch of the work which has been done in the past and of the different theories which have been held, and then to criticise and bring into their proper perspective the several points which have been under review. It is this feature which, combined with the author's erudition, places the work on a higher plane than that which is enjoyed by the average textbook. In its philosophic method and general style, the book reminds us of Sir Michael Foster's classical work which appeared about thirty years ago. Appended to each chapter is a selected bibliography which cannot fail to be of service and from which many a reader may learn of the work of Italian scientists which is not as well known as it should be. Of the ten chapters of which the volume consists, that on the mechanics of the locomotor apparatus is particularly valuable because it deals with a subject which is generally either neglected or omitted by writers on physiology. The chapter on phonation and articulation has been much abridged; the author's remarks on the singing voice and the speaking voice deserve a larger audience than they are likely to receive. The sympathetic system is discussed in a very brief chapter, but the author makes amends by referring to the previous volumes of this work and by the ample recognition of, and reference to, the labors of Gaskell, Langley, and others. Much of the pleasure experienced in reading the volume is due to the smooth and capable work of the translator.

DIAGNOSTICO DE LAS ENFERMEDADES DEL CORAZÓN. Por ANTONIO MUT, Jefe del Dispensario de Medicina general de Instituto Rubio. Segunda edición, corregida y aumentada. Price, 7.50 pesetas. Madrid: Hijos de Reus, 1915.

PERHAPS in no other branch of medicine have such signal advances been made during the past decade as in the study of the diseases of the heart. These advances are to be mainly attributed to two factors: first, the use of precise physical methods of recording the work of the heart and the condition of the cardiovascular apparatus as a whole; and second, bacteriological studies of the blood in cases of heart disease. Naturally, the greatest progress has been made along the lines of diagnosis. For this reason a volume, such as the one under review, that deals with the diagnosis of diseases of the heart in the light of the most recent investigations would comprise practically the entire subject of cardiac pathology and symptomatology. The student of this branch of medical science will find in the second revised and enlarged edition of the important work by Dr. Mut, a veritable digest of the most recent knowledge of the diseases of the heart. An idea of the extensive research upon which the text is based may be gleaned by looking over the bibliography of 90 pages at the end of the volume, the references comprising about 1,800, and all of these being contributions subsequent to the year 1908. The text of this work is divided into thirty chapters, which are headed as follows: Anatomy; Physiology; Subjective Symptoms; Methods of Physical Diagnosis; Percussion: Auscultation; Murmurs; Examination of the Arterial Pulse and Simple Sphygmography; Phlebography, Plethysmography, and Tachography; Cardiography; Radiology; Electrocardiography and Phonoscopy; Sphygmomanometry, Sphygmobolometry, and Viscosimetry; Arrhythmias and Sinus Arrhythmias; Extrasystole; Heart Block and Stokes-Adams Syndrome; Pulsus Alternans; Permanent Arrhythmia; Loss of Tonicity and Cardiac Insufficiency; Tachycardia; Bradycardia; Valvular Lesions, Aortic and Pulmonary; Lesions of Auriculoventricular Valves; Congenital Diseases of the Heart; Angina Pectoris; Endocarditis; Myocarditis; Pericarditis; The Heart in the Infections; Pregnancy and Heart Disease and the Effect of Chloroform Upon the Heart. This work may be recommended to any one capable of reading it as an eminently up-to-day treatise on the diagnosis of diseases of the heart.

OBSTETRICS. A Practical Text Book for Students and Practitioners. By EDWIN BRADFORD CRAGIN, A.B., A.M. (Hon.), M.D., F.A.C.S.; Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University, New York; Attending Obstetrician and Gynecologist to the Sloane Hospital for Women; Consulting Obstetrician to the City Maternity Hospital. Assisted by GEORGE H. RYDER, A.B., M.D., Instructor in Gynecology, College of Physicians and Surgeons, Columbia University, New York; Assistant Attending Obstetrician, Sloane Hospital for Women; Associate Surgeon, Women's Hospital, New York. Octavo, 858 pages, with 499 engravings and 13 plates. Cloth, $6.00 net. New York and Philadelphia: Lea & Febiger, 1915.

ANOTHER very excellent and readable book on obstetrics makes its appearance. The call for text-books of this type naturally depends upon the needs of the student body, graduate and undergraduate, who are pupils of the author; the former to refresh their memories of the Sloane technique, the latter to obtain instruction in the methods of their teacher. Based almost entirely upon the figures and results obtained by the methods of this one institution, it is a question whether the logical title of the book had not better have been, "The Practice of Sloane Maternity Obstetrics."

The statistics of the hospital are instructive, and though not based on as large a series of cases as those published by some other institutions in this country, are quite complete and compare very favorably with figures published both here and abroad. Grouped in one chapter they would make a valuable collection for reference. The sections on management of normal pregnancy, antepartum examination, management of normal delivery, ectopic gestation, pyelitis of pregnancy, fibroids complicating pregnancy and labor, management of lactation, and artificial feeding during the first month, have not been equaled in any recent work of similar scope.

The Freiburg technique of scopolamine narcosis is carefully detailed. From observation in a limited number of cases, the author concludes that the method has its advantages in selected cases in a hospital, but that it is inapplicable as a routine procedure in a large teaching institution with an active service, as the staff requirements are too great.

Pubiotomy is shown to be a competitor with cesarean section in the moderate degrees of pelvic contraction, but in view of the complications the author hesitates to recommend the operation. Vaginal cesarean is described as a valuable addition to our methods of delivery, but one not lightly to be undertaken, especially by a novice. In speaking of the relative value of the extraperitoneal and the Sänger cesarean section in infected cases, the author believes that the superiority of the extraperitoneal cesarean section over the Sänger incision followed by a hysterectomy after the removal of the child is still to be proved, and prefers the latter. Discussion of unsettled topics, such as the Abderhalden reaction and the morphine treatment of eclampsia, is avoided as far as possible. The presentation of etiology, prognosis, and methods of treatment is conservative throughout, and recommends the book especially to the undergraduate student.

NURSE INSTRUCTION FOR CIVIL SERVICE EXAMINATIONS. Covering Nurse, Trained Nurse, Hospital Nurse, Visiting Nurse, Field Nurse, Tuberculosis Nurse, School Nurse, Nurse's Assistant, Assistant Superintendent of Nurses, Head Nurse, Supervisory Nurse and Superintendent of Nurses. Answers to Examination Questions and 250 Specimen Questions. New York City, New York State, New Jersey, Chicago and Federal Services. Price, 50 cents. New York: Civil Service Chronicle, 1916.

THE contents of this pamphlet will be evident from the lengthy title page, transcribed above. Three sets of questions are answered, and these answers are the ones sent in by the candidates who obtained the highest marks in each case. Intending candidates can thus see how their answers will be graded by the examiners, and they may also observe that little eccentricities in spelling are not seriously objected to. Indeed, the questions are not entirely blameless in this matter. Most of the questions seem practical, and the pamphlet should prove of service to any nurse who is thinking of applying for a civil service position.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Sixty-Seventh Annual Session—Held in Detroit, Mich., June 13, 14, 15 and 16, 1916.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page 39.*)

SECTION ON OBSTETRICS AND GYNECOLOGY.

Wednesday, June 15—Second Day.

Colonic Infections: Some Seldom Described Nonspecific Types.—Drs. J. M. LYNCH and W. L. MCFARLAND of New York presented this paper. They said that in experiments on animals there were shown to be certain fundamental principles bearing on surgery of the gastrointestinal tract. The rate of motion of the intestinal contents was shown to be in direct proportion to their toxicity. It was most rapid in the duodenum. This was important to the protective mechanism of the animal. Thus the acid reaction in the terminal ileum was protective in character and alimentary disease should be interpreted in the light of this knowledge. Digestion was shown to be a segmental process and inflammatory conditions were most frequently found in the caudad segment where there were great quantities of bacteria. Twenty-one cases of purulent infection of the colon had been studied by the writers, which appeared so severe that tuberculosis was suspected in many cases. There was severe diarrhea with early appearance of pus, blood and mucus. The proctoscopic picture was typical, the mucous membrane appearing lifted from the subjacent structures and being edematous and ulcerated. After recovery an atrophic appearance occurred. The lymphatics presented no change except inflammation. Bacteriological examination was disappointing and did not throw light on the condition, the normal flora of the intestinal tract apparently only being present. Conclusions were that the etiology was unknown, the infections being acute at first and becoming subacute or chronic. They were segmental in character, suggesting vasomotor origin. Cases should be early recognized as infections and treatment should be medical or surgical, depending upon the type. Ileostomy had given very favorable results in some cases, as in a patient who had gained 22 pounds in six weeks after ileostomy.

Dr. J. W. DRAPER of New York said he wanted to thank Dr. Lynch for this valuable paper. He had seen a number of these cases with the reader and could corroborate what he said. The involuntary system supplied many nerves of the colon which had cells in the stellate ganglion. The thirteenth thoracic supplied the ileocecal region very largely and might account for the reflex symptoms so often seen in the stomach in the course of clinical disease. In regard to ileostomy, which was the method of treatment suggested by Dr. Lynch in his paper, Dr. Lynch had been the first to recognize the usefulness of this treatment in these conditions. Like many methods in general therapeutic use it had been employed sporadically a number of years and sufficient time had elapsed to prove its value. The reason that this worked so well from the point of view of surgical physiology was that it conformed to the fixed rule that the stoma, to give relief, must be early rid of the inflammatory process in the gut. Ileostomy had immediate effect on the nervous and mental condition by reflex action upon the duodenal and jejunal glandular secretion. To this fact also might be traceable the deaths in high intestinal obstruction.

Dr. J. M. LYNCH said that he wanted to mention medical treatment. All cases except the very acute could be relieved, and it was well worth while to try permanganate of potash, 1/5000 and in some of the subacute cases they had obtained good results with one teaspoonful of peroxide of hydrogen to each pint of water.

Congenital Inflammation, Deformation, and Defunctionalization of the Caudad. Ileum and Colon.—Dr. J. R. EASTMAN of Indianapolis gave this paper. He first described the fetal colon which, he said, lay free in the abdominal cavity to the left with its mesentery in contact with the parietal layers of the peritoneum. Later fusion of the layers took place, becoming connective tissue, fused to the abdominal walls, as far as the medial border of the left psoas muscle. Fusion occasionally was excessive and angulation occurred as the result. The gut itself became fused to the abdominal wall causing stagnation of contents. Another fusion took place on the right side and firm transverse folds occurred, differing, however, from Jackson's membrane. The persistence of this infantile position of the sigmoid was often noted. Later the descending genital glands, the ovary and testicle in descent from their primitive position might cause deformity of the terminal ileum and operation on internal hernia often brought to light the persistence of a fetal fold. The folds thus causing angulation of the sigmoid to the left, by irregularities of embryonic fusion, could be broken up by gauze dissection, by simple wiping of the folds. Another point of irregular fusion was about the cecum and terminal ileum. Fusion here often caused a retrocecal or retroperitoneal appendix, the latter being caught between the fusing layers. Dr. Eastman here showed diagrams illustrating the various irregularities of fetal fusion and also illustrative of Jackson's membrane, which was always associated, he said, with chronic appendicitis, and which differed from engorgement of the ileocolic artery with a hyperemic peritoneum and terminal ileum. The Jackson's membrane was often confused in the minds of many with fused membranes, but it was an entirely different condition.

Dr. GOLDSPOHN of Chicago said that Dr. Eastman had mentioned the extraperitoneal appendix and that back of the cecum. Eight years ago he had operated on a patient, a young, vigorous man, who had an extraperitoneal appendix lying concealed within the small pelvis. He had an indurated mass felt distinctly one inch inward from the right border of the ileum, which was very painful. There was no induration beneath this, as was usual from a ruptured appendix. The diagnosis was very much confused by the fact that six days preceding that time, he had been injured by a wagon pole striking him above the symphisis pubis. Four days after the injury, however, he was not disabled and he called a doctor because he had fever, nausea, but no acceleration of the pulse. The doctor thought it was caused by trauma. Dr. Goldspohn thought at first that the omentum had become strangulated between the layers of the internal fold. Hernia was present opposite the transversalis fascia, but did not descend into the inguinal canal. Going inward one inch from the border of the crest of the ileum, the doctor found a small mass with about half a dram of pus distributed into different directions; the peritoneum had a blue appearance. Working down, extraperitoneally into the small pelvis, to the spermatic cord and vas deferens toward the bladder, he got to the bottom of the infected area and discovered a mass of gangrenous tissue, about as large as a man's thumb (3 inches) that could be distinctly gathered up and had a pedicle running upward. The appendix was not thought of. It was tied off and taken out of the cavity, and the cavity enlarged extraperitoneally. It was desired to see the condition inside of the peritoneum and it was cut into. There was some free fluid but the intestine was not distinctly inflamed. Not wishing to infect the peritoneum from the venomous looking connective tissue area, the cavity was packed. There was temperature for several days then it subsided. The patient made a satisfactory recovery.

Dr. GREGORY CONNELL of Oshkosh said he would like to express his appreciation of this masterly summing up by Dr. Eastman of the etiology of these conditions. In the past there had been two sources considered—inflammatory and congenital. In future the inflammatory could be ruled out. In corroboration of Dr. Eastman's point relative to the ileopelvic ligament of Lane, and also on the left side, he would like to mention an instance in which there was no inflammation in the abdomen at all but extreme ptosis and adhesions to the round ligament on the left side. The tube was not inflamed, but there was fusion with this ligament and the omentum. The division made by Dr. Eastman between the excessive fusion, demonstrated by the white line, and the vascularized layers, was a very important one and should be kept in mind to simplify discussion. He saw Dr. Jackson in the meeting and he hoped that they would get some explanation of the original picture of Jackson's membrane. As he understood it there was a difference; Dr. Jackson's membrane being a pericolitis, not a pericecolitis. He would like to hear from Dr. Eastman whether these conditions were a result or merely a coincidence. The treatment of the condition would rest upon that point.

Dr. J. M. LYNCH of New York said that he thought they were all very much indebted to Dr. Eastman for the very excellent paper, but he believed that the kernel

of the whole proposition was that there might be any of these congenital deformities; there was, in fact, no such thing as perfect fusion. Any two layers might become separated or delaminated and become adherent and cause deformity. He did not believe that in the ordinary healthy peritoneum this was harmful, because it was elastic. It was the subsequent inflammation which left fibrous connective tissue. He did not think it was necessary to operate unless there was a change from ordinary endothelium to connective tissue.

Dr. JACKSON of Kansas City said that he had considerable interest in this subject, since he had described what had since been named "Jackson's Membrane." There had, however, been many things called Jackson's membrane which were not so. When the structures were considered anatomically and embryologically it was found that there were many departures from the normal. Many of these were due to fusion, transpositions and different causes. He thought that there were two distinct types of conditions clinically, and clinical symptoms existed sometimes from congenital malformations alone. There were angulations which produced symptoms, and the removal of which mechanical difficulty relieved the patient. Many cases were relieved by cutting adventitious bands. On the other hand, he was inclined to believe with Dr. Lynch that there must be an added element, usually infection, which made a complication to the original condition. There were other cases, however, where correction of the mechanical imperfection did not relieve the patient. The patient must be treated for affection of the inside of the colon. In the cases of true pericolitis (Dr. Connell was correct in so naming them) the pericolitis never goes on to the colon. Where cases had trouble from absorption from the outer colon there occurred a sensitization in the portion where the absorption took place. These cases had either to be let alone, or one could risk another operation in the ascending colon.

Dr. J. R. EASTMAN said that with all respect to what Dr. Jackson had said he would like to say that he had seen 100 times, over the cecum and caput coli, a thin veil that he could move about quite freely. He believed that these anomalous membranes had been seen by most of the gentlemen present. He did not mean to say that these irregularities impaired the function of the colon in every case, but occasionally it was definitely associated with angulated fusion and with arrest of the procession of intestinal contents, in other words, stasis in that zone. It has been occasionally observed that the separation of this excessive fusion would permit relief of the stasis. This did not happen often, but it was known to occur. The simple wiping away of adhesions could restore function of the stasic distal descending colon and proximal sigmoid, now and then. Dr. Eastman said he had purposely omitted the discussion of associated mental states, as there was not sufficient time to go thoroughly into the matter. He had tried merely to bring this simple message—that there was such a thing as excessive fusion between the mesentery of the large intestine and abdominal peritoneum. This might extend around and across the normal muscle band, and such fusions might apparently interfere with the function of the intestine, and the fact should be borne in mind that in the case of an oblique vascular abdominal band and folds down to the internal abdominal ring, the appendix might become arrested between these laminæ of the large intestine, so that when the layers became obliterated the appendix occupied a retroperitoneal position. The apparent postnatal adhesions of the omentum might represent fusion of the great omentum at the hepatic flexure or the splenic flexure and might not represent adult pathology at all. He was greatly indebted to Dr. Jackson for telling them what Jackson's membrane was (he had never known before). He did not believe that any of them knew what membranous pericolitis was. He could not see any reason why that should be limited to the ascending colon. He could understand that torsion of the cecum might pull it over from the serosa, but this did not have the course Dr. Jackson described. He felt that you could not do much with a fresh separable membrane; it was like shifting smoke. Removal gave rise to new adhesions. He felt that this membrane was quite distinct from the engorgement of the ileocecal artery.

Anterior Parietal Implantation of the Colon for Ptosis.—Dr. CHARLES A. L. REED of Cincinnati said that it had long been axiomatic and fundamental to say that constipation was the cause of persistent ill health. It was, however, a new viewpoint to attribute many anemias, rheumatisms, digestive disorders, nervous diseases and kidney diseases to the effects of the toxic state originating in constipation. Constipation could be said to be related to any or all diseases which might be influenced by toxemia with resulting acidosis. Treatment, to be logical, must correct anatomical disturbances. Causes of ptosis of the colon were numerous: dilated ascending colon, atrophied transverse colon, angulation of splenic flexure, adhesions to the sigmoid, etc. Each of these were asosciated with structural change and must be corrected by physical means. Cases without serious distortion, and those which could be corrected by hygienic measures were not under consideration. Only those cases were considered in which the relationship could be demonstrated between the intestinal condition and the constitutional state. The idea was current that it was best to try every other treatment before surgery, but a condition that was obviously surgical from the start should not be subjected to delay in treatment. It was impossible in every case to restore the status quo ante to the intestine, some conditions defying functional restoration. Thus there were two classes of operation—radical and conservative. The former were resections, the latter plications, fixations, and pexies. There was a rational demand for some conservative measures, and for this reason the writer had devised the parietal implantation of the colon, using the properitoneal structures, which insured maximal support. To do this a median incison was first made from the umbilicus to the pubis, the viscera were explored and the adhesions broken up. The peritoneal margins were then approximated, and a liter of hygienic salt solution put into the cavity, and the wound closed by laminated chromic gut. Next the upper abdomen was explored, the patient being in the Trendellenberg position, and the gall bladder and appendix being examined. The incision was not extended through the peritoneum. Dr. Reed had done this opperation 226 times with parietal implantation, and of these 96 had been in conjunction with other operations. There was no death from the parietal implantation alone. There were two recurrences, one due to trauma. In 200 there was marked functional improvement. Increase in weight of from 30 to 60 pounds had followed in many cases and headaches, mental symptoms, rheumatisms, depending upon toxemia, had been overcome. Dr. Reed showed charts illustrating the steps of the operation.

Dr. F. H. MARTIN of Chicago said a few fundamentals should be emphasized: first, all displacements of the colon and stomach, shown by pictures, did not lead necessarily to serious symptoms; second, adhesions in the abdominal cavity did not necessarily indicate that there were pathological conditions to be relieved, in other words, they did not lead to symptoms. This was illustrated by pictures shown by Dr. Ochsner at the clinical congress in Boston, where there was disease but no symptoms. Surgeons could go into the abdomen every day and find adhesions which had not given rise to symptoms. There were often seen displacement of the organs causing kinks which held the viscera in disadvantageous positions which might interfere with function. How did nature seek to cure these difficulties? How did nature hang up the colon when the animal assumed the upright position? By peritoneal fusion. The colon rotated, and peritoneal fusions occurred. Therefore, if it was necessary to make a peg to hang up the peritoneal contents, that was done by nature, and that meant that few of those cases required operation. It was only where the viscera were caught in disadvantageous positions that readjustment was required. The advantage of pexy was that it allowed the parts to be restored to more normal position.

Dr. R. T. MORRIS of New York said that surgery was the brutal way of overcoming what the internist had overlooked. In dealing with these cases one had to consider two important features: first, the group of susceptible individuals predisposed to these conditions; second, the matter which had been overlooked by the profession, that of sensitization, allergy or anaphylaxis. Unless an elaborate analysis was made ruling out the peripheral irritations and focal infections, they would not decapitate the demon of the patient's ills by doing any one operation. The psychic feature had to be included. One might do almost any operation upon a patient with epilepsy and the patient would be better for months. If one reported the cases quickly enough, one had brilliant results. If one waited, one would postpone reporting results at all. The day would come when the profession would have the Cabot system and make a report as a lawyer would make a brief out for

his client. The consultant would group together the testimony of various specialists, relating to irritations, focal infections, and so forth, and deduce his conclusions. In some cases he would have relieved a precipitating factor, not a causative factor. In these cases the surgeon was dealing with precipitating factors, and his work was merely a therapeutic resource which assisted the general practitioner, as the giving of a dose of salts might assist him. The surgeon had to be relegated to the position of a therapeutic resource.

Dr. Emery Marvel of Atlantic City said he appreciated the work of Dr. Reed on the subject of stasis. They might well study what was the most susceptible portion of the intestinal tract to stasis. If one took no other means of instruction, one would conclude that the most susceptible portion was the cecum. Dr. Reed had mentioned inflation of the cecum. The condition was passed over as not worthy of further mention. Exception should be taken to that. If the pictures of Dr. Reed were followed, in cases where benefit had been obtained, each picture showed stasis in the cecum. Dr. Marvel said he had seen great benefit by reduction of the cecum. Anywhere where one took peritoneal covering of the bowel and coapted it together there would be distention. In studying the anatomy of the ascending colon and cecum there were found three bands of striæ, and if sutures were applied here they would not stretch. In the cecal pouch most of the distention was below the ileocecal valve, and the pouch had to be reduced by making sutures in the longitudinal direction and drawing them up. This was offered as a consideration to Dr. Reed when cutting bands of adhesions. If he would obliterate the pouch and reduce the caliber of the cecum, additional benefit would accrue.

Prevention of the Passage of Gas Following Operations on the Colon.—Dr. A. J. Ochsner of Chicago read this paper. He stated that aside from direct interference with the circulation of the colon due to injury to the vessels or to tension, there was no source of danger to the patient so great as that which came from obstruction to the passage of gas following the operation. Dr. Ochsner presented charts illustrating the various methods by which drainage could be supplied to the site of operation and by which it was made impossible for gas to accumulate above the operative area. Various methods were as follows: (1) placing of a drainage tube in the ileum to the abdominal wall after removal of the colon. The mortality in these cases had been reduced to a negligible fraction; (2) after the removal of the ascending colon and attaching of the ileum to the middle of the sigmoid flexure, the placing of a drainage tube to allow escape of gas from the ileum; (3) use of a Jacob's retention catheter to drain through the rectum into the ileum and flushing of the openings, to prevent gas and fecal accumulation; (4) where there was inactivity of the colon, attachment of the ileum to the upper portion of the rectum or lower portion of the sigmoid flexure, and application of the Murphy proctoclysis directly to the ileum, irrigation either from above or below; (5) a portion of colon removed, not being able to be attached; a buttonhole opening was made in the abdominal wall or opening to the ileum left open at the distal end; (6) excision of tumor of the sigmoid, leaving enough intestine to make an anastomosis; in this case the lumen of the lower segment was not sufficient to carry a large drainage tube, and a small tube was used; (7) resection of the large intestine between the sigmoid and rectum with insertion of a double drainage tube and fixation by a few stutures, thus providing drainage for the gas. The sutures would absorb and the wound would cauterize and heal itself. In carcinoma of the colon there was often enormous distention, and the incision should be large enough for the entire hand. Such patients were bad surgical risks. The obstruction had to be removed and the tube applied.

Radical Operations for the Cure of Cancer of the Second Half of the Large Intestine.—Dr. William J. Mayo of Rochester, Minn., gave this paper, which was read by Dr. Charles Mayo. The paper dealt with the number of operations (419) from Jan. 1, 1898, to Dec. 31, 1915, at the Mayo clinic for resections of the large intestine. The average mortality was 14.5 per cent. In 262 cases there was a five-year cure (54 per cent.), and a three-year cure in 67.5 per cent. of cases. In 184 cases the left half of the colon and splenic flexure was resected with an average mortality of 17 per cent. The right half of the colon was resected in 235 cases with an average mortality of 12.5 per cent., the difference being 5.5 per cent., and this was considered due to the less septic character of the liquid contents of the right half of the colon as compared with the more solid content of the left half of the colon and to the greater safety of ileocolostomy, as compared with the methods of union following resection of the left colon. The mortality estimate included patients dying in hospital without regard to the length of time death occurred after operation. The mortality of resections for cancer of the left half of the colon was based on an operability of 62 per cent.; that is, of 100 patients 62 were operated upon. With an operability of 25 per cent. there was a 5 per cent. mortality. There were permanent cures in 60 per cent. A high operability with high mortality and a low percentage of cures gave twice as many cures to the hundred patients as a low operability and a low mortality and high percentage of cures. This appeared a paradox, but a greater number of patients had been given a chance. In desperate cases the two-stage operation was considered the best for the patient. Metastases were often the cause of inoperability. The patient, however, sometimes had a long rest before the recurrence of the disease, and recent advance in technic had extended radical operation to advanced cancers. In conclusion patients with cancer of the second half of the colon should be given a chance. The results were shown to be better than in any other position except cancers of the lip and in the fundus of the uterus.

Intestinal Obstruction: Further Experimental Studies.—Dr. J. W. Draper of New York said that intestinal obstruction was a many-sided problem, important to the abdominal surgeon and to the surgical physiologist, and important to conservative surgery and medicine. Medicine had as yet failed to recognize that man was but a link in the chain of animal and vegetable life and the loosely defined syndrome known as autointoxication was of interest alike to the surgeon and surgical physiologist. This syndrome was associated with delay in passage of intestinal contents. The relief by ileostomy, mentioned by Lynch, could be ascribed more to biochemical results than to mechanical measures. Future progress in study would lie in considering the alimentary tract as a whole rather than as cut into arbitrary morphological divisions. Results in recent laboratory experiments on obstruction at different levels showed that animals died early in thoracic and esophageal obstruction. In ileo-obstruction animals apparently died under the influence of obstructed secretion, which had been thought to be of fundamental importance in causing death due to obstruction. The beginning and end of the tract where shown to have many points in common, the toxicity varying with the digestive power. It was believed that the toxin was not in the cell but was a product of abnormal activity. The cells were not toxic, but their secretions were. They apparently manufactured a substance deleterious to the body. In duodenally obstructed animals the incoagulable nitrogen was double in twelve hours to that in the controls. This might be of value in differential diagnosis. The cause of death in obstruction was not yet known but was apparently due to aberrant activity of the jejunum and obstructed cells. Autotoxemia in the human would be better understood when the cause of death in duodenally obstructed dogs was known.

The Superiority of the Right Side Artificial Anus.—Dr. John Young Brown of St. Louis gave this presentation. He said that in cases of neoplasms of the lower colon and rectum with history of chronic constipation it was necessary for the surgeon to decide a quick and safe method for relieving the patient after the acute condition had been relieved. The cases were usually inoperable from the rectal standpoint, although sometimes radical work could be done. In these cases an iliac anus, excluding entirely the large bowel, could be rapidly made, a cecostomy being done to relieve the tension. This measure excluded the current from the large bowel and the continuity of the bowel could be later restored, though this was most difficult in a left-sided operation. The possessor of an artificial anus was not to be envied, but he could be made comfortable and without odor by the right procedure. The iliac anus did away with adhesions which would follow a left-sided anus and with the relief of acute obstruction the large bowel could be prepared for later radical procedures when necessary. The right-sided anus enabled the worker to work under the best conditions, and its closure could be accomplished by simple and satisfactory measures.

Dr. J. M. Lynch of New York said that he was very glad to know that the profession were beginning to

recognize the value of ileostomy in surgery. This was a comparatively old operation. It was first done twenty years ago by an Italian physician, and there had been scattered references in the literature up to the present time. At the time Dr. Lynch had first performed this operation it was upon a physician and he had a multiple polyposis of the bowel. He had very severe infection and was incapacitated from work. The results of investigations on this case were read before the Gastroenterological Society at Baltimore in 1915. The patient was interested in the work upon him and he was turned over to Dr. Lusk at Cornell, but he got tired of being investigated as to sugar, although he would have been willing, he said, to have been investigated on beefsteak. He then went to Professor Mendel and was investigated as to the contents of the ileum, and Bradley of Wood's Hole investigated the enzyme output of the lower ileum and found very few enzymes. The most important lesson learned was that the patient with an ileostomy was very comfortable and could be of more use than the patient with a colostomy. Dr. Wm. J. Mayo examined the patient and was convinced that the operation was one of great value. The patient was now practising in New Haven and had gained forty pounds and refused to take the risk of having the anus closed. The polyposis had disappeared but he thought if the current were turned back he might have a return of the trouble. It was not necessary to perform colostomy with ileostomy. In another case, a woman, who had an obstruction at the lower end, a catheter was passed through the ileocecal sphincter. The colon was filled with water and the water remained in. The catheter was then passed through the ileocecal valve and the water tapped. There was no need in these cases to make a cecostomy which was just as difficult to close as an ileostomy.

Dr. J. S. Horsley of Richmond, Va., said that he had recently seen such an operation which had saved a patient's life. The patient had a multiple papilloma of the colon. It had become ulcerated and there was a discharge of blood and mucus. The operation was done under local anesthesia. He noticed Dr. Brown said he used the lower stump of the ileum. He thought this had a good many advantages. First it made an opening in the cecum and retained the ileocecal valve. If the flora of the large intestine had access to the small intestine there would be trouble. There would be protection by getting the ileum to close up the cecum and retaining the valve. If 12 inches were left from the ileocecal valve there would be stump enough to make a union with the ileum when it was necessary to reestablish the current and preserve the valve.

Dr. J. Y. Brown of St. Louis said that he did not do a cecostomy in these cases, but he simply inserted the tube into the gut through the ileocecal valve. There was rapid relief in the lower bowel after the upper bowel was relieved. Where this operation was done in a week or more one could irrigate through the tube in the large bowel and get a relaxation where the original obstruction was and clean out the bowel as well. It was almost impossible to arrive at a correct diagnosis in these cases. Dr. Crile had reported three or four cases he considered malignant, and after the gastroenterostomy was done, the condition cleared up. In the rectal cases it was necessary to get immediate relief with as little delay and as simple a method as possible. This method had been found absolutely invaluable in cases of this type.

Pelvic Infection in Women.—Dr. Thomas J. Watkins of Chicago read this paper. He said that the subject was a very large one and he would deal with some of the features of its pathology. The modern treatment of pelvic infections should be based on knowledge acquired in special and general infection and immunity. It had been changed in accordance with the appreciation of the systemic nature of infection. It was not truly a local disease and recovery was due to systemic immunization. In puerperal cases inflammatory exudate was largely accidental except in embolic infections or phlebitis; in the nonpuerperal state the condition was different, on account of the mode of extension of the infection, which was by continuity of tissue, involving the Fallopian tubes. The local reaction was a conservative process limiting the bacterial invasion. Presence of pus was not now, as formerly, considered indicative of immediate operation. Pus might be in reality an autogenous vaccine, according to the work of Vaughan, Jobling, Petersen and Lusk, who regarded inflammatory products simply as reactions from bacterial invasion. Chronic and acute infections should be differentiated. The acute infections were the result of conflict with invading bacteria and the chronic dealt with the residues resulting from this conflict. His aim now was to deal entirely with acute infection. The treatment, medical and surgical, in these cases was confined entirely to sustaining increase of body resistance. No remedy was of value apart from this consideration. The outdoor treatment was of much more value in these cases than it was in tuberculous cases, as the one disease was more acute than the other. Patients would sleep better and take twice as much food with outdoor treatment, and upon this the body resistance depended. In very acute cases of puerperal infection where leucopenia was present, blood transfusion was of great value. In regard to systemic immunity, suppurations in the pelvis became sterile more readily than in other parts of the body, due to active reactions in the pelvis. Thus practically all puerperal infections would be medically treated, and it had been found that since there was less surgical treatment, there was a lower morbidity. Nonpuerperal infections should be also treated medically since they had marked leucocytosis. Three operations might be cited: curettage, incision and drainage, and excision of infected parts. The first should be condemned as dangerous and unnecessary; the second should be practised in exceptional cases, but prolonged operations under deep anesthesia were condemned as lowering resistance; the third, excision, had a limited field, *i.e.* with infected degenerated fibroids, with twisted pedicles of tumors, with acute intestinal obstruction, and with acute appendicitis.

Results Following the Treatment of Pelvic Inflammatory Lesions by Surgical Measures.—Drs. J. G. Clark and C. C. Norris of Philadelphia presented this paper, which dealt with the tubal and gonococcal type of infection. It was stated that a few years ago, when a patient was brought to the hospital in an ambulance the surgeon did not know whether the tube or appendix was involved. Both were considered surgical cases, and both were promptly operated upon. It was recognized now that gonococcus was a slow infection and rarely produced peritonitis. Dr. Clark then showed lantern slides of tables showing percentages before and since 1910 of the results of conservative treatment, with about 71 per cent. cures. He felt that conservative treatment showed that mortality was less and morbidity better with this method. The employment of drainage was always prejudicial to the patient. He would criticise Dr. Coffey's recent articles on the treatment by quarantine pack, because, in the first place, gonococcus infection tended to quarantine itself; it did not tend to peritonitis nor produce infection extraneous to its site. He felt that Dr. Coffey would find that this pack would produce hernia of the intestine and adhesions, and he would be obliged to discontinue its use. The conservative treatment aimed at the preservation of the menstrual function rather than at the preservation of fecundity, which had usually been lost in gonococcal infection. In only two of their cases had there been subsequent pregnancy.

Thursday, June 15—Third Day.

The External Signs of Diagnosis of the Attitude of the Fetus in Utero.—Dr. E. Gustav Zinke of Cincinnati read this paper. He compared the former practice of obstetrics by ignorant midwives with the present practice in the hands of physicians. This was practically a new branch, and he felt that it was the duty of medical colleges to provide competent teachers of this art. A great many physicians were not familiar with the principles of obstetrics, and the ignorant physician was as dangerous as the ignorant midwife. The most neglected side of this art was obstetrical diagnosis. Questions to be answered were: Was the patient really pregnant? If so, how far was pregnancy advanced? Would the parturient tract admit the passage of a full-term child? Was the patient healthy? What was the attitude of the fetus *in utero* after the seventh calendar month of gestation? In regard to the first question, the diagnosis was doubtful when signs were indistinct, when the patient menstruated irregularly or had never menstruated, or when she was past the menopause. The advancement of pregnancy might be determined by the size of the uterus or by the calculation of the last period. Thirdly, a thorough vaginal examination would reveal sufficient evidence of pelvic deformity to indicate instrumental delivery. Fourthly, family history and physical examination would reveal presence of disease. Fifthly, the attitude of the fetus *in utero* was important in the last two lunar months of

pregnancy. In a patient of normal stature and attitude a child might be born in almost any posture at the seventh month, but at the end the position must be determined. The fetal attitude must be diagnosed by external examination. To do this it was necessary to map the abdomen into four quadrants, right upper and lower and left upper and lower. To discover evidences of a breech or vertex presentation careful notation of the movements of the fetal heart and of the fetal movements in regard to these quadrants and to the umbilicus should be made. In vertex presentations the fetal movements were in the region of the diaphragm. The head would always select the right oblique diameter, which was the largest. The second and fourth positions of the vertex were most common and the first and third least common. In breech presentations the dorso-anterior position was most favorable for the body of the fetus and the d.a.l. position for the head. The fetal heart was to the left and level with the umbilicus, the movements posterior and below the umbilicus and the head in the upper right abdominal quadrant.

Dr. MANTON of Detroit said he considered this paper very important, because he found that on an average not more than 50 per cent. of practitioners made a diagnosis of presentation or position in any way. It was a great deal easier to diagnose presentation and position by external abdominal palpation than it was to do so by vaginal touch. The majority of physicians arrived on the scene after labor had begun, when the pelvic bones had overlapped so that, especially in nervous patients, vaginal examination was extremely difficult. The personal equation entered very largely into diagnosis. He found that it did not make much difference how well a man was trained; if he was indifferent and negligent, and if he took confinement cases only as pot boilers, he would not in any instance make a correct diagnosis. He could cite a case of one of his students, a recent graduate, who was sent to assist in a case which he diagnosed as transverse presentation. When the case was seen it was found that the young doctor had not even done abdominal palpation and he had jumped to the conclusion of transverse presentation. It turned out to be a perfectly normal presentation. Any paper which would draw attention to these diagnostic points was exceedingly valuable, and Dr. Zinke had rendered great service by enumerating these features.

Dr. JOHN O. POLAK of Brooklyn said that he was very pleased to hear from Dr. Zinke on the subject of palpation. The importance of this subject could not be overestimated. The knowledge gained in antepartem examination in following the course of labor was extremely valuable. In ordinary cases one could follow the advance of the course of the head and the descent of the head through the pelvis with the hand; and also the fetal heart in its descent and approach to the median line. In Faber's clinic the movements of the fetal heart were followed and studied and the course of labor determined by the descent of the heart of the fetus. It was impressive to mark the descent of the fetal heart every half-hour during the course of labor and to have the student record his findings to show the direction of the anterior shoulder of the fetal heart as the head descended into the pelvis, and in that way to obtain a practical guide of the descent of the head. In regard to the cervix, the dilatation of the cervix was followed through the rectum, and most of the normal cases were conducted with no vaginal examination. The progress was followed by abdominal palpation and by using the fetal heart and the condition of the cervix by palpation as a guide.

Dr. YARROS of Chicago said that those of them who had medical students to teach eight months out of the year found themselves in a curious position. These features were the A B C of modern training, which had advanced on that formerly given. These things had to be pointed out to students day by day, and it was necessary, because they would not remember them in making examination. It was so with the profession: they would not use the knowledge they had. The A B C of modern teaching was of the highest importance. It was not that the doctor did not know the breech from the vertex; it was that he did not use his knowledge. One made a diagnosis only by using methods of diagnosis. In listening to the fetal heart sounds it was important to ask the mother where she felt the baby most of the time. In a moment she would reply on the right side more often. The small extremity would lie there. The fetal heart sounds, as mentioned by Dr. Polak, were of importance. The student must listen to them when he made his diagnosis. The examination per rectum as to how much dilatation there was seemed to puzzle students a good deal, but this was one of the important means of diagnosis to be taught them.

Dr. ZINKE said that it was impossible in a fifteen-minute paper to cover the subject entirely, as it involved so many points. He had had some misgivings in presenting such a paper to such a learned body as this, but he had met with so many sad and serious experiences in his consultation practice that he thought a paper on this subject would be timely and would bring these ideas anew before the profession. It illustrated the fact that, having risen to the heights of abdominal surgery yesterday, it was proper that they should descend to the more common ground of equally useful and important subjects to-day.

Posture in Obstetrics.—Dr. JAMES W. MARKOE of New York read this communication. In it he gave a brief history of the antiquity of the usage of chairs for the use of women in labor. These were in use in the most primitive tribes in Africa, were common in the Orient, and had been in use in European countries through the middle ages and down to the present day. In Holland this formed part of an outfit of a well-equipped bride in the last century. In 1909 Dr. Markoe had turned his attention to the study of posture in obstetrics and its effect in different stages of labor. With the introduction of forceps in labor the importance of this subject had been lost sight of. The obstetrician should endeavor to make the first stage as short as possible to spare suffering to the mother. It was his duty to teach the woman to make the best use of her pains. In the first stage of labor the chair would allow full dilatation to take place. It would also allow the expectant mother to rest as much as possible. A study of the text-books showed that the physician was not expected to bother with the patient until the second stage of labor. The primipara, however, did not know how to use her efforts. The use of the chair would be found to exert the pressure of the bag of waters to the best degree. The rule of use-with-discretion applied to the chair as to all other procedures, but Dr. Markoe had found that since he had used the chair he had had recourse to far fewer surgical procedures. It had been used with 282 primiparæ and 38 multiparæ. Dr. Markoe showed slides illustrating primitive and medieval chairs, and also an experimental chair designed by him, with movable footboard and back, and also the use of the ordinary rocking chair with certain support for the feet which could throw the axis of the uterus back.

Dr. R. W. HOLMES of Chicago said that it was an interesting thing that a man who was the head of one of the largest maternity services in the country should discuss the question of posture in labor. All the rest of the morning had been given to the grandstand stunts of obstetrics, but the most vitally important were these things that every man ought to know how to carry out. He was sorry that Dr. Markoe's paper did not go further into the field of posture, because it was so vitally important to obstetric work. The original chair was the position of the woman merely squatting. This was the most natural position of emptying of the pelvic contents. It brought the axis of the uterus more nearly into the axis of the pelvis, thereby bringing the descent of the head into the brim. That position of crouching often secured the same effect. The extreme lithotomy position gave the woman the same position that Dr. Markoe gave with his obstetric chair. He did not see, however, how the chair could be said to shorten labor if the average time was twenty hours and the time in the chair was two hours. Twilight sleep had not shortened labor materially either. It was, however, a more vitally important thing that patients in the early stages of labor should have the advantages of more convenient posture. Posture meant much in abnormal labor. It meant the minimizing of forces. Thus in oblique presentations, where the long axis of the baby was transverse to the long axis of the mother, the woman should be put on the left side, where the head was to the left, and the fundus would gravitate and carry with it the breech. It would be well for all to go further into the ramifications of the subject of posture in labor. If the studies made in Dr. Zinke's paper and in Dr. Markoe's paper were followed all the time they would all get somewhere. There would not be so much indiscriminate cesarean section and there would be an end of the pseudo science of obstetrics.

Dr. BACON of Chicago said he had not been in the habit of letting the patient be up and around the room, mainly because of the danger of contamination. The patient was put in a sterile bed and effort was made to keep her in a clean condition. The contamination from

the floor to the feet was avoided and walking around, for that reason, was discouraged. The use of the chair and letting the patient get out of bed would defeat perfectly sterile conditions. He would ask the doctor to answer this point. He had been somewhat in doubt as to the value of abdominal contractions in the first stage of labor. It was chiefly the uterine muscle that dilated the cervix, but the experience of Dr. Markoe would incline him to try this.

Dr. J. W. Lee of New York said that, of course, the most natural thing in our existence was to be born. It seemed wonderful after millions of years that there should be so much discussion on the most natural procedure that mankind could first resort to. There was one other that was inevitable, but this was the primary entrance to separate existence. In posture in labor nature asserted itself. The most primitive posture, as Dr. Markoe had brought out, was squatting. He wanted to make reference to that, because it had been his fortune to be among primitive people. Many years ago, when he was among the Indians, he knew of an Indian woman about to be confined. He told the husband that he would be glad to be of any assistance if he could. The Indian asked him how much he would give him. Dr. Lee said that he asked the man how much he wanted, and the husband said he wanted a dollar. Dr. Lee agreed to give him this sum and the man agreed to let Dr. Lee know quickly when the birth was to take place. Shortly after the man came running and they both went running back and arrived in time. The woman was in a squatting posture and she simply pulled the baby out of the pelvis, bit the cord in two and tied it, took some handfuls of grass and wiped off the blood, the placenta came away, and that was all there was to it. In advocating posture care had to be taken not to bring on undue contraction of the muscles of the uterus for fear of rupture, but posture stimulating the first stage of labor would save no end of trouble. Another question was how was one to manage asepsis. He had heard a great deal about antiseptic labor and he had seen many, many cases of so-called puerperal fever that followed the most up-to-date, scientific, elaborate sterilizing procedure. There was one other condition that he had observed. In his early days in the wilds he was called to attend upon a primipara. He knew very little of obstetrics. The woman was in labor and he was beginning to be very nervous. He washed his forceps and got ready. He had no assistance but an old Irish lady who he was convinced knew much more about the matter than he did. Presently the old lady asked, "Doctor, aren't you going to quill her?" He said yes, perhaps that had better be done. He did not know what it was, but he had confidence in the old lady. The old lady picked out a good sized goose quill and filled it with black snuff and put it to the patient's nose. The patient began to sneeze and in fifteen minutes the baby was born.

Dr. E. P. Davis of Philadelphia said that he recognized the value of posture as set forth by Dr. Markoe, and fully indorsed what he said concerning it. He would also call attention to the value of posture in prolapse of the cord when the knee chest posture and vaginal reposition of the cord were often successful. Voucher's position was also often of value in moderate pelvic contraction. Dr. Davis said he was for primitive remedies, and he had often prevented cesarean section in the production of labor, by resorting to the posture on the knees. If more people went upon their knees more often no harm would be done. Lincoln had said that often in political crises he was driven to his knees because he had nowhere else to go. This principle would prove of use in labor cases. In the maternity hospital in Philadelphia where the matron was a woman of experience and sense, the patients with moderately contracted pelves were often to be found scrubbing the stairs, in the kneeling posture and with vigorous use of the arms. Spontaneous deliveries were the rule, and cesarean section was rarely resorted to.

Dr. Zinke of Cincinnati said that it was not his intention to unduly prolong the discussion, but he would like to emphasize the sledge-hammer eloquence of his friend, Dr. Davis. The question was how were they going to prevent the necessity of performing cesarean sections and other operative procedures. They could not abandon the judgment of the obstetrician. There was no question, however, in his mind but that many of the obstetric operations were performed too often and without proper distinction, but at the same time they should go slow and not express themselves entirely condemnatory of procedures which had proven themselves of benefit to mankind. The doctrine of narrow pelves, scarcely of age, which it had taken 100 years to develop, and which had been amply tested in the hospitals of Europe within the past twenty years, gave this result, that the cases of labor with narrow pelves had given 80 per cent. spontaneous deliveries. Five per cent. of cases had cesarean section with a maternal mortality of less than 1 per cent. He would take occasion here to mention one symptom, sometimes encountered, that was the "ringerbandel" or ring contraction. It could be seen when the abdominal wall was exposed, running transversely or obliquely, and it was always a danger signal of rupture of the uterus. The lower segment became so excessively attenuated that there was always danger of rupture. No man would hesitate, when he saw this ring, to perform cesarean section or hebosteotomy as the case might be.

The Use of Chloroform in the First Stages of Labor.—Dr. I. L. Hill of New York said that the use of chloroform in obstetrics was formerly widespread, and accident was almost unknown, but that recently its use had been criticised, largely on account of its relationship to active degeneration of the liver cells. Some hospitals had given up its use on this account. More evidence, however, should be forthcoming, based on autopsy findings, as to chloroform poisoning in obstetrical cases, than had at present been produced. Careful search of the literature failed to show sufficient evidence for abandoning it, as 5000 chloroform anesthesias has been performed without death, and some of these in very protracted cases. The prejudice against chloroform seemed to have arisen largely on account of laboratory experiments on dogs, in which it was found that damage took place by liberation of hydrochloric acid with alkalis. On this account Dr. Hill had undertaken a series of experiments on animals under chloroform anesthesia. His conclusions were that these animal experiments were in no way comparable to human anesthesias, the animals being frightened and struggling for hours, and requiring excessive doses, whereas a woman in labor was suffering pain and anticipated relief, so that the force of suggestion was added to the procedure. Dr. Hill had found that combined with small doses of pituitrin good results had been obtained. There was no arbitrary rule for chloroform dosage; it was necessary when the patient was unequal to the suffering. A very little chloroform would secure tranquillity and cooperation of the patient. Neurotic patients were most amenable to suggestion in this respect.

Obstetric Surgery.—Dr. E. P. Davis of Philadelphia reviewed his subject from the standpoint of modern surgery and from his clinical experience. The scope of obstetric surgery had become a wide one. Operation was indicated in many complications, such as ectopic gestation, colon bacillus appendicular infection, pyosalpinx complicating pregnancy, rupture of the uterus, ovarian tumor, fibroid tumors. All of these were complicating problems. In soft myomata of the uterus one distinguished surgeon had said that he could not tell the difference from pregnancy, but to the obstetrician Hegar's sign should always be distinct. The question of tumors was difficult; when they were present one had to ask how long the woman could go on and still have a living child. The obstetrical surgeon had also to be a vaginal and abdominal surgeon, but in many cases the art of obstetrics had been lost and a surgical monstrosity substituted. In spontaneous labor the maternal mortality was but a fraction of one per cent, and that of the child was largely due to asphyxiation. Abdominal cesarean section was to be done only in carefully selected cases, the mortality for the mother was then low, and it was the safest way of delivering a living child. In delivery by the vaginal route the death rate was in proportion to the leaving by the surgeon of the uterus in good condition, well drained and contracted. The fetal mortality in these cases was in proportion to the distance of the head; when the head was well in sight it was 10 per cent., with floating head as much as 33 per cent. Clinical diagnosis was of far greater importance in all cases than laying too much stress on laboratory findings and centimeter measurements. There should be constant clinical diagnosis, and the obstetrician should perform operations, not the surgeon.

Dr. E. G. Zinke of Cincinnati said that practice was one thing and the exercise of good judgment was another. Lawson Tait had suggested cesarean section for placenta previa, and Dr. Zinke had treated the subject in his entrance essay before this society. When he had got through reading his paper, there had not

been a single assenting voice. He had been roundly arraigned and subsequently criticised in the journals, but to those who had studied the subject, it was clear that there was justification for cesarean section in certain conditions of placenta previa. Every case of placenta previa was a surgical one, and could be recognized before hemorrhage appeared and sent to the hospital to the care of a good surgeon.

Dr. JOHN O. POLAK of Brooklyn said that there was just one point in regard to Dr. Davis' paper that he would like to mention. The success of the obstetric surgeon depended, first, upon his ability to make a diagnosis; second, upon the training of the individual operator; third, upon asepsis. In regard to rupture of the uterus, the speaker said that in the work of Finley sixty-two collected cases had been reported with no rupture, except where there was definite morbidity; that is, infection of some type. Every labor case should be studied as to its diagnosis, measurements, and position, and every case should be given the aseptic test, abdominally, following rectal interpretation.

Meddlesome Midwifery in Renaissance.—Dr. DELEE of Chicago stated that in the census of 1914 10,518 women died in childbirth. That was estimated on two-thirds of the population of the United States, and probably, when one considered deaths due to after effects of childbirth, such as nephritis, endocardial disease, etc., it was very much higher. Probably there died annually in the United States 20,000 mothers, and the infant mortality was as high. The morbidity was also high; 4,654 women died of sepsis in 1914. In puerperal cases 15 per cent. had fever of some degree. Pelvic adhesions were frequent, and many patients came back with the same history of never having been well since the birth of the child. Lacerated cervix was more common than lacerated perineum because the accoucheur did not take sufficient care of the cervix, and infections of this part were frequent. Too many interferences with the natural processes were being practised, the efforts that nature employed to expel the child being the best ones and intended to insure slow dilatation of the passages and gradual advance of the fetus. The old time watching and waiting policy in labor had been replaced by a polypragmasia, every sort of reason being advanced for hastening the processes of nature, including that of saving time and sleep to the obstetrician! One of the most common evils was the attempt to cut short the period of dilatation, and overstretching frequently resulted in gynecological and urological disease. The misuse of twilight sleep and of gas and oxygen had resulted in increase of postpartem hemorrhage and forcing the parturient to make too early bearing-down efforts was a very common cause of procidentia uteri. It was desirable to save the levator ani from too rapid distention. If a desire for too rapid labor were curbed and an extra half hour given, it would save the woman from permanent relaxation of the pelvic floor. Other dangers were the use of pituitrin, which should be entirely condemned; too frequent cesarean section, and the use of cutting operations instead of natural dilatation of the cervix.

Dr. A. J. RONGY of New York said that he wished to emphasize the operation of pubiotomy in protracted labor. The use of forceps often precipitated infection, and pubiotomy was the only choice. After a woman had had two or three dead babies and was very anxious to have a living baby this operation would give her a chance. Cesarean section on the mothers gave a 30 per cent. mortality in the children. In placenta previa, at the seventh or eighth months of gestation when there was profuse bleeding with no signs of labor, the operation could be tried because one did not know when labor would take place. Another point was being able to diagnose the size of the baby in the uterus as this would decide whether induction of labor was desirable.

Dr. E. P. DAVIS of Philadelphia said that he had done eight pubiotomies, and he had stopped. He did not like the operation. He was in entire accord with Dr. Holmes in wishing to stop unnecessary cesarean section. He hoped he would be able to do it. To the modern obstetrician fell the task of repairing injuries of labor, the injuries to the cervix, the pelvic floor, and perineum. No vaginal operation was complete unless these points were attended to. With regard to the criticism of Dr. Bacon about intrauterine gauze drainage, he had never seen retention of lochia. He had seen 8 per cent. complete union and 10 per cent. partial union. In regard to rupture after cesarean section he had done a number and had not had rupture, but it was an emergency procedure. He was heartily in accord with Dr. DeLee's remarks that injury to the genital tract produced invalidism. He did not believe in curtailing labor. The question of palpation was important in diagnosis. A man should be able to tell when engagement was there or not there. In regard to sepsis, the woman did not die so much from the hemorrhage and sepsis as from changes in the liver and kidneys as the result of toxemia. In regard to his friends Drs. Carstens and Zinke, he asked what could he as a specialist do to make their practice better. He could send them recent graduates, men trained to give anesthesia properly, men who knew when the head was engaged and when to call in the older practitioner, men who knew how to watch the case. He wanted to give these men assistants who knew how to use modern facilities. These older men had fought out the problems single-handed, and the next generation had had the advantage of their knowledge. All honor to the old guard.

Dr. DELEE said that he wished to subscribe most heartily to the last words of Dr. Davis, and if the old guard would adopt the methods of the younger men, they would say all honor to the young guard, too. One important point was the rectal examination. It was a pity that it took so long for men to learn it. If everyone would try it out on his next case it would be astonishing how much would be accomplished. With external diagnosis and rectal examination one could get all the information necessary. Here he would say that chloroform was not necessary to the general practitioner. He had been a general practitioner, and he thought one could instruct the husband to give the patient ether as well as one could give chloroform. Ether was more bulky to carry, but the physician would have to carry much more paraphernalia if he was going to do modern obstetrical practice.

Umbilical Hernia and Lipectomy.—Dr. WALTER LATHROP of Hazleton, Pa., sketched the changes which took place in the umbilicus after birth, resulting in the formation of a firm fibrous scar. In hernias this was weakened and the abdominal wall might be involved. This condition was twelve times more frequent in women than in men. Repair by overlapping to secure firm fixation was the most useful operation and considerable help was obtained by lipectomy where the abdomen was large and pendulous. Lipectomy was an easy operation to accomplish and if postoperative instructions as to diet and exercise were followed the relief from excessive fat would last a long time. The chances of recurrence of hernia were very much lessened by lipectomy in very obese patients.

Sheet Rubber Superior to Gauze in Abdominal Operation.—Dr. J. W. KEEFE of Providence, R. I., said that as long as surgery remained an art sponges would be overlooked and left in the abdominal cavity. Even very experienced surgeons had had the misfortune to leave something in the abdominal cavity. The human element was always present in operating and it was easy to leave a foreign body in the wound. Many cases never came to autopsy and so the extent of these mistakes would never be known. The causes included a bad light, unfavorable position, profuse bleeding, and many cases had happened with extrauterine pregnancy, hernia, and bladder operations. Forceps had been found after four years and sponges after twelve. In one case where an appendix had been removed under local anesthesia and a sponge was left in, the patient sued the surgeon, who contended that the patient was looking on and was therefore responsible. The court, however, held the surgeon responsible. Very many devices had been adopted to prevent these accidents, such as counting the sponges, or tying the sponges to tapes. None of these answered all objections, for if the work of Yandall Henderson were correct, the covering of the intestine with gauze was responsible for the loss of CO_2 content of the blood. The intestine should be placed in a bag. The use of the rubber roll would obviate many difficulties. Part of it lay outside the wound. It was easy to clean and sterilize and it was less irritating to the tissues. The loss of the CO_2 content of the blood would be prevented. The relief of not having to keep count of the sponges would be immediately felt by the surgeon.

Indications for Cholecystostomy.—Dr. DONALD GUTHRIE of Sayre, Pa., gave this paper. He said that the recurrences after cholecystostomy were from 1 to 33 per cent. He had sent letters to a number of prominent surgeons requesting their opinion as to the comparative results in cholecystectomy and cholecystostomy. Some advised cholecystectomy for the prevention of systemic disease. Some thought that it was only indi-

cated in malignant disease. Others, Crile, Lilienthal, and Erdman, preferred cholecystectomy in most cases, as affording better drainage. Counterindications for cholecystectomy were inexperience of the operator, desperate condition of the patient, obesity of patient, perihepatic adhesions. Deaver, Mayo, and Crile advised against it in empyema of the gall bladder. The latter was to be treated by cholecystostomy followed by cholecystectomy. The mortality was variously estimated as being lower or higher than in cholecystostomy. Conclusions were that cholecystectomy was the better operation, but was more dangerous and required a skilled surgeon, and that empyema of the gall bladder was best treated by cholecystostomy and later by a second operation.

One Hundred Consecutive Cases of Fibromyomata Uteri Subjected to Operation. — Dr. S. E. TRACY of Philadelphia said a study of his cases led him to conclude that malignancy was more frequent than was generally believed. In his series if microscopical examination six months after operation revealed a good condition it was considered a cure. His cases showed 12 per cent. of malignancy, and this was in accord with the general statistics showing that cancer was on the increase (62 per cent. in 1900 as compared with 78 per cent. in 1915). The ages of his patients were from 23 to 72 years, and 88 per cent. were over 40 years of age; sixty-three were married, twenty-seven single, and 72 per cent. had had children. In fifty-six cases there were associated abdominal lesions. After hysterectomy the amount of suffering from artificial menopause was noted. There was none in 18 per cent. of cases, other cases had varying degree, and in four it was very marked. Forty-eight patients had both ovaries removed. In these cases menopause symptoms were absent in 70 per cent. In women under forty years of age it was found preferable to leave the right ovary, but not unless it was absolutely normal. After forty years of age this did not matter. Fifteen myomectomies had been done. Of all patients two had hemorrhages postoperative, one controlled by *x*-ray. Seventy-four were alive and in good health, mortality was 2 per cent. He believed that all cases of fibromyomata uteri should receive early surgical treatment, and that those surgeons who advised women to do nothing but to await the menopause assumed a very serious responsibility. His list of operations included supravaginal hysterectomies 64; panhysterectomies 20; vaginal hysterectomy 1; abdominal myomectomies 9; vaginal myomectomies 6.

Operative Treatment of Fibromyomatous Uterine Tumors.—Dr. JOHN B. DEAVER of Philadelphia read this paper. He stated that much harm could be done by delay in the treatment of uterine tumors. It was claimed that diminution of tumor growth had been brought about by the *x*-ray and even more extensive claims were made for radium therapy. He felt, however, that while it was possible for radiation to check hemorrhage and influence tumor growth that this therapy excited false hopes and should be considered as malpractice. Radium should only be employed when operation was counterindicated. There was a large class of associated lesions in these cases, such as pyosalpinx, carcinoma of the appendix; ovarian cysts, dermoid; papillitis of the rectum or ovary; cholecystitis; hernia and other conditions. Surgery was the only safe treatment for malignant disease and the only way to cure cancer was to operate before it became cancer. The operation of choice was supravaginal amputation, and in some cases myomectomy. There was one other operation that might occasionally be of use, that was hysterotomy. Occasionally it was impossible to distinguish between pregnancy and a tumor symmetrically enlarged. Richardson had said in this connection that he could not always tell pregnancy when he had the uterus in his hand and the obstetrician could not tell when he was on the outside.

Recent Progress in the Surgical Treatment of Uterine Cancer.—Dr. J. J. JACOBSON of Toledo, Ohio, read this paper. He said that the criterion of cure in all of his studies was based on the five-year period. The radical operation of Wertheim had given 42.5 per cent. of cures for less periods of time and 25 per cent. of cases passed the five-year limit. Cases of recurrence after operation had usually been generally considered hopeless, but Zweifel had reported 30 per cent. of cures after 7.5 years for operation and recurrences. The treatment of Percy by diffusion of low-degree heat throughout the cancer mass was found, when properly performed, to raise the operability of cases to 90 per cent. *X*-ray and radium therapy were undoubtedly powerful agents in aiding in the cure of these diseases, as inoperable cases could be brought into such condition as to present a good operating field for the surgeon. The best results could then be obtained in the radical abdominal operation. Cancer of the uterus should receive the same treatment as cancer in other parts of the body and undergo radical operation. The type of cancer present should be determined and cancers of the vaginal portion of the uterus should be radically treated. The treatment by *x*-ray and radium should be restricted to inoperable cases, and these agents should also be used as a subsequent therapeutic measure following every operation for uterine cancer. In this way the patient would have been given the best possible chance against recurrence.

Dr. HENRY T. BYFORD of Chicago said that anyone coming there to-day would receive the impression that there was no other treatment for fibroid tumors but operation, but he had read a statement from the other side of the water that no fibroid tumors should be removed at all until radium and *x*-ray treatment had been tried. The truth did not lie with either extreme. Knowing that there was a certain mortality with some of these cases, he thought that there should be a certain amount of individualism in certain doubtful cases. With regard to *x*-ray treatment, it had the place which removal of the ovaries once had. It was found that the bleeding depended largely upon menstrual influence and that the congestion made the tumors grow faster. Removal of the ovaries stopped the hemorrhage and diminished the growth, and some apparently gave no trouble. This method had been abandoned after thorough trial. The *x*-ray worked the same way, but one could not get the *x*-ray into the tissue without destroying the surrounding tissue. If one restricted the cancer cells with fibroid tissue there might also be dessication of muscular tissue and the subsequent round cell infiltration would increase the trouble rather than diminish it. In certain cases there was no excuse for *x*-ray therapy, and this held true also of radium. It could not go through large tumors without also destroying the mucous membrane. Large tumors could not be treated in this way, but there should be a certain individualization in the cases of younger women with small tumors. The removal of the ovaries in the case of young married women who were to live with their husbands condemned them to a life of unhappiness. The social side of this question had to be considered, for although the woman and man stayed together on account of children a great deal of unhappiness was bound to result. The cure by removal of the ovaries was a doubtful one in any case. The removal of small tumors after the menopause was a more difficult matter, as a larger incision was necessary, and one had to go further into the uterus and one ran therefore more chance of sepsis.

Dr. CARSTENS of Detroit said he agreed with Dr. Jacobson on general principles, but one point was essential, and that was that one must make an early diagnosis. Cancer had a beginning and was so small at first that it could not be seen, but it would get in time to be as large as one's head. In older women it could be recognized. What was wanted was early diagnosis. Hundreds of women were curetted and no one ever took the trouble to examine the curettings, but they were thrown into the slop pail. Every curetting should be examined, and in one hundred cases these might be nothing but in the hundred and first case one would catch the indications. It mattered not whether the woman was nineteen or forty, it had been found at all ages. He said perhaps he was dull of comprehension, but when he heard his *x*-ray friends talk about getting cancer by exposure to the *x*-ray he wondered why did they use it to cure cancer. All these treatments came and went, and he could remember when his friend Marcy was experimenting with 200-ampere electricity; but surgery stayed with them forever. In regard to the other conditions, he agreed with every thing that had been said; especially did he agree with Dr. Deaver in regard to the operation on uterine fibroids. There was, however, one point he would make, and that was that fibroids did not kill the patient immediately. The surgeon should endeavor to get the patient into the best possible condition; and after due preparation, and when the woman was in the proper phase, operation could be done as soon as possible. In reply to Dr. Deaver he was surprised to hear the doctor advocating such an operation as hysterotomy. Personally he had always been able to diagnose pregnancy without cutting into the uterus, but if there was any doubt in the doc-

tor's mind it was easy to have an *x*-ray picture taken of the uterus; if the woman was pregnant the fetal bones would be shown. This was an easy procedure, and he asked the doctor not to do any more hysterotomies.

Dr. H. O. MARCY of Boston said that he remembered when he was experimenting with Apostoli's electrical treatment and he had asked him to come to his hospital in Boston and give treatments. The singular thing was that every patient believed that she was benefited by it. He thought that the *x*-ray and radium would follow the other treatment. What was there then left for the profession to do? He would advise them to follow Dr. Deaver, but he would say that if one was in doubt an *x*-ray picture should be taken and studied and one could find out what was in the uterus. Surgery was the only treatment to be considered, but he would ask the profession to make themselves more perfect in the technique so that they could do better work in the future than they, the older men, had done in the past.

Dr. HENRY SCHMITZ of Chicago said that personally he could subscribe to the last part of the last speech. He had done a great deal of investigation with the *x*-ray and with radium, and the question in his mind was whether all the statements of Drs. Jacobson and Deaver were correct, and he believed that they were not. Cancer was operable or it was inoperable. When it was operable it was a surgical condition, but when it was inoperable what was there to be done? There was the use of radium or the *x*-ray, or there was Percy heat treatment. Radium was indicated when the condition was entirely inoperable. The condition became operable under the use of radium. When the local condition was cleaned up the surgeon could then remove the uterus. Not every case of myoma was operable. The patient would probably have an advanced anemia or the myoma was probably advanced. It would be wrong to let the patient go as an inoperable case. Here the treatment by *x*-ray or radium was of much benefit. The treatment itself was easy, the patient was not required to stay in bed, it could be used under all circumstances, and the benefits were real and marked. Later the condition had been so much improved that it was operable, and it could then be treated surgically.

Dr. LAWRENCE of Philadelphia said that he simply wanted to emphasize everything that Dr. Deaver had said, but he wanted to add that the man who advised a woman with a neoplasm to let it alone should be dealt with very severely. Any neoplasm might become malignant, and many of them did. Out of 100 cases of fibroids 14 became malignant carcinomas. The mortality of hysterectomy for fibroids should not be larger than for ovarian cystectomy. There was little shock and the hemorrhage should be absolutely nothing. The tumor should be delivered out of the abdomen and grasped by a ligature about the base, and an oval-shaped incision sholud be made. By cutting out the tumor and tying the ligature one lost no blood unless there was venous blood in the tumor. In supravaginal hysterectomy one shoudl leave a convex pelvic roof instead of a concave one.

Dr. J. W. LEE of New York said that the subject was a large and interesting one. A great deal of time could be spent discussing the pros and cons, and it left them in the state of mind of the young man who came out of court and said, "I believe in the last speaker." Dr. Deaver had presented a paper that took in the whole subject. It might be called a classic. His paper covered all that had been said, and even included what Dr. Schmitz had said, because Dr. Deaver would not discard the use of radium in inoperable cases. Dr. Lee said he had been watching this fibroid game for thirty-five years. It used to be the custom to give large doses of ergot, and then Apostoli's treatment was considered a great success. He had been foolish enough to buy the apparatus, but he had never been able to sell it. Then came the fashion for oophorectomy. Then an abdominal incision was made and the uterus was brought out with four clamps and left, and one could see the stump rot. Then there was hysterectomy. In regard to the method of Dr. Lawrence, he must have fibromas and myomas made to order. It was generally necessary to go in further than he had described. He believed very strongly in the work done by Dr. Deaver, and he hoped that the style would not be altered in the next ten years.

Dr. ECCLES of Milwaukee, Wis., said that in their enthusiasm to cut something out he thought they were apt to overlook the operation of myomectomy. He granted that this was not indicated in the majority of cases, but in a young woman desirous of having children, or at least to menstruate, and where the tumor was not big, there was an indication for this operation. In his student days he had been taught that myomectomy was more dangerous than hysterectomy. In his experience this was not so. A considerable number of myomectomies had convinced him that the indications for myomectomy were often overlooked. In one case the patient was a young woman, the wife of a prominent physician, and she was unable to bear children, as she always aborted because of multiple fibroids. In this case a myomectomy was performed and seven or eight tumors were removed. The woman was now the mother of a four months' old baby and there was no recurrence. Even supposing such a tumor did return, the operation of hysterectomy could be later performed and the danger had not been increased.

Dr. RUBEN of Pittsburgh, Pa., said that it would be unjustifiable to leave this discussion with a little defense for the progress of medicine. If *x*-ray and radium treatment of malignant disease of the uterus could be considered malpractice, then all new ideas must be considered malpractice. In the old time ideal of curing cancer by the *x*-ray many men sacrificed their lives in the hope of contributing to the advance of medicine. This was due to their ignorance of the agent with which they were dealing. Now it was known that the rays were of different power—the soft, the medium, and the hard ray. In the old days the rays went through the hand, and men were burned and would probably later die of cancer. But at the present time men were shielded from the rays, and they did not carry radium around without proper protection. The rays were filtered, and the patients were given doses measured by radiometers. Patients were given 1/40 of a grain of strychnine, not 5 grains, and *x*-ray dosage was also according to measure. There were many young men, trained gynecologists, at the present day, who were watching this work and its effect on the growth of tumors, and when it was found that the *x*-ray was not having effect, then surgery could be resorted to.

Dr. S. E. TRACY of Philadelphia said that he did not believe that all fibroid tumors should be treated by surgery. He agreed with Dr. Schmitz that cases not suitable for surgery should be treated by the *x*-ray, but he believed that in malignancy an early diagnosis and a radical operation gave the best results. However, after all that could be done by surgery had been done, the patients should have the benefit of the *x*-ray. He did not believe that any case was cured by removal of the ovaries. A fibroid tumor without symptoms in a woman under forty should be left alone; after that the danger increased with the age of the patient. He believed that all curettings should be examined and not thrown away. He had never seen cases where he was afraid to operate for fibrosis. He had found it a good plan to spend time in getting the patient into good shape, and then operation could be successfully done. In this the *x*-ray was helpful for the operability of cases could be increased. Dr. Lawrence had spoken of his method, and he felt with the other gentlemen that Dr. Lawrences' cases were made to order. In all hysterectomies he found it a good plan to stitch the infundibular and pelvic ligaments to the stump and to pull the bladder back. It took three stitches. In regard to Dr. Eccles' remark on myomectomy, the age at which degeneration was likely to occur should be considered. After forty, this operation was dangerous.

Dr. J. H. JACOBSON of Pittsburgh said that he agreed with Drs. Schmitz and Tracy in advocating combined treatment. He was glad to hear that Dr. Schmitz advocated surgery in advanced cases. As a rule men who had done much along this line of work were apt to deprecate surgery. He believed that in radium, *x*-ray, and also Percy's heat treatment the profession had very powerful agents to assist them in radical therapy.

Non-Inheritance of Acquired Characters.—Our belief that acquired characters can be inherited rests very largely on some old experiments of Brown-Séquard on guinea pigs. These involved injuries of the nerve substance of breeding animals said to reappear in their progeny. Even at the time it was pointed out that sources of fallacy were present. In 1907 Wrzosek and Maciesza began to repeat the experiments, and their work was still in progress when the war put a stop to it. From the first it was apparent that there was no transmission of acquired alterations.—*The Journal of Heredity.*

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Original Articles.

RECENT PROGRESS IN THE OPERATIVE TREATMENT OF EMPYEMA OF THE THORAX.*

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FOR years the primary treatment of empyema of the thorax has been neglected. The cut and dried methods of past decades with an appalling mortality have gone on with practically no improvement because of lack of investigating interest on the part of the surgeon and because practitioners were apparently satisfied that when an opening had been made in the chest there was, for the time being, nothing else to do.

In nearly one-fourth of the cases the wounds required revision and frequently the patients were turned over to the surgeon for various deforming thoracoplastic operations.

The original cause of the pyothorax did not seem to matter—whether postpneumonic, metastatic, or primarily pleuritic—the treatment was the same. The patient was kept under observation and punctured until pus was found; an opening was made for drainage and the case was too often left to shift for itself. In the simple and unilocular cases in older subjects promptly operated upon there were many recoveries, but the least complication upset everything. When pockets or secondary isolated collections formed it was hoped that they might break into the main cavity and occasionally they did, but sometimes there was perforation into a bronchus, or the surgeon after many days and much puncturing averted this calamity, the patient meantime suffering all the dangers of sepsis.

A little more than two years ago the First Surgical Service at Mt. Sinai Hospital† took up the study of empyema with a view to developing a line of treatment commensurate with the therapy of infectious processes in other parts of the body.

We began with the assumption that the empyema problem was a pathological and a physiological one and not merely a matter of the mechanical emptying of a cavity from the most suitable point. The behavior of the diseased tissues of the living body had to be considered. We were aware that the causes which originally produced the empyema might still be operative after the chest had been opened and even that new conditions might arise after the operation to prevent a return to the normal.

Accordingly, we planned the therapy with two objects in view. First, the relief of intrathoracic pressure which immediately threatened life and, second, the establishment of a state which should make possible a complete recovery with a minimum of complications and without deformity.

Now, after two years of work and observation we hope and believe that we may report progress.

Our mortality rate is lower than that of the previous ten years in the same institution* and we have succeeded in preventing the necessity for a single thoracoplastic operation. We ourselves were responsible for many of the failures in the decade just mentioned and this fact appears to demonstrate all the better that the improvement in statistics may fairly be ascribed to changes in the methods.

We believe, too, that we have shortened the number of hospital days per patient by nearly one-third.

General Management of the Cases: X-ray. With few exceptions all our patients were examined with the aid of the Roentgen plate or screen, and we have found this of incalculable value in selecting the type of operation. Also, some interesting observations have been made in the course of these radiographic studies. We have found that in the encapsulated cases and also in the more chronic general empyemata the affected side is apt to show contraction of the chest instead of distention, the ribs being closer together than on the healthy side. This appearance has often been accompanied by the presence of tough peripleuritic confining membranes so that at operation the lung did not expand and required mobilization by the division or removal of the exudate.

Encapsulation is often beautifully demonstrated so that the most favorable point for drainage can be determined before the operation. We have found (Case 1, F. B.) two distinct sacs containing pus of different appearance and consistency which would have been overlooked without the *x*-ray. Secondary collections of pus have been demonstrated after the first operation and we have been able to empty these sacs promptly because of the accuracy of their localization. In two cases the secondary abscess was in front, on the right side close to the mediastinum near the base of the heart (See Fig. 5). They were evacuated from the front with the greatest ease and precision.

During convalescence the degree of pneumothorax can be made out and its gradual disappearance observed. The presence of areas of consolidation can sometimes be determined in cases in which there is

*Read May 16, 1916, before the Surgical Section of the New York State Medical Association, at Saratoga Springs, N. Y.

†The operations in this series were performed by Dr. Lilienthal, Dr. Joseph Wiener, Dr. Martin W. Ware, and a few by the House Surgeon under supervision.

*Wilensky, Abraham O.: *Surg. Gyn. and Obst.*, May, 1915.

doubt between residual empyema and pneumonia. Without the Roentgenogram unnecessary and possibly dangerous punctures would have been made. In two instances the *x*-ray enabled the diagnosis of foreign body in the lung or trachea to be made when

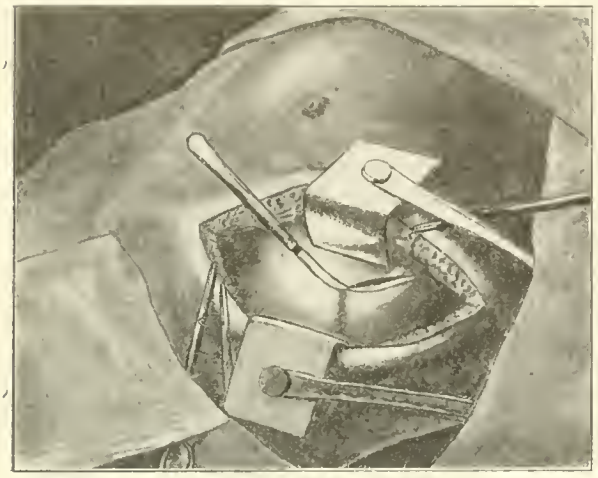

FIG. 1.—The chest is open, the rib spreader in place. The scalpel is making the incision through the layer of dense exudate which confines the lung.

clinically the case appeared to be one of atypical empyema. These patients were bronchoscoped by Dr. Yankauer and the foreign bodies removed. In one case pneumonia and pneumothorax were demonstrated after puncture made outside the hospital had yielded a few drops of pus, the patient being admitted for the treatment of empyema. There was no empyema and the patient recovered without thoracotomy.

We do not believe that this little list comprises all of the possibilities of *x*-ray diagnosis in empyema. And we have not here gone into the question of intrapulmonary disease.

Diagnostic Puncture.—After study of the physical signs and the radiograph the final proof, that of the aspirating needle, should not be made until the patient is on the operating table or within a few hours of operation. Repeated puncture several days before the operation may do harm. For example, some of our cases suffered from spreading infection of the tissue planes of the thoracic wall as the result of needle punctures. This, to be sure, is often a danger avoidable by early operation and by Roentgenography before the aspiration. The danger of puncture is much greater in lung abscess in which we believe it is absolutely contraindicated.

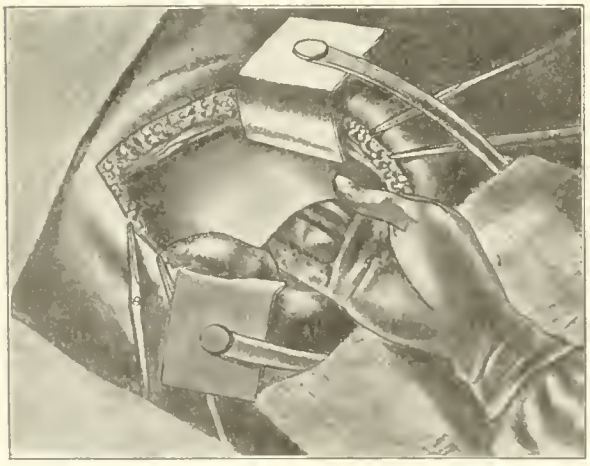

FIG. 2.—The fingers are separating the layer of dense confining exudate from the visceral pleura. The lung protrudes below. (This is, of course, diagrammatic.)

Most of our patients had been punctured before they entered the hospital and came with the established diagnosis of endothoracic suppuration. These patients, however, were *x*-rayed just the same unless their condition was so precarious that immediate relief was demanded.

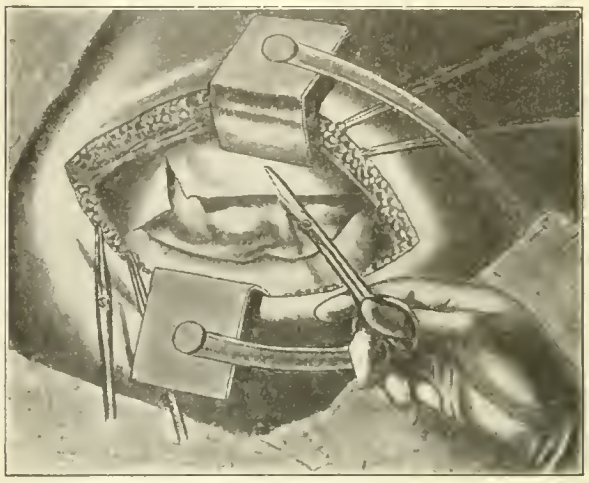

FIG. 3.—With the scissors incisions are made in the exudate to permit a freer expansion of lung.

Anesthesia.—When the empyema is secondary to pulmonary disease, as is usually the case, we believe that ether should be avoided because of the possibility of its irritating action upon the lungs. We have, therefore, employed either local, regional, or nerve-blocking anesthesia, or nitrous oxide and oxygen narcosis.

Selection and Type of Operation.—We realized that to obtain a final cure an active pneumonia, a perforating subphrenic abscess, hepatic or otherwise, or an infecting bronchiectasis, might require medical or surgical treatment more than the consequent empyema; yet a patient coming to the hospital cyanotic and gasping, the heart embarrassed by dislocation, had to be immediately relieved. His complete restoration might be a matter for later consideration. Accordingly, these cases were treated by what we have termed minor thoracotomy, though in the beginning of our work there were a few operations by the old method. (See table I.)

FIG. 4.—Case 1. (F. B.) Large right sided encapsulated empyema.

This table includes all cases in which primary operation was performed, regardless of the cause

of the empyema. March 25, 1914, to March 24, 1916.

Table I—General Table of Operations.

Minor Thoracotomy		Major Thoracotomy		Resection for Encapsulated Empyema		Resection (Old Method)		Miscellaneous		Remarks.
Total.	Died.	Total.	Died.	Total.	Died.	Total.	Died.	Total.	Died.	
24	4	26	5	4	0	5	1	4	3	Miscellaneous cases were: 2 liver abscesses; died. One large lung abscess with perforation empyema; died of hemoptysis. One old gunshot empyema; spontaneous rupture; well.

1. *Minor thoracotomy*—except for its name—is nothing new. The procedure is described as follows:

Under local anesthesia a small incision is made, preferably in the seventh or eighth interspace, in the posterior axillary line and carried through the pleura. The ribs are separated by spreading the blades of a dressing forceps or a pair of scissors and a small tube is slipped into the chest. Or, after the short skin incision, a trocar and cannula are made to enter the pleura and a drainage tube is pushed through the cannula which is then withdrawn leaving the tube in place. There are various devices to prevent pneumothorax. We have found the simplest to be a permanent syphon to keep the tube full of fluid and so arranged that the level of the liquid in the water supply bottle is lower than the patient's chest, while the tube leading from the chest has its end submerged in weak antiseptic fluid in a vessel on the floor.

Table II—Operations Compared by Ages.

	Minor Thoracotomy.		Major Thoracotomy.		Resection for Encapsulated Empyema.		Resection (Old Method).		Miscellaneous.	
	Children.	Adults.	Children.	Adults.	Children.	Adults.	Children.	Adults.	Children.	Adults.
	18	6	13	13	3	1	4	1	0	4
Died	4	0	3	2	0	0	1	0	0	3
Aged.	1½, 2, 3, 4		2, 3½, 4	35, 55			1½			25, 27, 32

Total cases	63	Total children under twelve years	38
Total deaths	13	Deaths	8
Mortality rate	20.6 per cent.	Mortality rate in children	21 per cent.
Or, omitting the two liver abscesses, 61 cases, 11 deaths.		Total adults	25
Mortality rate	18 per cent	Deaths	5
		Mortality rate in adults	20 per cent.

In favorable cases this operation is all that will be necessary. The lung expands, the discharge lessens, and recovery follows.

During the two years covered by our table we operated in 24 cases by this method with 4 deaths or 16 per cent. These deaths were due to pneumonia or general severe sepsis—often with persistent diarrhea—median suppurative otitis and metastatic abscesses, the patients being in too low a state for more thorough surgical work. Case II.)

When these minor thoracotomy patients were improved but showed no sign of prompt healing, we considered them suitable subjects for what we have termed major thoracotomy. This operation, however, was performed at the first sitting whenever the case did not look absolutely desperate.

2. *Major Intercostal Thoracotomy with Exploration and Lung Mobilization.* (The procedure has been described in an article by Lilienthal, *Ann. Surg.*, September, 1915.) Briefly, the steps of the operation are as follows: (*a*) Skin and muscle incision in the seventh or eighth interspace. Line of incision from the angle of the ribs to the anterior axillary line, more or less, and close to the upper border of the lower rib, to avoid nerves and vessels. (*b*) Pleura entered carefully to avoid possibly adherent lung. (*c*) Rib retractor inserted and the ribs separated from 4 to 6 inches or more. If still greater room is needed cut a rib or two above or below the wound at the posterior angle. (*d*) Exploration. Removal by suction or sponging, of all pus and coagula, then inspection and palpation of lung and pleura.

Adhesions to the chest wall should not be disturbed unless they separate easily. If the lung expands and fills the chest when the patient strains, and if no sign of lung abscess or fistula is present, the soft parts of the wound may be approximated with chromicized gut and the skin partly closed by suture.

Because of the division of the intercostal muscles the ribs will not at once fall together. There will be a space of an inch and a half or more (in adults) which will persist for some days. Drainage openings of suitable size anteriorly or posteriorly or both may be left, but it is not often necessary to put in tubes or gauze. Should an inoperable pulmonary suppurating lesion be encountered—bronchiectasis or lung abscess—better resect a piece of rib with the periosteum so as to permit of long-continued drainage without a tube and without the danger of valve formation and tension pneumothorax.

If the lung is bound down by tough exudate upon the pleura this should be divided by long vertical incision (Fig. 1), when the lung will usually try to force its way out of its confining membrane. Peeling this away with the fingers (Fig. 2) the lung may be further freed by incisions at right angles with the first one (Fig. 3). Hemorrhage is moderate, often absent. A slight wound of the lung tissue is not serious. Tough adhesions of the lung to the chest wall had better not be disturbed unless they are capable of being divided between ligatures. The loose flaps of membrane peeled from the lung may be cut away, but there should be no

special effort made to denude every portion of the lung's surface.

During the procedures just described secondary abscesses may be found and turned into the main cavity. Sometimes the lower lobe of the lung is

Fig. 5.—Case 1. (F. B.) Secondary antero-mesial encapsulated pyopneumothorax. Note fluid level.

adherent to the diaphragm. This adhesion should be loosened with the greatest caution for fear of entering the abdominal cavity. We have several times encountered between lung and diaphragm collections of pus which must have caused serious complications had they not been emptied.

Having mobilized the lung the wound is closed with tubeless drainage as just described.

We repeat that this mobilization and exploration through the large incision—or major thoracotomy, as we think it should be called—is not advised as a primary procedure for the desperately ill patients. It should follow minor thoracotomy, the operation for immediate relief. Doubtless, in cases without confining membranes one of the various suction apparatuses with a fixed paracentesis cannula will prove efficient. One of the best of these is that of Philips. (Demonstrated before the Surgical Section, Academy of Medicine, April 7, 1916.)

We have performed in our hospital service 26 major thoracotomies with 5 deaths, or 20 per cent.

The fatal endings may be classified as follows:

1. A. S., man, 35 (one stage), gangrenous pleurisy.

2. Bessie T., girl, 3½ (one stage), pneumonia, six weeks after operation.

3. O. W., man, 55 (two stages), sepsis (*x*-ray, suspicious of tuberculosis, but the pus showed the pneumococcus).

4. N. T., boy, 2 years (one stage), sepsis; diarrhea.

5. L. C., girl, 1 year (two stages), pneumonia; sepsis.

The operation appears to us surgically sound. It gives a far better opportunity than any other for thorough exploration and rational treatment. Pockets of pus are discovered which could not otherwise be found. In two cases subphrenic abscesses —evidently the determining cause of the empyema —were discovered, though in both instances the patients died weeks afterwards of the pylephlebitis with the liver abscess which caused the empyema. (Case 4.)

During the after treatment it is easy to explore the chest digitally when retention is suspected or, if necessary, to reopen the whole wound for more thorough visual examination.

This operation differs from that of Fowler, Delorme and Lloyd in the enormous exposure with little danger, and little hemorrhage, and, too, the deformity following multiple rib resection is, of course, absent. We avoid the great thoracoplastic operations, which seek to bring a rigid chest wall down to the collapsed lung, by mobilizing the lung and bringing it out to the normal thoraic limits. We repeat that out of all our cases, an unselected series of 63 there was not one thoracoplasty.

3. *Thoracotomy for Encapsulated Empyema.*—When the physical signs and the radiograph indicate the presence of localized intrapleural abscess, whether interlobar or not, the operation must be planned according to the situation of the disease. Often the costal pleura forms one wall of the abscess, and in these circumstances we have resected ribs directly over the pus, trying to avoid infecting the general cavity. (Case 3.) The case is then treated as an ordinary abscess. It has been found effective to remove a section of at least one rib with its periosteum so that this abscess can be treated by packing with gauze and later, if necessary, by drainage with a short tube. The removal of the periosteum with the rib prevents the rapid growth of deforming bony bridges which so frequently interfere with proper drainage. We have dealt with four of these cases and all the patients recovered.

This paper is not a plea for any one operation, but for an abandonment of routine in the treatment of empyema. Each case should be studied and its

Fig. 6.—Case 1. (F. B. Patient is well. Note cicatrix following intercostal drainage of secondary empyema.

therapy determined according to its individual requirements. We believe that the poor showing of the results in this disease is largely due to the employment of rule of thumb methods.

Case I.—*Sacculated Empyema of Thorax; Double*

Sacculation. Thoracotomy with Rib Resection; Secondary Anterior Thoracotomy. On January 19, 1916, Frank B., 24 years old, was admitted to the medical service of Mt. Sinai Hospital. His temperature at that time was 103½°, pulse 100, respiration 36.

Five years before admission he had had malaria in

Fig. 7.—Same patient as in Fig. 6. Shows main intercostal cicatrix.

South America. His present illness had begun five days before admission, with cough, fever, and bloody sputum. He passed through a rather sharp pneumonia of the right side, and on February 2 the chest was aspirated in the fourth space posteriorly in the axillary line, and thick pus was found. He was then transferred to the first surgical service for operation.

The blood count was 23,600 white cells, polys 84 per cent., lymphocytes 16 per cent., red blood cells 5,040,000. The *x*-ray showed a shadow which apparently indicated an encapsulated empyema from the right apex along the right side of the chest next to the ribs down almost to the base. (Fig. 4.)

On February 3, 1916, in nitrous oxide and oxygen anesthesia by Dr. Branower, an incision was made in the seventh interspace, the lung being supposed to be adherent at this point. The seventh rib was resected with the periosteum and clean pleural cavity invaded at the inner end of the wound. This opening was made before the evacuation of the empyema and it was closed by a suture and a gauze packing. The empyema itself was then opened through much thickened parietal pleura and a large quantity of pus escaped. On exploration the lower lobe of the lung was found soft and expansile, the remainder of the cavity lined with tough membrane. Part of this membrane was peeled away, allowing good lung expansion, and it was thought that the entire pus collection had been evacuated. Exploration showed the cavity to be cleanly marked, and on completely emptying it there was no leakage from anywhere else. Dr. Wessler of the Roentgenological department was present and stated that it was his opinion that the pus extended up to the apex. Therefore, aspiration in the axilla was practised and thick yellowish pus of a different color from that below was encountered. A section of the sixth rib was now excised at the site of the original wound and following a long aspirating needle put in as close as possible to the costal side of the chest a second large cavity was opened with dressing forceps. The entire bilocular cavity was now packed with gauze and patient sent back to bed.

On February 15 he was again *x*-rayed because of a rise in the temperature and a collection of pus anteriorly and against the mediastinum was found. There was considerable gas above the pus. (See Fig. 5.)

Under nitrous oxide and oxygen anesthesia, a small anterior fourth interspace incision was made, and gas and pus evacuated; tube drainage. Under postural treatment this rapidly closed and the patient was discharged well on March 6, 1916. The illustrations (Figs. 6 and 7) show the sites of the cicatrices.

This case illustrates beautifully the value of the *x*-ray in accurate diagnosis, pointing the way to intelligent and prompt surgery.

Case II.—*Empyema of Thorax, General Sepsis, Double Otitis Media; Death.*—On February 6, 1916, Celia M., four years old, was admitted to Mt. Sinai Hospital. Her temperature was 103.4°, pulse 144, and respiration 40. For two days she was a patient in one of the medical wards, and was transferred for operation.

When the child was fifteen months old she had some indefinite intestinal trouble, with loss of weight and weakness, which continued for three months.

The illness for which she entered the hospital had begun eighteen days before admission, with cough, high fever, and dyspnea. When transferred to the surgical service she was acutely ill and extremely septic in appearance. There was herpes prolabialis, great dyspnea, both ear drums were perforated, and the ears discharging. The left lung was apparently normal. The right chest was full of fluid; the heart displaced; Grocco's sign present. The day before her transfer she had been aspirated and one cubic centimeter of purulent fluid had been withdrawn. The blood showed 11,500 white blood cells, with 86 per cent. polys and 14 per cent. lymphocytes.

On February 8, 1916, in local anesthesia with alypin, a short intercostal incision was made in the eighth interspace behind the posterior axillary line, and a large quantity of pus was evacuated. The pus was later shown to be pneumococcal. The chest was drained by means of a small tube and permanent suction was arranged with the water syphon. The patient continued extremely septic, lying in a semiconscious state and being fed with difficulty. With slight variation the progress of the case continued for about a week, when there developed ecchymoses of large size upon the face. A blood culture resulted in the diagnosis of pneumococcemia.

In this desperate condition a transfusion of 80 c.c. of blood from the patient's mother was made by the sodium citrate method, and this was repeated twice within the next two days. Needless to say the necessary tests were previously carried out. After each transfusion there was evanescent improvement, but the child died in coma ten days after the operation.

Fig. 8.—Case 3. (S. M.) Large axillary encapsulated empyema. Cured by resecting ribs in axillary region.

The wound showed no sign of gangrene and the discharge had considerably diminished.

Carefully reviewing this case we believe that nothing at present known to science could have saved the patient. Her death was due, not to the

empyema nor to the operation, but to the effect of the pneumococcal bacteremia.

CASE III.—*Encapsulated Empyema of Thorax, Rib Resection, and Drainage.*—Samuel M., 24 years old, was admitted to the medical service of Mt. Sinai Hospital on December 10, 1915, and was transferred to the surgical service on January 13, 1916.

Eight years before admission he had had pneumonia, and three years before tonsillitis. His present illness had begun on December 8, two days before admission, with pain in the left chest, vomiting, chills, fever, and headache. Then with an increase of all the symptoms there came cough, with scanty expectoration. Finally, dyspnea and precordial pain.

Physical examination showed a very sick patient, tongue dry and coated. In the lungs anteriorly from the apex to second rib on the right side there was exaggerated inspiration with a few râles; no dullness; posteriorly from angle of scapula to base dullness with bronchial respiration and voice over scattered areas. The left side from the midscapular region to the base showed dullness, increased tactile, and vocal

FIG. 9.—Compare with Fig. 7. This patient has had several thoracoplastic rib resections. Note deformity and rigid scapula.

fremitus, bronchophony, numerous crepitant râles. Urine not abnormal. The blood count was 27,000 white blood cells, 87 per cent. polys, 13 per cent lymphocytes. The *x*-ray showed an oval shadow of large size in the upper part of the left chest with an opacity below connected with upper opacity by what might be called an isthmus. (Fig. 8.)

This patient had been aspirated a number of times by the medical men and finally, on January 4, pus was obtained in the fifth space in the midaxillary line.

On January 13, 1916, as soon as possible after the transfer to the surgical service, the patient was operated upon. In nitrous oxide and oxygen anesthesia, administered by Dr. Branower, an incision perpendicular to the line of the ribs was made in the left axillary region and portions of the fourth and fifth ribs were removed with the periosteum. At once a large collection of pus was encountered and the anatomical conditions suggested by the *x*-ray were easily made out. There was a strong tendency to expansion of the lung and the wound was packed with gauze and permitted to drain without a tube. The patient made an uneventful recovery and was discharged well in twenty-five days.

CASE IV.—*Pylephlebitis Following Appendicectomy; Secondary Empyema of Thorax; Death.*—Abraham E., 27 years old, had been operated upon for acute gangrenous appendicitis, at the New York Post Graduate Hospital, seventeen weeks before I saw him. Later the diagnosis of pylephlebitis was made and the gall bladder was opened at the same hospital.

On December 29, 1915, he entered one of the medical services at Mt. Sinai Hospital in a wretched condition, and eleven days later he was transferred to the first surgical service for operation, pus having been found on apirating the left upper chest. There was edema of the extremities.

The urine contained albumin and red blood cells, but no sugar. The blood showed 6,100 white cells, with 87 per cent polys and 13 per cent lymphocytes. Before the aspiration at which pus was obtained there had been other aspirations when clear green-yellow fluid with 89 per cent. of polymorphonuclears and 11 per cent. lymphocytes had been withdrawn. No growth on culture. *X*-ray examination showed two distinct fluid levels in the left chest, one below, the other above.

The empyema being apparently the most urgent condition, he was operated upon on January 10, in nitrous oxide and oxygen anesthesia. A long incision was made in the eighth interspace and the eighth rib was widely resected with its periosteum. The rib spreader was put in. An enormous amount of gas under tension and exceedingly foul pus was evacuated. It was later found that this pus contained *Bacillus proteus*. The lower lobe of the lung was adherent to the diaphragm and there were numerous other adhesions in the chest, some of which were peeled loose, and one which divided the chest apparently into two main cavities was divided with scissors. Dense adhesions in the upper chest were not interfered with. The lung was covered with a greenish exudate, but on peeling some of it away from the lower lobe there was no expansion. With a very guarded prognosis this operation was concluded by closing part of the wound with suture and leaving the rest open for drainage.

By January 24 there was great abdominal distention from ascites, and under local anesthesia a tiny transverse epigastric incision was made in the hope of coming down upon an hepatic abscess. Repeated puncture through this incision revealed no pus, although the liver was much enlarged and the abdomen contained a quantity of seropurulent exudate. The prognosis was now bad.

A few days later paracentesis in the left iliac region was performed and the opening permitted to drain for ten days. This gave considerable relief, but the fluid reaccumulated and the patient's condition became desperate. Finally, intestinal obstruction developed and the patient refused operation until fecal vomiting appeared and he was almost moribund. On February 26 laparotomy under nitrous oxide and oxygen disclosed a tough band of adhesions binding the ileum to the anterior abdominal wall. The obstruction was relieved, but on account of the cirrhotic condition of the liver even the slightest adhesion between the intestine and the abdominal wall bled furiously. The patient survived for twenty-four hours, vomiting constantly, then died. A small piece of the liver was secured and examined by Dr. Mandlebaum, who reported a probable healed pylephlebitis, from the history and from the fact that there was a recent cellular cirrhosis.

The case is reported here very briefly because of the complication of thoracic empyema. The death of this patient was not due to his empyema even remotely.

There was another case which is included in our table very similar to this one, in which a direct perforation occurred between a liver abscess and the right lower pulmonary lobe. At operation a serous effusion was found in the chest and on peeling away the lung from the diaphragm an abscess was evacuated. Later the diaphragm was opened and the main abscess drained. This patient also died of his liver sepsis.

THE CAUSE, TREATMENT, AND PREVENTION OF HAY-FEVER.

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UNTIL recently, hay-fever was considered a disease of varied and doubtful origin, but whose reappearance was as certain as the proverbial tax-collector. A more exact knowledge of the etiology of this disease, however, has shown not only that it is not inevitable, but, in view of the simplicity of its prevention, is a disease whose contained existence would be a reflection on preventive medicine.

The development of pollinosis at the exact time of the blooming of certain plants, and its disappearance with these flowers, eventually led to the conclusion that a relationship existed between hay-fever and the blooming of these plants. This was corroborated by the fact that susceptible persons develop a paroxysm by simply approaching such plants at a time when their pollen is being dispersed by the wind. It was also found that this pollen, applied to the nostrils of susceptible subjects, could produce a hay-fever reaction at any season of the year.

The class of plants whose pollen may cause hay-fever are wind-pollinated, that is, the process of fertilization is effected by the pollen being borne by the wind, instead of this being done by contact or by insects. This explains the presence of such pollen in the air. In some cases the pollen is present in

FIG. 1.—Common ragweed (*Ambrosia artemisiafolia*). Responsible, with the giant ragweed, for 85 per cent of fall hay-fever. More common in the Middle and Northern States.

enormous quantities, as for instance in the ragweeds, in which it has been estimated that only one in a hundred million pollen is actually used in fertilizing the pistillate flower.

The plants that are responsible for hay-fever are practically all common weeds, such as the ragweeds, cockle bur, yellow dock, etc., which are also a source of expense and labor to the farmer. Their characteristics are as follows: They are wind-pollinated, without attractive color or fragrance, very

FIG. 2.—Giant ragweed (*Ambrosia trifida*), whose pollen is one of the chief causes of hay-fever. Grows in moist lands. Very abundant on the Gulf Coast. (From "Hay-Fever and Its Prevention," by W. Scheppegrell, A.M., M.D. Report of United States Department of Public Health, June 30, 1916.)

numerous, and with abundant pollen. The lack of color or scent is due to the fact that these plants are wind-pollinated, the qualities mentioned being intended to attract insects for fertilization.

The most common weeds that cause hay-fever are the rag-weeds (*Ambrosia artemisiæfolia* and *trifida*, Figs. 1 and 2), which are the causes of most cases of fall hay-fever. The marsh elder (*Iva ciliata*, Fig. 3) is also a cause of fall hay-fever and frequently prolongs the attack. The early cases are due to the yellow dock (*Rumex crispus*, Fig. 4), and the mid-summer cases to the careless weed (*Amaranthus spinosus*), cockle-bur (*Xanthium canadense*, Fig. 5) and other wind-pollinated weeds. In early summer, many cases are due to the various grasses (Fig. 6), all of which are wind-pollinated.

The reaction of pollinosis is divided into the direct and indirect stage. The former is influenced by the physical conformation of the pollen. In plants, in which the pollen is covered with spiculæ, such as the Ambrosias, Partheniums, Dracopis, etc., the direct reaction may develop immediately and is usually prolonged. In those in which the pollens are smooth, such as the Rumex, Amaranthus, grasses, etc., the reaction is deferred several minutes and is milder in character.

The indirect reaction of pollinosis is partly due to the effects of the primary irritation and partly to the absorption of the protein contents of the pollen, and the toxin formed by the proteolytic

action of the cells. The immunity of the patient depends upon his resistance to the initial irritation and the completeness with which the liberated toxins are neutralized. The character of this process establishes the degree of susceptibility of the

Fig. 3.—Marsh elder (*Iva ciliata*), a cause of fall hay-fever.

patient and forms an important factor in what is called "predisposition." This is probably also affected to some extent by certain general conditions but the influence of these has not been clearly established.

Immunity and predisposition in pollinosis are relative terms. The person who is immune and the one which is affected may both breathe the same pollen-infected air, the former without apparent discomfort and the latter developing an attack. In each case, the pollen enters the nasal cavities, but in the immune, the clinical symptoms are not presented.

This result is due to the fact that all cells possess to some extent a proteolytic power which acts as a defense against the invasion of foreign proteins, provided certain limits are not exceeded. In addition to this, the entrance of foreign proteins by parenteral channels results in the development of antibodies, which are ferments which also protect the host within certain limits. The extent to which these processes neutralize the absorbed toxins, and the degree to which he can resist the initial irritation, establishes the degree of immunity of the patient.

Local conditions, such as abnormalities of the nasal passages, also act as a predisposing cause, but much less so than is generally supposed. Operations to correct such defects have given satisfactory results as regards hay-fever in less than 25 per cent of the cases, and are not to be recommended unless also indicated for other reasons.

The increased susceptibility of hay-fever after an initial attack, is due to the anaphylactic condition produced by the absorption of the pollen protein by parenteral channels. The antibodies resulting from this reaction are probably of the anaphylactic type, and this explains the reduced resistance to further infection.

Anti-anaphylaxis, eventually resulting in a reactive condition of immunity, also develops in pollinosis, but is usually delayed for quite a long period, and is indicated by gradual decrease of the paroxysms. This should not be confused with the disappearance of the attacks due to diminution of the supply of pollen resulting from a change of residence or the eradication of the pollinating weeds.

The effects of hay-fever are due not only to the absorbed pollen proteins but also to the action of microorganisms resulting from the lowered resistance of the nasal mucous membrance, and from the inflammatory reactions associated with these processes. In the treatment, these various conditions should be considered.

The important factor in the treatment is the removal of the exciting cause. In many cases, the pollinating weeds are in the neighborhood of the patient's residence, and the cutting of these will frequently give marked relief. My first prescription to such patients is "Have the weeds and grass in your neighborhood cut and keep away from other weeds." The result of this advice depends upon the extent to which the pollinating weeds and grasses can be cut or destroyed, but the results compare favorably with the published reports of therapeutic methods.

A method which has given relief in almost every case, is the removal of the patient during the hay-fever period from the infected locality. This does not necessitate an expensive trip to the mountains or seaside, which frequently fails to give relief on

Fig. 4.—Yellow dock (*Rumex crispus*). A cause of spring hay-fever.

account of the presence of hay-fever pollens in the air at these places. A temporary visit to a more central part of the city will be sufficient, provided the areas with pollinating weeds or grasses are at a sufficient distance ($\frac{1}{2}$ mile or more). The new

locality should, however, be carefully inspected, as a small lot with high weeds in the same square may be more irritating than a whole acre of weeds at a greater distance.

For several years attempts have been made to increase the resistance of the patient to pollen by the injection of the pollen extracts. In all the early attempts, mixed pollens were used without regard to the special susceptibility of the patient, which is probably one of the causes of their failure. In such cases, only the pollen should be used to which the patient reacts, as evidenced by the nasal, conjunctival, or skin reaction. The injection of the wrong extract may cause the patient to become sensitive to the pollen from which the extract is prepared.

The pollen extract is prepared by dissolving one centigram of the specified pollen in ten c.c. of 5 per cent. salt solution to which 10 per cent. alcohol has been added and which is preserved in an aseptic condition. When used, this should be diluted to about 5 per cent., the strength to be determined by the conjunctival reaction, this being indicated by a hyperemia produced by the extract. The subcutaneous injection of the extract should be repeated at intervals of three to five days. The object of the injection is to increase the patient's resistance to the pollen toxin (anti-anaphylaxis) so that the inhaled pollen protein will no longer produce an attack.

Instead of the conjunctival reaction, the skin reaction is frequently used. This is effected by making a number of light scratches on the skin and rubbing in a drop of the pollen extract to be tested. A positive reaction is indicated by reddening and edema of the area surrounding the abraded surface and accompanied by itching.

In cases in which the pollen therapy does not give satisfactory results, autogenous vaccines may also be used. These are prepared from the bacteria found in the nasal secretion of the patient. Both of these methods have given fairly satisfactory results, whose permanency, however, still remains to be established.

Relief has also been reported from the use of calcium chloride, which already has been successfully used in asthma, the dose being 3 grams daily. It is supposed to act as a sedative to the nervous system.

Mercury has also been used in hay-fever, and Barton L. Wright of the United States Navy reports several successful cases. He prefers the succinimide of mercury, 1/5 gr. in distilled water, this being injected deeply into the gluteal muscles. He believes that the effects are due to the fact that patients after a mercuric treatment have a peculiar power of resistance to infection of every kind.

In regard to treatment, however, it must be admitted that thus far none except the elimination of the pollinating weeds has given very satisfactory results. The above methods are described as the most promising thus far. Further investigations along these lines it is hoped will eventually give sufficient data to indicate the most advisable method of treating this disease.

As hay-fever has been shown to be a distinctly preventible disease, it is clearly our duty to use every effort to eradicate the cause. The investigations which we have conducted for several years indicate that the large majority of the plants whose pollen give rise to hay-fever are worthless weeds which are alike an expense to the farmer and a menace to health.

In a work of such an extensive character, however, as the eradication of hay-fever weeds, we must have general co-operation in order to be successful. It is therefore necessary to educate the public in the relationship of such weeds to hay-fever and the relief that sufferers from this disease are entitled to by removing the cause. Health is one of man's most important assets, and every one has a right to demand that this does not suffer on account of the neglect of his neighbor. If the hay-fever weeds are allowed to infest his neighbor's premises or vacant lots and infect the air he breathes with noxious pollen, he is evidently entitled to relief.

In the medical profession, the relationship of pollen to hay-fever has been so firmly established that it is now technically referred to as "pollinosis." In the recent meeting of the Louisiana State Medical Society, in which I spoke of the etiology of hay-fever, there was not a dissenting opinion expressed regarding the relationship of these pollens to hay-fever.

FIG. 5.—Cockle bur (*Xanthium canadense*). A great nuisance to the farmer and a cause of hay-fever.

An important item in the eradication of hay-fever weeds is the distance at which pollen may produce an attack of hay-fever. It has been shown by means of glass slides exposed to the wind that some pollens may travel a great distance, even several miles. We have found, however, that pollen scatters rapidly as it is carried by the wind from the parent weed, the decrease being estimated to be inversely as the square of the distance. On this account, pollen is not often a source of hay-fever at a distance of over a half mile, and even a much shorter distance is often sufficient to give relief. According to the above rule, a patient at 1000 feet, or about three ordinary city blocks, would inhale only 1/100 part of the pollen to which he would be exposed at 100 feet.

Immunity to hay-fever does not mean that the patient is not inhaling pollen, but that the amount is not greater than he can neutralize. In an atmosphere in which there is an abundance of pollen, it is evident that all persons breathing this air must inhale about an equal number, but only those suffer in whom the amount of pollen inhaled is in excess of their neutralizing power. There are probably few who cannot inhale a certain number of pollen grains without disturbance, hence the importance of keeping this number as low as possible.

As an evidence of the importance of eliminating the pollen in the immediate vicinity of the patient, I have observed great relief to patients when the hay-fever weeds in lots adjoining their residences were cut down, although considerable pollen was still in the air from weeds at a greater distance.

The increased susceptibility of a hay-fever patient after an incipient attack has already been referred to. We have had patients living at a distance of a quarter of a mile from a large area of hay-fever weeds, who were entirely free for weeks until their susceptibility was increased by an attack from close proximity to these weeds. The amount of pollen at a distance which had not before been a source of irritation was now sufficient to continue the attacks.

FIG. 6.—Johnson grass (*Sorghum halapense*). Practically all grasses are wind-pollinated and may cause hay-fever. (From "Southern Grasses," United States Department of Agriculture.)

In order to be effective, the efforts against hay-fever weeds should be reinforced by proper legislation. There will always be persons who respect their neighbors' rights, in health as well as in other matters, only when compelled by the majesty of the law. When education has reached a sufficient stage, therefore, suitable laws should be enacted to obtain permanent results against hay-fever.

In New Orleans where success against hay-fever is already quite apparent, the education of the public in the relationship of certain weeds to hay-fever was carried out by means of articles in the medical and lay press and in lectures before various societies. As a result of this, when an effective anti-hay-fever-weed law was submitted by the American Hay-Fever-Prevention Association to the city council it was passed without a dissenting vote. It is now being enforced, and the results in the reduction of the number of hay-fever cases thus far (July 1) has surpassed all anticipations.

It is important in enacting such an ordinance that the provisions should not be too drastic or it will be difficult to enforce. The height of grass and weeds should be limited to one foot on lots, sidewalks, and roads operating through a public franchise. On the other hand, no preliminary notification should be allowed, as this greatly increases the expense of inspection and reporting, and lowers the efficiency of the ordinance.

As the relation of weeds to hay-fever becomes more generally recognized, adequate anti-weed laws will be introduced in all the towns and cities. Their proper observance will give results in hay-fever that will fully justify the expense of their enforcement.

844 AUDUBON BUILDING.

HAIR-MATRIX CARCINOMA.

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BASAL-CELLED, or hair-matrix, carcinomata occur, with few exceptions, on the head, face, or upper lip. They occasionally occur on the lower lip, the body, or the extremities.

In a recent study[1] of 206 cases of carcinomata occurring in various parts of the body, thirteen were found to be of the hair-matrix type; eleven being on the upper lip or above, one over the scapula, and one on the leg. Two of the cases were epidermoid of the cheek.

Whenever a malignant tumor develops in this upper face and head region, it will usually be found to be a hair-matrix carcinoma.

Hair-matrix carcinoma, as a type of rodent ulcer, has long been known to infiltrate broadly and slowly, but not deeply. The general understanding of this proposition has proved of great advantage to the surgeon, and in turn, to the patient. Where possible, the surgeon removes the growth with an incision fairly clear of the infiltrating edge, which can usually be determined by a rather abrupt margin, of different color from the balance of the growth, being pearly in appearance.

This cancer is the least malignant of the carcinomata. It displays little tendency to produce metastases, although these occasionally occur. For all it grows slowly, and is so feebly malignant as compared with many of the other varieties of cancer, as to make its complete removal easy. An operation will give the patient freedom from mutilation and recurrence in proportion to the thoroughness and promptness with which it is undertaken and done after its inception. Once thoroughly removed, it never recurs.

The histological picture of a hair-matrix carcinoma is quite characteristic in most cases. At times, however, it comes to resemble a sarcoma, when the usual cuboidal cells, of which it is composed, assume a spindle shape.

Mallory[2] has pointed the way to its differentation by calling attention to the fibrils which will be

found on careful examination, taking the characteristics of the cells which line the hair-matrix. Not alone the fibrils tend to differentiate the growth from sarcoma, but their tendency to arrange themselves in tubules, like the hair-matrix from which they are derived.

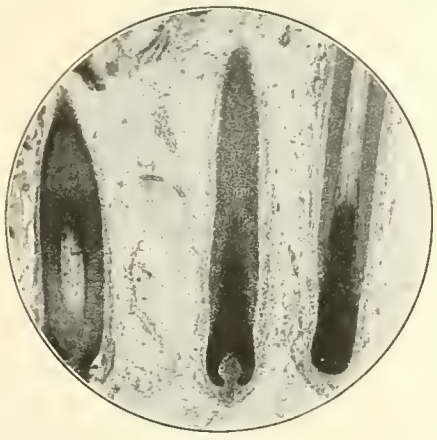

Fig. 1.—Normal hair follicles.

Adami,[3] in speaking of Krompecher's work, says that he has called these basal-celled cancers, and has "established, it would seem, beyond any doubt, that cells of epidermal, epiblastic origin can give rise to tumors indistinguishable from connective-tissue sarcomas in histological structure." Again: "We deal with an epithelioma of the most aberrent and anaplastic type, which, nevertheless, for long months, and it may be, years, continues to grow and locally infiltrate and destroy the surrounding tissue."

Ewing[4] has made some interesting observations on the resemblance of certain spindle-cell carcinomata to sarcomata. He says: "Epithelial tumors may from their inception appear like spindle-cell sarcoma, as in the spindle-cell, basal-cell carcinomas of Krompecher, in spindle-cell carcinoma of the thyroid, and in melanoma. It is becoming more and more apparent that many so-called sarcomas of the organs are in reality spindle-cell carcinomas. . . . Spindle tumor cells are so common in carcinoma that their occurrence in any carcinoma is very strong presumptive evidence that they are altered epithelium."

The disposition to keratinization into epithelial pearls in basal-celled carcinomas is nowhere nearly so frequent as it is in the epidermoid variety of tumors, although Mallory speaks of their occasional appearance in minute forms.

A rodent ulcer appears as a warty growth, and indeed is frequently mistaken for a wart, which may remain for a considerable time without ulcerating; some authors say for several years, but this seems rather improbable. Rather, it would appear that the simple warty excrescence has changed its character to a malignant type of epithelial penetration and overgrowth. As has been emphasized, hair-matrix carcinomata spread very slowly and superficially.

Morrow[5] pointed out long ago a prominent distinguishing feature of rodent ulcer in contrast with an epithelioma, when he said: "The amount of infiltration or new deposit about the base and edges of a rodent ulcer is much less than in the usual variety of skin cancer, while ulceration is more marked." These are valuable points in making a differential diagnosis.

The location of the ulceration is always suggestive, in a diagnostic way, for the majority of these ulcerations occur about the sides of the nose and the eyelids, or on the head or face above the lower lip.

Again, the age of the patient is helpful in making a rightful interpretation of the character of the ulcer, or of the warty growth before it has become broken down into an ulcerating surface. It is preeminently a disease of the advanced cancer age, or of middle life.

Until recently many writers have confused hair-matrix carcinomata and epitheliomata, the one with the other. But their whole history of development and subsequent behavior are quite different. Then when a histological study of the two is made, there is no longer doubt remaining as to their true character.

In contrast to many varieties of cancer which have arisen after a prolonged period of a so-called precancerous state, hair-matrix carcinoma is quite as apt to develop on a part which has apparently been free from all forms of irritation.

Some authors have attempted to explain the development of cancer upon anatomical grounds. Theilhaber[6] thought that nutritional changes, due to endarteritis and an acellular connective tissue that are frequent accompaniments of old age, are responsible for their initiation. But the writer has shown that in a study of 206 cases of carcinoma, obstructive vascular changes occurred in only 105 cases, a little over one-half. So, the other half of the cases could not have depended upon this cause of the cancer. Likewise, the fibrotic changes were present in only 118 cases, or 57 per cent.

These anatomical changes are hardly constant enough to be regarded as offering sufficient causative agency for the initiation of malignant growths.

Internal causes of cancer, associated with external irritative ones, known as precancerous conditions, are more likely to result in the development of malignant growths than where the one cause operates alone. Perverted chemical and biological activities of the epithelial cells seem to be sufficient cause for the development of cancer, but just what these changes are, or what induces them, remains to be established. Aside from the influence that heredity plays, and the exciting causes of the well-known precancerous conditions, the etiology of carcinoma is still in the dark.

Fig. 2.—The tumor from the nose, showing tendency of epithelial cells to form into tubules.

But whatever are the causes that start epithelial malignancy, the disease is local at the outset, and all that is needed to effect a cure in any one case is to operate early enough to find the condition in its very incipiency.

Then, and only then, can the surgeon hope to make his operations universally successful. This is less true of hair-matrix carcinoma than the others, because there is slight tendency to produce metastases, or to infiltrate deeply; yet, even here,

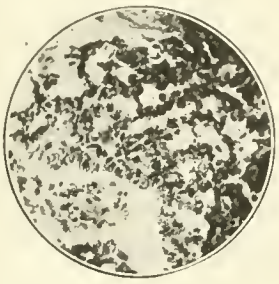

Fig. 3.—Higher magnification of Fig. 2, showing the tendency to the formation of tubules.

this form of cancer cannot always be attacked with assurance of success when it has been in existence for a long time, for infiltrations may have occurred that are impossible to reach. Hair-matrix carcinomata are, of course, on the surface of the body, where they can be seen in their earliest development. If attacked as soon as observed, doubtlessly 100 per cent. of recoveries would result.

As illustrative of the results to be attained by early operations on hair-matrix carcinoma, the following two cases are appended:

Case I.—Mr. J. A. C., age 53, came to me Nov. 20, 1909, for a slight lump on his forehead, over the left eye. This had been in existence for six months. It was small and only slightly elevated. The edges of the elevation were higher than its center, and the color was lighter, slightly pearly in character. There was no ulceration of the surface, but the whole appearance of the disturbance was that of an early rodent ulcer, or hair-matrix carcinoma. No pain was associated with the growth. On November 24, 1909, I removed the tumor with a rather wide incision, quite clear of the growth. The wound healed promptly, and there has been no reappearance up to the present time, being nearly seven years since the operation. The tumor was a hair-matrix carcinoma.

Case II.—D. I., age 43, male, consulted me with reference to a small lump on the right side of his nose. It was about the size of a pea, with pearly edges, but no ulceration. The tumor had only been observed a few weeks previously. No pain had been experienced in the growth. A circumstance that made one feel that the tumor was about to ulcerate was the fact that soon after its first appearance, or at least, since its presence had been observed, bleeding occurred from a small vein traversing the growth. This healed at once, so that no ulceration was observable at the time of the examination.

This growth was removed on October 22, 1914, by an incision which well cleared the outermost edges of the tumor, and the actual cautery, a platinum point heated by electricity, was applied to both the base and the edges of the freshly made wound. This was done as a precautionary measure to destroy any infiltrating can-

Fig. 4.—Showing change to cells of a spindle shape

cer cells that possibly might have escaped the knife. There has been no evidence of its recurrence. The histological structure of the growth proved it to be a hair-matrix carcinoma.

The results in both of these cases emphasizes the fact that we may reasonably hope for a complete freedom from recurrence in hair-matrix carcinoma when the operations are done early in their progress, for it is well known that at this time these new growths do not tend to infiltrate deeply, nor to

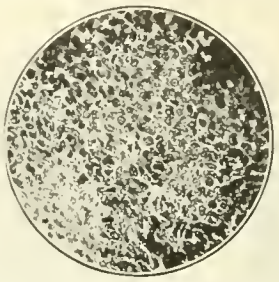

Fig. 5.—The tumor cells are packed closely together and appear only as small round cells.

metastasize, nor to show a high degree of malignancy.

Finally, when we come to reflect how absolutely curable this disease is in its early inception, and how easy it is to make a probable diagnosis at this time, and what a slight operation is required to effect this much desired result, there seems little occasion to delay these trifling operations that promise so much. As has been shown in this paper, there is not alone this more extensive infiltration to encounter in delayed operations, but there is the constant danger present of an epithelioma engrafting itself on the edges of the ulcerating growth. Then a tumor of a higher grade of malignancy is there to deal with. By this time, metastases may have occurred in neighboring glands, or elsewhere, and infiltration of epithelial cells into depths that are not reached by an operation.

To obtain better results in our operations for cancer of all forms, earlier diagnoses must be made, and earlier opportunities given the surgeon to do these operations.

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THE ACTION OF GAMMA-RAYS OF RADIUM ON DEEP-SEATED INOPERABLE CANCERS OF THE PELVIS.

By HENRY SCHMITZ, A.M., M.D., F.A.C.S.,

CHICAGO.

Radium therapy of malignant tumors in any part of the body demands the discussion of the following points: (1) The technique of the application of radium, (2) the evidence of the histological changes caused in the tumor tissue, and (3) the clinical results; it also must include a discourse on all accessory means which will assist the action of radium, such as (4) the application of the massive Roentgen rays, and (5) the use of surgical procedures to facilitate or aid the intensity of the gamma-rays of radium.

The Technique of Radium Applications.—The technique of the application of radium must consider (1) the amount of radium element used,

(2) the method of screening, (3) the extent of the time of exposure of the rays to the tumor, and (4) the distance maintained between the radium and the tumor mass. The quantity of radium necessary to destroy growths, that reach two or three

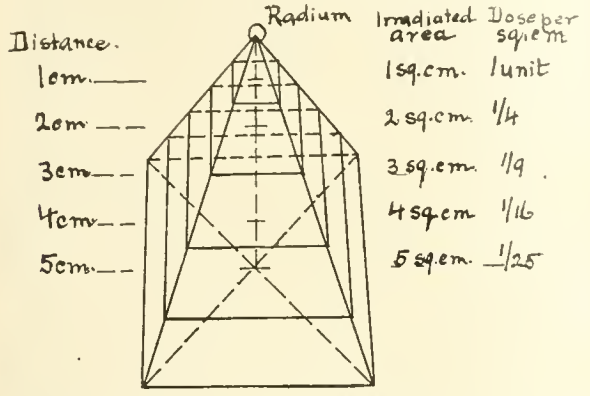

Fig. 1.—Law of Radiation.

centimeters into the uterine, rectal, vesical and pelvic cellular tissues, should be at least fifty milligrams of radium element. If the capsule cannot be brought into direct contact with the tumor, then a sufficient intensity of the rays must be obtained by the use of larger amounts of radium element.

To determine the dose of gamma-rays necessary to destroy carcinoma tissue we make use of the law of radiation and experiments carried on in the living human body. The intensity of the action of rays varies inversely as the square of the distance from the source of radiation. The irradiated area at a distance of one centimeter may be considered as one square centimeter and the dose of rays for this area as one unit. At two centimeters, the irradiated area is four square centimeters and the dose one-fourth of a unit, and at three centimeters the irradiated area is nine square centimeters and the intensity of the rays is one-ninth of a unit. (See figures 1 and 2). If for instance, fifty milligrams of radium element destroy a tumor mass within a distance of one centimeter from the radioactive substance in twelve hours, then the same amount will bring about the same result within a distance of two centimeters in forty-eight hours, and within a distance of three centimeters in 9 x 12 = one hundred and eight hours. Or if fifty milligrams radium element destroy a tumor mass within one centimeter distance, in twelve hours, then two hundred milligrams radium element will do so in twelve hours within two centimeters distance and four hundred and fifty milligrams radium element in twelve hours within a distance of three centimeters. However, it has been found that more than one hundred milligrams radium element should not be used at a given point, and if a larger amount be used, it is better to distribute each hundred milligrams to various parts of the tumor, as is done in the method of cross-firing. The reasons are that large amounts of radium cannot be properly concentrated into a sufficiently small area of space, so that the law of radiation may be correctly applied.

The experiments in the human body were carried out in recurrent breast cancers, characterized by the formation of multiple nodules. A nodule was removed under local anesthesia and subjected to a microscopic examination to determine its pathological nature. Then the gamma-rays of fifty milligrams radium element were applied for four hours to a given nodule, for six hours to another nodule, for eight hours to a third, for ten hours to a fourth, for twelve hours to a fifth, and so forth. After ten to fourteen days, *i.e.* when the latency of the action of the gamma-rays reaches its height, the nodules were removed. We noted particularly the distance of the growths from the skin surface. The removed tissues were subjected to microscopic examinations. In this manner we repeatedly demonstrated the fact that the gamma-rays of fifty milligrams radium element destroyed carcinoma tissue within a distance of one centimeter from the skin surface after a continued application of twelve hours, *i.e.* six hundred milligram hours or milligramage.

The receptivity or sensitization of carcinoma tissue toward the gamma-rays varies, depending upon the age of the individual and a corresponding difference in the vascularity and nucleization of the tissues as well as on the variety of species of the cells composing the tumor. H. Dominici and Theilhaber have made extensive investigations along these two points. For practical reasons the above dosage of milligram hours, when fifty milligrams of radium element are used, may be considered as lethal.

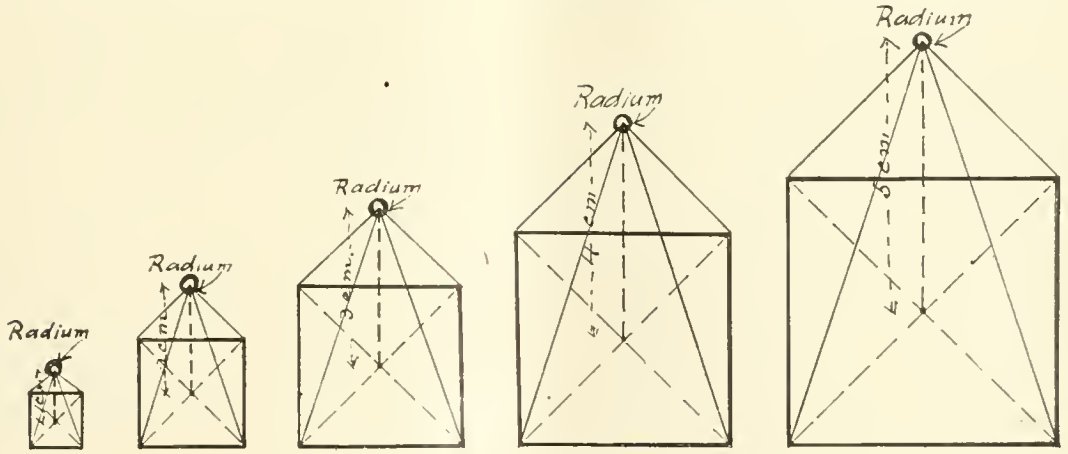

Fig. 2.—Law of radiation.

Distance.				
1 cm.	2 cm.	3 cm.	4 cm.	5 cm.
Irradiated area.				
1 sq. cm.	2 sq. cm.	3 sq. cm.	4 sq. cm.	5 sq. cm.
Dose per sq. cm.				
1 unit	¼ unit	1/9 unit	1/16 unit	1/25 unit

If we determine by a careful examination the extent of the tumor mass and apply the radium according to facts given, we will be able to estimate for each case, the amount of gamma-rays necessary to bring about a clinical cure.

The schedule of a course of radium applications, based on these facts, is as follows: The duration of a course of treatment varies from twelve to one hundred and eight hours, when fifty milligrams of radium element are employed and this depends on the extent of invasion of the cancer into the tissues. The course is divided into séances of twelve to twenty-four hours, the interval between the sittings being from twelve to thirty-six hours. We endeavor invariably to give the total estimated within one week.

If one hundred milligrams of radium element are used, then the duration of the treatment is correspondingly reduced. Should it be impossible to apply the radium directly to the tumor mass, longer exposures or large amounts must be used to correct the reduction of the intensity of the rays caused by the increase in distance. The law of radiation must be applied in consideration of these facts.

The method of screening or filtering is simple as gamma-rays only must be used in deep-seated cancers. The alpha-rays of radium are arrested by the glass capsule, which contains the radium salt. The beta-rays are absorbed by 1.2 mm. brass, silver, or lead. The secondary or Sagnac rays, that form in the metal screens by the arrested beta-rays, are absorbed by a pure rubber tube free from any metal and of 2 mm. thickness. They are also arrested within a space of 7 mm. and therefore distance filtering may obviate the need of a rubber filter.

Cross-firing should be employed whenever possible. If a carcinoma is found in the anterior rectal wall a radium capsule should be inserted in the rectum and another in a corresponding position within the vagina; if in the posterior rectal wall in the rectum and on the anal fold, if in the posterior vesical wall in the bladder and vagina; if in the anterior vesical wall into the bladder and on the suprapubic region, if in the cervical canal, the latter and the vaginal fornices, and so forth.

Special radium carriers are required for rectal and vesical applications. For the former I use a cup with a perforation in the center. It is held in place by two rubber bands fastened to a belt around the abdomen. The radium carrier is attached to a brass rod which is surrounded by rubber tubing. The latter arrests also the secondary rays. The length of the rubber tubing is determined by the distance of the growth from the cup. The brass rod passes through while the rubber tube rests on it. The carrier by this arrangement remains movable and therefore becomes automatically adjusted to any position the patient might assume. In vesical cancers I place the radium capsule in a urethral catheter. Two fenestræ are made in the catheter beneath the radium capsule. As vesical cancers are usually located in the trigone the position of the catheter within the bladder is indicated by the escape of urine through the tube. The latter is then secured in place by adhesive plaster. A rubber tube attached to the catheter directs the urine into a bottle. Continuous drainage is thus secured, making long-continued applications of radium within the bladder possible.

After the first course of radium treatment the patient is requested to return weekly for reexamination. The latent action of radium reaches its height within twenty-one days. Should the patient at this time not exhibit a marked improvement in the local condition, indicated by a decrease in size of the tumor, another course like the first one is given. If the patient shows a marked improvement, then the second séance is postponed for another three weeks. Further applications are thereafter given when indicated by a persistence or a reappearance of the tumor.

Strictest asepsis must be observed in the application of radium. Instruments and applicators must be rendered sterile by boiling. The field of operation must be prepared as for any operation. The surgeon also must adopt the same procedures as he would for the performance of any operation.

Healthy tissue must be protected from the rays wherever practicable. Lead sheeting 0.5 mm. thick is used for this purpose. It is cut and shaped to correspond to the dimensions and form of the area to be protected from the action of the rays. The Sagnac rays are arrested by surrounding the lead sheeting with heavy soft rubber sheeting. The latter also serves as a cushion to prevent undue pressure and thereby injury to the soft tissues.

The Use of Massive Roentgen Rays in Connection with Radium Treatment.—We cannot determine by bimanual examination whether the regional lymph-nodes are or are not metastatically invaded by the carcinoma. Therefore, we apply massive *x*-rays to the glands through the anterior abdominal wall by the massive multiple field crossfire method of Gauss. We use Coolidge and water-cooled Roentgen tubes. As the vacuum or hardness obtainable in the water-cooled tubes is higher than in the Coolidge, we prefer the former. However, the use of the water-cooled Roentgen tube involves a greater expenditure in the duration of the exposure, but the higher vacuum obtainable insures a deeper penetration. This, after all, determines the preference for the water-cooled tubes.

Thirty to fifty erythema doses are necessary to destroy a malignant growth within two centimeters of the surface of the abdominal wall. It requires seven times this amount, that is three hundred and fifty erythema doses, to remove metastases near the posterior pelvic walls, which are about ten centimeters distant from the surface of the skin of the suprapubic region. The Roentgen tube should have a hardness of twelve to thirteen and a half, as determined by a Wehnelt penetrometer. It should carry a critical current of four to five milliampères. The constancy must be maintained for an indefinite length of time by a continuous flow of cold water around the anode and an interruption of the current for a half second out of every second while in use to keep the tube cool, and thereby retain the originally indicated hardness. The latter should be controlled by a Heinz Bauer qualimeter. The distance of the anode from the body should be 21 cm. The rays must be filtered through a three millimeter aluminum screen, to exclude the soft rays. Under these conditions, ten to twelve erythema doses may be obtained per hour. If three séances of one hour each are given daily, ten to fourteen days are necessary to reach an amount of three hundred and fifty erythema doses. We use six fields as portals of entrance, and must apply about sixty erythema doses to each field. Bumm does not hesitate to apply one hundred erythema doses to a field.

The time of exposure may be reduced by using a Coolidge tube. L. G. Cole states that an erythema dose may be filtered in one minute using a three mm. aluminum filter. The entire application of three hundred and fifty erythema doses could, therefore, be made within six hours.

The Possibility of Increasing the Intensity and Penetration of the Gamma-rays of Radium by Excochleation and Cauterization of the Cancer Growth.—The distance between the radium capsule and the periphery of the tumor may be decreased by the removal of the cancer tissue with the sharp spoon and the cautery iron. Thereby the intensity and penetration of the gamma-rays in the peripheral portion of the tumor is markedly increased. This method is especially practicable in the proliferating cauliflower growth of the cervix. Cauterization has been performed in every case in our series, in which such a procedure was not otherwise contraindicated. The result is a marked reduction in the extent of the new growth and a corresponding increase in the penetration of the rays and a decrease in the duration of the exposure of the gamma-rays. It is a purely economical question and has no other influence on the result of the radium treatment.

It is advisable to perform a colostomy in rectal cancers. This renders the seat of the carcinoma clean, prevents absorption of septic and putrefactive material, gives the patient an invaluable relief and makes the use of radium less obnoxious to patient and surgeon.

In vesical cancers in the male, a suprapubic cystotomy should be done. The radium may then be inserted through the suprapubic drainage tube. Injury to the posterior urethra by long-continued insertion of a cystoscope is avoided, the use of an operating cystoscope becomes unnecessary, and the objections on the part of the patient are obviated. However, the catheter procedure, as before mentioned, may also be used after a preceding dilatation of the urethra, so that a cystotomy can be avoided.

The Histological Findings.—The histological changes may be divided into four stages:

The first stage is characterized by an enlargement of the carcinoma cells, a hyperchromatosis and a pycnosis of the nuclei. They are evident in all the cases examined. These changes usually occur within about ten days after the first application of radium.

In the second stage we observe caryolysis, caryorrhexis, cyctolysis, and cell detritus. They are seen as early as from the first to the third week of the treatment.

The third stage shows an absorption of the cellular and nuclear debris by phagocytosis. Macrophages and microphages are concerned in this step. It takes place as soon as the cells begin to degenerate.

The fourth stage is the stage of connective-tissue proliferation and scar formation. It completes the histological cure of cancer. The places left vacant by the dead carcinoma cells are immediately filled by young fibroblasts derived from the connective-tissue stroma of the tumor. The fibroblasts become differentiated. The fourth stage appears usually after the first to the third month, but may occur much sooner.

A discrepancy frequently exists between the clinical results and the histological findings. For instance in case 26 of our series there was evidence of a completely destroyed cancer tumor, yet the patient succumbed to a bowel invasion, proving that some cancer cells either remained uninfluenced by the radium or regenerated after the subsidence of the action of the rays. Therefore, certain questions arise which call for definite answers before we may positively state that radium rays cause a degeneration and ultimate death of cancer tissue and a simultaneous proliferation of connective tissue.

1. Are we able by microscopic examinations to differentiate the necrobiotic changes in the carcinoma cells brought about by natural and artificial conditions from those caused by the influence of radium rays? Cells undergo necrobiotic changes in the course of their existence. Heat, caustics, and alcohol, brought in contact with the tissues, may produce the same changes, as is well known. However, the absence of cell degeneration as evidenced in the first section, and the general and extensive changes as seen in the subsequent specimens after their exposure to the gamma-rays, and the regularity of their occurrence in all the tissues microscopically investigated, even in those not previously cauterized, permit us to state that they must be caused by the action of the gamma-rays.

2. Can we, by examination of small pieces of tissue removed from the growth, determine the extent and intensity of the action of radium rays? We cannot from such an examination, but could do so from serial sections from all the organs removed either intra vitam during operations or, preferably, post mortem.

I have, fortunately, seven cases in which an abdominal panhysterectomy was performed after a clinical cure of the cancer by the use of radium rays was obtained. (Cases 26, 29, 32, 64, 128, 162, and 165.) Serial sections were made from the tissues removed. A microscopic examination revealed that the cytolytic changes were generally present throughout the tumor. This does not prove that distantly located foci were not left behind. As a matter of fact, patients 26 and 29 died subsequently from cancer. This shows that viable cancer cells were left behind somewhere in the pelvis. Bumm examined tissues acted on by gamma-rays and removed afterward during post mortem examinations. He estimated that the intensity of the gamma-rays sufficient to destroy carcinoma tissue extended into a radius of four centimeters. Within this area of intensity, carcinoma cells were not found present. Beyond it, however, typical unchanged cancer cell nests were still found to exist. In other words, extensive carcinoma growths are only partially destroyed by gamma-rays. This area of destruction, however, has a diameter of eight centimeters and enables us to reach tissues which a knife could never remove.

3. Is it possible by such microscopic examinations to state whether a carcinoma cell has perished or whether it might not regenerate after the action of the radium rays ceases? The following citation will illustrate the answer to this question. Créron and Rubens-Duval treated a patient suffering from an inoperable carcinoma of the cervix with radium during November, 1910, and January, 1911. The patient was apparently clinically cured. She died from an intercurrent disease (a cerebral softening) during April, 1912, fifteen months after the beginning of the radium treatment. All the internal organs and tissues were removed post mortem, and a careful serial histological examination of all the

tissues did not reveal a single carcinoma cell at any place of the organism. A complete anatomical cure by radium rays had been demonstrated.

I have made a similar observation in a case of Mrs. A. R., Augustana Hospital, number 44801, serial number 141, who was treated with 3,600 milligram-hours radium element from October 27 to October 31, 1915, for an inoperable cancer involving the cervix and the entire vagina. An examination made December 27, proved the patient clinically cured. She died suddenly during the latter part of January, 1916, from heartblock. The pelvic organs with the para and perimetrium and parietal peritoneum and lymphnodes, including the sacral, were removed *en bloc*. A most careful examination of stained sections in series did not reveal any cancer cells or nodules.

Our investigations demonstrate the uniformity and general extent of the necrobiotic changes brought about in the carcinoma cells by the action of the gamma-rays. Bumm's researches fix the extent of the area of intensity of the rays within which a carcinoma will become destroyed, and Chéron and Rubens-Duval's case proves the capability or efficiency of the radium rays to bring about an anatomic cure of cancer.

The Clinical Results.—The accompanying table gives the clinical results of thirty-five inoperable, twelve recurrent, and fifteen operable uterine carcinomata; seven inoperable, and three operable rectal cancers; and five inoperable, two recurrent, and one operable carcinomata of the bladder. The total number is eighty. They were treated between April 1, 1914 and April 1, 1916.

Carcinomata of Pelvic Organs Treated With Radium

	Cases Treated from April 1, 1914 to April 1, 1915							Cases Treated from April 1, 1915				Per Cent Apparent Cures
	Report April 1, 1915				Condition April 1, 1916			Report April 1, 1916				
	No.	Clinically Well	Unimpr.	Died	Clinically Well	Unimpr.	Died	No.	Clinically Well	Unimpr.	Died	
Inoperable												
Uterine	18	5	1	12	2	2	14	17	9	2	6	31 43
Rectal	3	1	..	2	1	....	2	4	1	2	1	28 57
Vesical	2	1	..	1	1	....	1	3	2	..	1	60 0
Total	23	7	1	15	4	2	17	24	12	4	8	34 04
	30 44%				17.39%			50 0%				
Recurrent												
Uterine	9	2	2	5	..	..	9	6	3	1	2	20 0
Rectal	0	..	..	..	..	..	..	0	..	..	..	..
Vesical	0	..	..	..	..	..	..	2	..	2	..	..
Total	9	2	2	5	..	..	9	8	3	3	2	17 65
	22 22%							37.5%				
Operable												
Uterine	5	4	..	1	3	..	2	7	5	1	1	66 67
Rectal	1	1	..	..	..	..	1	2	2	..	..	66 67
Vesical	1	..	..	1	..	..	1	0	..	..	..	..
Total	7	5	..	2	3	..	4	9	7	1	1	62 5
	71 43%				42 87%			77 78%				
Grand total	39	14	3	22	7	2	30	41	22	8	11	53 66
	35 9%				17 95%			39	7	2	30	17 95
								80	29	10	41	35 12

The results of the radium treatment differ depending (1) on the organ involved and (2) on the stage of the disease. The prognosis is best in vesical cancers, less favorable in uterine malignant growths and least favorable in rectal carcinomata. The value of the treatment varies depending on the incurability, operability, inoperability or recurrence of the disease. Some cancers are far advanced and concealed and cannot be cured or improved by radium or any other remedial agents. The time elapsed in all the cases enumerated is too short to permit a discussion of the curative action of radium.

Inoperable Carcinomata.—Eleven clinical cures were obtained in thirty-five inoperable uterine, two in seven inoperable rectal and three in five inoperable vesical carcinomata. A clinical cure implies a complete subjective and objective cure of the cancer as far as this can be determined by an exact palpation and a microscopic examination. We have a total of sixteen clinical cures in forty-seven inoperable carcinomata, *i. e.*, 34.04 per cent. This percentage would have been higher if hopeless or terminal cases had not been included. However, we did not reject a single case referred for the treatment, regardless of the general condition of the patient. Twelve of the inoperable cases were far advanced and are included in these statistics.

The time elapsed since the beginning of the treatment in the fourteen clinical cures is as follows:

Serial No. 32, 26 months (hysterectomized); 69, 16 months; 98, 13 months; 113, 12 months; 140, 11 months; 128, 8 months (died from an intercurrent disease); 117, 2 months (died from an intercurrent disease); 141, 6 months; 162, 6 months; 165, 6 months; 150, 6 months; 170, 6 months; 168, 5 months; 178, 4 months; 70, 16 months; 153, 6 months.

The palliative action of radium in inoperable cases is truly remarkable. The three cardinal symptoms —hemorrhage, putrid discharge, and pain cease invariably within four to eight days after the commencement of the treatment.

There does not exist another remedial agent in our entire medicinal and surgical armamentarium, the application of which in inoperable carcinomata is followed by better primary and remote results. Radium will bring about this action without immediate or late danger to the patient provided the strictest asepsis and a perfect technique are employed.

Recurrent Carcinomata.—The primary results in recurrent cancers are: three clinical cures in fifteen uterine, and none in the two vesical cancers, *i.e.* 20 per cent.

The elapsed time since the beginning of the treatment is: No. 105, 12 months; 125, 10 months; 135, 9 months.

The prognosis of radium treatment in recurrent cancers is, therefore, not as good as in inoperable cases. Especial care is necessary in these cases to avoid injury of neighboring organs and contiguous tissues by the radium rays. As familiarity in the treatment of these cases increases the results should improve.

Operable Carcinomata.—The application of radium following radical excision of the uterus and adnexa for malignant disease is a purely prophylactic procedure. Carcinoma cells that have become spilled all over the wound surfaces during the progress of the operation or carcinoma cell nests and shoots that have been inadvertently left behind may become effectually destroyed by the gamma-rays. This fact has induced surgeons to increase the percentage of operability of their cancer cases on account of the possibility of subsequent radium applications following the radical operation. It also has rendered the operation less extensive, especially in the regions of the rectum and bladder because of

the evolution of radium-surgery. Cases No. 90, 101, 106, 133, and 188 were really inoperable, yet subjected to an abdominal panhysterectomy and subsequent radium treatment. Singularly enough the first three cases have done remarkably well, while the last two have not been benefited by the surgery and radium.

We do not wish to render an opinion as to the value of prophylactic radium treatment after excision of the operable cancers. The improvement or cure must be accredited to surgery. The time elapsed since the operations is too short to permit an expression as to a permanent or anatomical cure. The time passed since the operation and radium treatment of these cases is as follows: Serial No. 32, 15 months; 41, 20 months; 90, 14 months; 101, 13 months; 106, 12 months; 107, 12 months; 134, 9 months; 163, 8 months; 173, 4 months; 174, 4 months.

Conclusions.—1. The therapeutic action of radium depends on the use of a correct technique, which must be based on a careful physical examination of the patient and the physical properties and the biologic action of the metal.

2. The use of massive Roentgen rays, according to multiple field and crossfire methods in conjunction with radium therapy to destroy metastases, is an imperative necessity.

3. Certain surgical procedures must be used in radium therapy to assist the action and facilitate the application of the rays.

4. The action of gamma-rays on cancer tissue is specific and suggests positive proof of the possibility of destroying malignant tumors by the application of radium.

5. The results of radium therapy in inoperable and recurrent cancers surpass those of any other known therapeutic agent.

6. The prophylactic use of radium rays in operable carcinomata increases the percentage of operability and probably the efficiency of the operative procedures.

25 East Washington Street.

THE TREATMENT OF PARALYSIS AGITANS WITH PARATHYROID GLAND.

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Numbers of inquiries from physicians interested in the study of paralysis agitans continue to come to me; and I have thought it might not be uninteresting to readers of the Medical Record for me to report briefly once more my therapeutic experiences with parathyroid gland. Since I last published anything on the subject in this journal, nearly six years have elapsed.[17] I can perhaps offer no better introduction than to repeat what I then said as to the physiological details involved.

"It may be briefly stated that when the parathyroid glands are removed from a dog or other suitable animal, a curious and characteristic train of symptoms follows,—hurried respiration, tachycardia, profuse salivation, twitching and shivering of the voluntary muscles, rigidity, intermittent convulsions, rapid wasting, and death. There is now an enormous literature on the subject. A fairly complete bibliography may be compiled from the writings of Jeandelise[1], Pool[2], Erdheim[3], Berkeley and Beebe[4], and Ochsner and Thompson[5].

"MacCallum,[6] in a further interesting and important contribution to the subject has shown that a suitable dose of a soluble calcium salt, injected into the veins of a dog that has been successfully operated upon in this way, will arrest the spasms and for a few hours restore the animal to a normal condition. He concludes that the parathyroid glands, therefore, preside in some way over the calcium metabolism of the body, and that the symptoms in question are caused by a deficiency of calcium. S. P. Beebe and I[4] have successfully repeated this experiment, which is one of the most striking phenomena in the physiological laboratory; from a series of additional experiments, however, we have been disposed to conclude that in such cases the calcium has a 'drug effect,' and that the parathyroid glands more likely furnish enzymes of prime importance in the intermediary metabolism of nitrogen. The subject is a difficult one and awaits further research.

"Whatever the ultimate solution of the physiological problem may be, such remarkable and characteristic symptoms strongly suggest some causal relation between a defective secretion of these glands and one or more of the known convulsive diseases, and medical men have not been backward in guesses of various kinds. Exophthalmic goiter was long ago proposed by Gley[7] and afterward given over. Vassale proposed puerperal eclampsia.[8] Epilepsy was first suggested by MacCallum (acknowledgedly in a tentative way),[9] but further independent researches by this author[10] brought him to the conclusion (reached about the same time by Pineles[11] and Erdheim (*l.c.*) and rather vaguely suggested by Jeandelise (*l.c.*) in 1902, four years previously) that *tetany* is the final answer to this long-standing question.

"Without going further into the extensive literature of this part of my topic, it will be enough to say that tetany—whether associated with surgical damage to the parathyroid glands in thyroidectomy, with infantile rickets, with pregnancy, or with dilation of the stomach—is unquestionably *one* of the answers. But a further inquiry remains whether this be the *only disease* having any relation to these glands; and it is now some years since the Swedish neurologist, Lundborg,[12] and I,[13] working along different lines, and each independently of the other, conceived the idea that *Paralysis agitans* is possibly due to some chronic disorder or disease of the parathyroid glands.

"In support of this hypothesis I have offered (*l.c.*) the following considerations: Paralysis agitans has all the marks of a chronic toxemia; the symptoms following parathyroidectomy are remarkably like those of paralysis agitans; in cases of myxedema and exophthalmic goiter, paralysis agitans has not infrequently occurred as a complication or sequela; of fourteen reported autopsies on paralysis agitans, two by Erdheim (*l.c*) and nine by R. L. Thompson,[14] showed negative parathyroid glands, but two by C. D. Camp[15] and one by myself[16] showed distinct pathological changes; and lastly a remarkable percentage of cases of paralysis agitans treated with properly identified fresh gland, or a properly made extract, have been greatly benefited."

As a source of supply for the remedy, the parathyroid glands of the horse are available in those countries where horse meat is a popular flesh food, and where horses are slaughtered in well-conducted and officially inspected abattoirs. In this country

the only glands generally available are those of the bullock. As regards methods of preparation, I have elsewhere remarked on the careless and unscientific way in which the ordinary parathyroid of commerce is prepared, and I have mentioned the successive experiments through which I have labored in order to get a preparation which more nearly represents the unmodified gland.

I have used fresh glands with some success. A medical associate writing me some years ago from Ohio told me of an elderly lady fed on fresh parathyroid whose improvement was quite marvelous, and lasted over the entire time (about two years) during which she was under observation. But fresh glands are very expensive, are not permanently palatable, and are, of course, not accessible to the great majority of patients.

Later on I made a long series of experiments with crude gland rubbed up with milk sugar, and dried. But this was indigestible, and it was found almost impossible to standardize it.

Much the best preparation is an acetic extract of the fresh glands (commonly though very inaccurately called a "nucleoproteid" extract), made by treating the ground or triturated glands with cold distilled water, filtering, and then precipitating with a very minute amount of acetic acid. I have fully described the process in several articles published elsewhere.[4, 18]

This extract, in doses of one-fiftieth grain (either in capsule with milk sugar, or as a hypodermic solution) is now for sale in a number of New York drug stores. It is not very expensive, and it comes nearer to the chemical constitution of the human gland than anything I have so far devised. It is absolutely without local effects of a disagreeable nature. Among hundreds of patients I have known of but one who either had, or thought he had, an idiosyncrasy for parathyroid. The hypodermic solution, in doses of fifteen minims, does not even redden the skin, if it be injected with reasonable care.

In the form in which I have recommended it, this remedy has been extensively prescribed during the last five or six years; the cases now number hundreds, and it has been successfully sent, so the dealers tell me, to all parts of the world.

Further experience seems fully to justify the opinion I have formerly expressed, namely, that parathyroid gland is not a "cure" for paralysis agitans, but that 60 to 70 per cent. of the sufferers from this dreadful disease who have given the remedy a fair trial for from three to six months (it takes all of this time to test it) have been greatly benefited, and that in such patients the progress of the disease has been arrested, or very materially retarded.

One patient, an elderly man, relative of a medical friend in the Bronx, has taken the capsules for seven years (also the hypodermic solution at times), and he is still in fairly good condition, but lapses into helplessness within a few days when the medicine is omitted.

Another recent case, woman, 52 years old, brought to my clinic by Dr. Leon Lesser of Brooklyn, has done wonderfully well on my formula. Her agitation has been entirely arrested, and her rigidity greatly relieved. She had suffered with the disease for two years before I saw her, and had spent all of her money on osteopathic and electrical treatments; so that, if suggestion had anything to do with her case, she certainly had ample opportunity for full exercise of her imagination before undertaking the parathyroid medication.

There are no other internal secretions which have any specifically beneficial effect whatever—either alone or in combination—in paralysis agitans. Among the older patients pineal gland is a useful stimulant to functionally failing mental activity, and there is now on the market one extract of pancreas which is valuable in the peculiarly obstinate constipation these patients are afflicted with. But I cannot too strongly deprecate promiscuous dosing with thyroid, and pituitary, and others of the internal glands. Thyroid, especially, does serious harm; even massage of the neck over the thyroid gland sometimes liberates enough of the thyroid secretion to make the patient distinctly uncomfortable.

Like most chronic diseases, paralysis agitans does not do well in institutions, for reasons which are sufficiently obvious. The most successful cases have been in private practice, where cheerful surroundings, occasional opportunities for travel, and a varied diet contribute to the patient's comfort, and increase his resisting power. But a fair proportion even of the almshouse poor have been greatly helped.

I am still of the opinion, as I have long been, that paralysis agitans is caused by a deficiency of the parathyroid glands, and that further and more diligent study of the complicated chemical processes involved will make it ultimately possible to cure paralysis agitans with parathyroid in just the same way in which cretinism is cured with thyroid.

134 East Sixty-second Street.

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Psoriasis as a Sequel to Acute Inflammation of the Tonsils.—Wingate has now seen six cases of this sequence which he is unable to explain, there being no evidence of an infection. In four cases there was ordinary follicular tonsillitis, and in a fifth streptococcus sore throat. The sixth case followed an extirpation of the tonsils. None of the familiar throat organisms has ever been known to cause psoriasis. The only remaining view is that the balance of metabolism was somehow disturbed, either by the fever or the state of the tonsils.—*Journal of Cutaneous Diseases.*

THE WASSERMANN REACTION.

By B. LEMCHEN, M.D.,

DUNNING, ILL.

With the introduction of the complement fixation test we have obtained something valuable in diagnosis. It is hardly necessary for me to comment on this. The reason I am writing this paper is to try to make it clear that there is some misunderstanding about the test, because in some cases where the test should be positive we get a negative or *vice versa*, and because the same serum or fluid gives different results in different laboratories. Some physicians try to disregard the test entirely. It is with the Wassermann test, as with everything else in medicine, the value increases with the knowledge thereof.

First of all, it must be understood that the Wassermann reaction is a biological phenomena and it confronts everything else in biology. Biology deals with life, deals with a mystery, because the molecular arrangement of the living cell is not known to us yet. It is a question whether it ever will be known because every living cell must be killed before it can be analyzed; but as little as we do know about biology we know this much, that life in higher planes and in animals depends on two things, one is an attack and the other is defense. Every higher form of life that cannot live on simple matter must attack another form of living cell to get its food. It must also defend itself against another living organism that is trying to live upon it, and to keep up this species a third factor comes in and that is reproduction; so I might state that attack, defense, reproduction are the foundations of the living organism. They are also the source of all evils, the reason a crime is committed, because one can trace the crime to either attack, defense, or reproduction. They are also the root of insanity.

Why does a paranoiac kill? He has imaginary enemies. It is a defense reaction. He believes that some people are organizing against him to try to ruin his life and his family and, after trying every possible way of defending himself believing that he has not succeeded, as a last resort he kills his enemy. Why does one in delirium jump out of a window? Practically the same thing. It is a defense reaction. The patient in his delirious state sees different animals trying to jump on him to tear him to pieces, he has only one way of escape and that is to jump through the window. What else should he do? So he jumps through the window. We might also say that catatonia is also a defense reaction, as it 's known that lower animals, when they are in great danger of being caught as a prey by stronger animals, lie down motionless. Therefore, it is not strange that human beings when they are overcome with fear are practically paralyzed and cannot move.

Why does a dementia precox subject strike impulsively? It is due to the inheritance of attack. We can also understand mannerisms and dream states by the inheritance reproduction. Now it is understood always that in the animal kingdom it is the stronger animal that attacks the weaker. It is the weaker that has to defend itself against the stronger, but there might be a time when the stronger animal was weakened either by disease or by not having sufficient food, in which event the stronger animal would have to defend itself against the weaker animal. It is also known that the animal reproduction goes hand in hand with the strength and life of that animal. An animal might be so weakened that he could not reproduce any of his own kind.

Now, we shall apply all these facts to the Wassermann reaction. It will not explain everything, but it will explain a good deal. The Wassermann reaction is also due to the same phenomena of attack and defense. Here it is *Spirocheta pallida* that is attacking and it is a human being that is defending against the attack. The same rule is holding true here. *Spirocheta pallida* is an organism that has to have albumin to live. It is also a species that is reproducing its kind or multiplying itself. It attacks a human being because, so far as we know, it cannot live in any other media but the human tissues. It produces toxin which weakens the human beings so it can attack them more strongly. A human being has to defend himself against it, and nature has provided help for defense against microorganism by producing something known as antibodies. Here again *Spirocheta pallida* is a living organism and besides being able to attack it is also able to defend itself. It likewise produces something that will neutralize the antibodies. Here, again, the one that is infected with this *Spirocheta pallida* will have to produce more antibodies to defend himself against the organism. The *Spirocheta pallida*, as regards its growth, its reproduction, its power of producing toxins, etc., is influenced by the food it is getting. There might be a medium that is favorable for its life, but it would not be favorable for reproduction. There might be a medium favorable for its growth, but not capable of producing toxin.

Now, let us apply all we know on the Wassermann reaction and see if we cannot explain everything regarding what we have said. The Wassermann reaction is due to the fact that antibodies will unite with their specific antigens; but the antibodies are composed of two substances, one that is comparatively stable, that is not destroyed by heating to 56° C., and the other known as the complement, that is unstable, and is contained in all blood serum and is destroyed by heating to 56° C.

Wassermann takes antigens that are supposed to be products of the *Spirocheta pallida*. Lately it has been found that lipose from any organ will answer the purpose. He takes a certain amount of this and a certain amount of the blood serum of the patient to be tested, after the complement has been destroyed by heat, and a certain amount of antigens. To these he adds a certain amount of complement, which he takes from the serum of a guinea pig and incubates them for about an hour. Then he adds to this a certain amount of red blood corpuscles from the sheep and a certain amount of blood serum from rabbits that have been sensitized against the red cells of sheep, the complement of which has been destroyed by heat. He incubates them again for about an hour and then examines the tube. If the patient has syphilis the complement will have been fixed at the first incubation and there will be no hemolysis, but in case the patient does not have syphilis there will have been no union between the antibody and antigens and the complement will be free to react with the red cells from the sheep and the rabbit blood serum, and there will be hemolysis. Now, we can readily see why results should vary.

First, it takes some time before the patient will react to the toxins of the spirochete. For this rea-

son, at the beginning there are not enough antibodies to give the reaction, but after a couple of months, there are sufficient antibodies and we get the reaction, generally in from three months to a year. The Wassermann is practically positive in syphilitic cases in more than 90 per cent. Now, as I said before, the spirochetes are able to defend themselves by producing something that will neutralize the antibodies. If there is sufficient of that something to neutralize the antibodies, the reaction, of course, will be negative. It is a fact that in old syphilitics we do not get more than 50 per cent. positives, probably less. Again, there might be antibodies still free, but not as many, and for this reason we will get a positive reaction in larger amounts. It is also a fact that old syphilitics include Tabes. When we do not get a positive reaction in the ordinary amount, which is 0.2 c.c., we may get a positive reaction in 0.5 c.c. or 1 c.c. Again, the patient may be so weakened by the disease or other diseases that he cannot defend himself or, which is the same, cannot produce antibodies; then we shall get a negative reaction even in a syphilitic. Again, the media may be so altered that while the organisms may still retain their power to grow they may lose their power of attack or defense. In case they lose their power to attack but retain their power of defense, they will not liberate anything to stimulate antibodies but will still liberate substances to neutralize antibodies; or they may lose their power to produce substances to neutralize the antibodies but will liberate toxins which will stimulate the production of antibodies. It is also known that by treating the patient, for instance, with salvarsan or mercury, a positive reaction may become negative or a negative reaction positive, while the spirochetes will still grow and multiply. This will also explain why the same serum may give different results in different laboratories, as it is evident from what has been said that antigens will vary according to the source from which they have been taken.

Again, we know that antibodies can be transmitted from the mother to the fetus, and it is also known that children who are born from syphilitic mothers seldom contract syphilis, although they themselves never have signs of congenital syphilis. Now there are some investigators who claim that they do have syphilis because they give a positive Wassermann reaction, but this I do not agree with. So long as a child does not show any signs of syphilis he has not got syphilis, but the positive reaction is due to the transmission of the antibodies from its mother either through the placental circulation or through the milk when nursing.

I wish to state that in my opinion the reason we never could find a substitute for mother's milk for babies is due to the fact that nature has provided for the helpless infant, that his mother should supply him not only with nourishment but with the invisible defense against infective bacteria. It is known that the majority of the antibodies belong more or less to the ferments, and the ferments are destroyed by digestion, and nature has so fashioned the infant's stomach that it absorbs some albumins from the mother's milk without the necessary digestion, while the milk of other animals has to be first digested before it can be absorbed. This is the reason why we have so much trouble with modified milk.

Again, Finger has demonstrated that the spirochetes can be transmitted by the spermatozoa, so it can easily be seen that when a woman gives birth to a syphilitic infant that has been infected by his father, the placenta prevents the transmission of the organism to the mother, while the antibodies can be transmitted, so the woman might receive antibodies from the fetus when she, herself, may never be infected with syphilis. It has also been known for a long time that a syphilitic infant will infect the strongest nurse but will never infect its own mother; this is what is known as Colles' law. Here again, some investigators claim that the mother does have syphilis, because she often gives a positive Wassermann. I disagree here, also. It is known that mothers have lived for years and years and never shown any manifestation of syphilis, never being infected by their syphilitic children. I say that the positive Wassermann reaction is due to the fact that the mother has received antibodies from the child but has never had syphilis.

In conclusion let me state that I consider the Wassermann reaction to be of the greatest value in the diagnosis of syphilis, but it must be taken into consideration with the other known manifestations of the disease. We should not make a diagnosis entirely on the result of a Wassermann, we should not declare a patient free from syphilis because his Wassermann was negative, and the physician should be careful in declaring a patient who has had syphilis free therefrom because the Wassermann is negative after treatment. If there are any signs that the nervous system is involved, a spiual puncture should be made and the spinal fluid examined by the cell count, globulin test, and also Wassermann reaction. If 2 c.c. gives a negative result, we should try with larger amounts.

Chicago State Hospital.

The Alcoholic as Seen in Court.—Victor V. Anderson has made a study of 100 cases of chronic alcoholics, those who are repeatedly arrested for drunkenness and seem more or less unmodified by any form of treatment. He gives statistics with reference to the number of arrests, the economic efficiency, the mentality, and the diagnosis in this series and finds that not more than one-half were capable of supporting themselves out in society. Fifty-six per cent. had the mental level of children below the age of twelve years. They were all suffering from conditions in general regarded as medical problems. For purposes of treatment they, in general, fall into two classes, namely, the steady drinker and the periodic drinker. The mentality of the former is either defective to begin with, or is so deteriorated from the insidious effects of alcohol as to require that he be confined or have prolonged care and hospital treatment. The periodic drinker, though in many instances he may require short periods of detention, as well as hospital treatment, is in general to be handled on probation and incorporation into society's scheme of living by means of well-directed medical, psychological and social service methods of treatment, methods that take full account of his peculiar mental make-up, his character defects, and temperamental difficulties.—*Boston Medical and Surgical Journal.*

A General Plan for a Schedule of Medical Fees.—J. N. McCormack makes some suggestions which are in part as follows: Day visit in town, $2.50; night visit in town, $4; ordinary office examination, $1; complete examination with advice, $5; advice or prescription by telephone, $1; obstetric case, uncomplicated, not over 6 hours, $15. Cases seen in consultation, double fee. Fees in the country are regulated as usual by mileage, while no fees are tabulated for surgical and other special work.—*Kentucky Medical Journal.*

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PSYCHIATRIC TREATMENT OF SOLDIERS.

THERE seems to be a certain amount of conflict of opinion as to the effect on the nervous system of soldiers fighting in Europe, of the unprecedented conditions of warfare existing there. It was freely predicted at the outset of the war that the present generation of young men and especially of those of England and France whose vital energies were said to be sapped by city life and self-indulgence would inevitably break down under the fearful strain of war. The conditions of war have been worse than anticipated and it appears on the whole that the fighting men have borne up very well under them. Some say that affections of the nervous system have been infrequent, while others declare that a large proportion of soldiers are incapacitated by such disorders. Perhaps the truth lies in the mean.

In a special bulletin issued in April, 1916, by the Military Commisson of Canada, Dr. C. R. Clarke of Toronto discusses the psychiatric treatment of soldiers. According to this authority, the question of caring for returned soldiers suffering from mental and nervous troubles has engaged the attention of the Canadian medical profession in a marked way since the actions of last year. He points out that new conditions have arisen since the use of high explosives and the mental strain during action seems to be of the most severe character, with the result that numerous such cases are encountered requiring special treatment.

With regard to the manner in which such patients should be treated, the writer emphasizes the fact that neither convalescent homes, general hospitals, private houses, nor asylums are appropriate places in which treatment may be carried out. As convalescent homes and general hospitals are obviously unsuitable for the treatment of these cases, under the present conditions cases of marked mental trouble, although curable in the majority of instances, have to be sent to asylums. Of course, this is most unfair and, in a manner of speaking, a tragedy, for not only does it place upon the men the stigma of being certified inmates of a hospital for the insane, but perhaps in the majority of cases it precludes the possibility of successful treatment. In the large proportion of cases proper and intelligent treatment will cure, while it is equally as obvious that unintelligent and careless treatment will tend to aggravate the mental state, and life in an asylum is apt to have the most dire results.

As Clarke says, modern methods demand that recent cases of mental disease should receive just the same attention that cases in a general hospital secure. What should be done is to acquire a house of suitable structure which will afford accommodation for a certain number of patients. The necessary staff is best lodged in a separate building. This hospital should be equipped with the most modern scientific, hydrotherapeutic, and electric apparatus demanded in the care of such patients, and especially should the medical attendants be men who have been well trained in the diagnosis and treatment of mental disorders. This, after all, is the most important point. If a correct diagnosis be not made, the patient will not be treated as he should be treated, and a medical man to be able to make a correct diagnosis must be an expert. Also nurses should be specially qualified and should be women of the highest type, as on the sensible nursing of psychiatric patients the outcome largely depends.

During recent years it has been increasingly evident that in order to treat mental disorders intelligently new methods must be devised. Some men are peculiarly fitted by temperament and order of brain to deal with such cases, and these men should be rendered as skillful as possible by long training. We are only now on the eve of managing mental affections in a sensible manner, and the war in Europe will, it is to be hoped, tend to develop a really scientific system of differentiating between the various kinds of mental aberrations and of treating each kind on its merits, or rather in the way that its peculiarities call for.

SWIMMING-POOL SANITATION.

IN large cities the question of supplying adequate swimming-pool facilities, and their sanitation, is a very pertinent one. Because of the mode of living, especially in the congested districts, this offers really the only means of sufficiently cleansing during weather when this seems most necessary, besides offering the readiest, though temporary, relief from the depressing heat of the summer months. It is for them a stimulant of first value in overcoming the relaxation and the exhaustion accompanying such weather. At least for bathing and cleansing purposes, the pool—or its prototype in miniature, the bathtub—method is entirely unsatisfactory because it entails rewashing in the water contaminated by the very materials one desires to get rid of by the bath. At best, this method is unsanitary, and the sooner all pools and tubs are replaced everywhere by the shower bath the better. If this is properly and not extravagantly used, the consumption of water may be very small.

In cities like New York, situated on tidal water, the use of stream pools for bathing purposes in the summer is a universal practice. The question of the safety of these stream pools is most important, especially when the waters are depositories for sewage. Even the tidal waters surrounding such a city as New York are not sufficient to remove the enormous amount of sewage deposited. While ordinarily the typhoid-colon element in water is not a large one, because usually so soon and so much diluted, where there is bathing at the very

points of discharge of the sewage, the danger to health is great, especially in respect to the spread of typhoid where there is a large carrier population. Moreover, the whole gamut of pathogenic bacterial infection can be spread by pool water. Epidemics of vulvovaginitis, venereal disease, aural and ocular conditions have been reported as having been spread by swimming pools.

As a later development in swimming pools, the indoor pools offer a great many advantages, and obviate the prolific source of infection carried by live sewage. The usual drinking water being used, the opportunity for infection is only that of drinking water, and to a much lesser degree if the water is kept fresh and wholesome by one method or another. The element of colon contamination is supplied almost entirely by the bathers themselves, the dilution depending upon the amount of fresh water added, and the frequency of the addition. Investigations carried on by Manheimer (Public Health Report No. 229) showed that this element of pollution was quite appreciable. He made the amount of the bacterial content of the water and the presence of colon bacilli as his bacteriological index of the purity of the water, and the clearness and the ability to see the bottom of the pool as his practical index, being especially the index of the amount of solid matter suspended in the water. The larger the pool capacity in relation to the daily attendance, and the greater the frequency of the change of the water the safer is the pool. The least expensive and the best method of maintaining pool sanitation is by refiltration of the water used, combined with some chemical treatment, usually a coagulent like alum or calcium hyperchlorite. When the latter is used, a trace of chlorine must always be present in the water to make it adequate.

The installation of indoor swimming pools, as recommended by the New York Department of Health, will soon take the place of the highly unsanitary stream swimming pools. But the installation must be along proper lines as to capacity, attendance, refiltration, and chemical treatment, else all the good that might accrue from the indoor pool will be lost.

THE COLD FEET OF LEGISLATORS.

THE Romans did not believe that a man possessed the capacity for making laws to govern other men until he had learned to govern himself, *i. e.* until he was long past the follies of youth, or until he was what we would call aged. It is not recorded, however, that their laws were any the less just or their public policy any the less martial because their circulation was less vigorous than in youth. Cold feet may exist actually then without their supposedly concomitant mental attitude.

In an article dealing with "colds," in the *British Medical Journal* for April 15, Dr. Leonard Hill calls attention to the ventilation of the House of Commons, where the ventilating current is driven up through the floor in such a way as to cool the members' feet, while their heads are exposed to more stagnant air. As a result, Hill says, they suffer from cold feet and stuffy heads; he does not say whether or not he uses these expressions figuratively. In the May 13 issue of the same periodical Dr. E. Lloyd Owen takes exception to Dr. Hill's theory. He believes that, warm feet and a cool head being the ideal conditions to promote sleep, cool feet and a warm head must necessarily make one wide awake, which is ingenious, but savors too much of sophistry. Dr. Owen says that he finds difficulty in thinking after spending eight hours in a warm bed; that is, if he remains in bed. This is susceptible of another explanation. Having spent eight or nine hours in a warm bed, the apposite idea would naturally be to arise, hence the disinclination to think at all.

Whether, then, we believe with the pacifists in cold feet for legislators, or think that, come what may, a lawmaker should have a cool head at all times, whether his feet be frying or freezing, we will all agree that the subject of ventilation of legislative halls should be given enough attention so that the soporific effect of carbon dioxide is not added to the somnolence of the spoken word.

THE PRESERVATION OF CERTAIN ANTIGENS.

THERE are a number of difficulties which arise in the attempt to produce anti-human precipitin rabbit serum, a procedure which may be of the greatest importance in a medicolegal connection. The need for haste may be imperative, the rabbit may die at the critical moment, from anaphylaxis, from peritonitis, or, from the toxic effects of the serum, and it may be difficult to obtain the human serum in the desired quantities at the desired time. Efforts to preserve the serum in fluid form have not been very successful since it shows a tendency to precipitate a portion of its protein content even though sterile and kept at a low temperature. It would doubtless be possible to keep it unchanged when frozen and dried *in vacuo*, but the technique of this method is quite laborious and requires special apparatus.

In order to avoid, as far as possible, most of the difficulties above mentioned, Smith *(Jour. Med. Research*, 1916, xxxiv, 169) has made use of the precipitate obtained by treating the human blood with ammonium sulphate. The sediment thus obtained is freed from the solution by prolonged and vigorous centrifugation. The precipitate is then dried, powdered, and put up in tubes each of which contains 0.5 gram, representing the sediment from 10 c.c. of blood. Before use the powder is taken up in 2 c.c. of sterile salt solution and is then ready for injection. The small amount of ammonium sulphate remaining proved slightly irritating when the material was injected intraperitoneally and markedly so when it was injected into the vein. It would probably be necessary to remove this salt by dialysis before using the preparation intravenously. This material proved to have active antigenic properties, even when nine months old, and the serum produced from its use was uniformly of good value. It is necessary to use a very small bulk of the substance and its administration is apparently without danger. Such a preparation would be of great help at times and it offers a convenient way for the storing of the antigen. The author used placental blood and thus

was able to obtain a large volume with but little difficulty. It is probable that a similar method may be applied to a number of the immunological reactions for the preservation of the reagents.

Medical Preparedness.

There has recently been organized a Committee of American Physicians for Medical Preparedness, representing the American Medical Association, the American Surgical Association, the Congress of American Physicians and Surgeons, the Clinical Congress of Surgeons of North America, and the American College of Surgeons, which in cooperation with the Federal Government is formulating plans for the purpose of ascertaining, organizing, and utilizing the civilian medical resources of the country in accord with the comprehensive plans for national defense which are now being carried out in all lines of endeavor. The chairman of the committee is Dr. William J. Mayo, and the secretary, Dr. Frank F. Simpson, Jenkins Arcade Building, Pittsburgh, Pa. The first duties of the committee will be to aid the medical departments of the United States Navy and Army by making a comprehensive inventory of the qualifications of individual civilian physicians throughout the country, and to cooperate with the American Red Cross in bringing that organization up to the highest standards of medical ideals and in forming Red Cross units throughout the country. As it is the desire of the Surgeon-General of the army greatly to increase the number of medical men in the Reserve Corps, the committee will also endeavor to interest the medical profession in that branch of the service, if Congress will permit it to survive. The organization will include, in addition to the national committee, committees of nine members in each State.

Fancy-work for Surgeons.

Who of us has not sat admiring the deft way in which a wife or sister or one who has not promised as yet to be either makes a needle fly back and forth through a piece of linen until the line of stitches seems actually to grow under our eyes by leaps and bounds? And then we have contrasted mentally the surgeon at the next operation we witness, excellent workman though he may be, watching him crunch down upon a needle with a needle holder, push a needle the size of a darning needle through the tissues, release the needle-holder, seize the needle again on the other side and so on, wishing that a little of the seamstress's dexterity might be communicated to him. Or perhaps we are surgeons ourselves and have often wondered what an efficient expert would say to the countless lost motions in the sewing up of an abdomen.

And yet the answer is easy. Simply a course in sewing, plain and fancy, but above all a few lessons in the correct way to use a thimble. Sit at the feet of some good housewife and learn the fundamentals. Dr. Edward Harrison, in an article in the *British Medical Journal* for May 6, gives this excellent advice, illustrating by his own experience. He began six or seven years ago to learn to sew with a thimble and gradually advanced until he was able to hem a fine cambric handkerchief accurately and fairly rapidly. Applying this accomplishment to his surgery, he found his needle much more easily directed and managed almost entirely with one hand, leaving the other free to expedite the work in some other way. Dr. Harrison found that he could use a straight needle for many kinds of suturing where it was generally supposed only a curved one could be used.

In these days when our patients, especially those who affect décolleté, demand the invisible scar and other cosmetic results of operations, the suturing of the wound plays a much greater part than it did years ago, and a suggestion such as that of Dr. Harrison is worthy of serious attention, in spite of the smile it may evoke at first. Let us not forget also that the beneficent effect of the operation itself may in some cases depend almost entirely on the skill with which the parts are approximated and not neglect anything which might enhance that skill.

A Question of Anatomy.

As was to be expected the *Journal of the American Medical Association* has attacked editorially Dr. H. H. Rusby of this city because of the testimony he gave in favor of the plaintiff in a libel suit recently decided against the Association. We are not going to defend Dr. Rusby, who needs no defense, for a lifetime of honorable service in the cause of science speaks for itself. It pains us, however, to find our esteemed contemporary wrong also on an anatomical point. It speaks of "Dr. Rusby's weird conception of the anatomy of the female pelvis," because he referred to "the unstriped muscular fibers of the broad ligament!" (mark of astonishment the *Journal* editor's), and advises him, when he gets back to Columbia University to "ask a freshman student in the anatomy class to make a dissection of some of the unstriped muscles in the broad ligament." The funny point here is that the broad ligament does contain unstriped muscular fibers, as Cunningham, Gray, and all anatomists, as well as De Lee and many obstetricians, testify. Whatever the wants of others may be, Dr. Rusby evidently needs no freshman to teach him anatomy.

News of the Week.

Troops' Health Cared For.—Three of the best sanitarians of the army, Lieut.-Col. Edward L. Munson, and Majors R. B. Miller and W. N. Bispham, have been sent from Washington to San Antonio to take charge of the organization of the sanitary forces along the Mexican border. Dr. Thomas Darlington of New York also has been sent by the National Civic Federation to the border to investigate and report on the health of the enlisted men. The work of the Red Cross and of the army medical organizations has continued unabated during the week in spite of the loosening of the tension in the Mexican crisis. It is reported that a large percentage of the men who were in the organized militia at the time of the President's call have been rejected by the army surgeons for failure to meet the physical requirements.

Another Base Hospital Unit.—A letter has been received at the American Red Cross Headquarters in Washington from Dr. William J. Mayo, of Rochester, Minn., stating his willingness to organize a base hospital, the personnel and equipment of which will be furnished by the Mayo Clinic. The number of medical officers in a base hospital is 23; the number of beds 500, and the cost of the equipment is estimated at $25,000.

Camps for Doctors.—General Wood has an-

nounced that two training camps, both for medical men, will be held in connection with the regular Military Training Camp at Plattsburg, N. Y., during July. The course of instruction will cover camp sanitation and military hygiene, and the camps will be commanded by medical officers of the regular army. Enlistment blanks will be furnished by the Military Training Camp Association, 31 Nassau Street, New York.

The Poliomyelitis Epidemic.—Two hundred and eighty-seven deaths and 1440 cases was the record in New York City in the present epidemic of poliomyelitis up to July 12, by far the greater number of the cases and deaths having occurred in Brooklyn, where the first case was discovered. In its efforts to combat the disease the New York City Department of Health has received the help of all of the other city departments as well as of the State Department of Health and of the United States Public Health Service. The facilities of the last, offered by the Secretary of the Treasury, are a great assistance in the fight, and are being used largely to determine if possible the means by which the contagion is spread and the ways in which it can be controlled. The hospitals throughout the city have also responded to the call and practically all have offered to care for patients or to supply doctors and nurses for work outside. On July 9 the Kingston Avenue Hospital, Brooklyn, was filled to its capacity, 301 patients, and the Willard Parker Hospital, New York, with 139 patients had almost reached its limit. The use of the hospital on Swinburne Island containing forty beds was given by the Health Officer of the Port, Dr. L. E. Cofer, who also offered to supply doctors and nurses for twenty patients. The quarantine laboratory will undertake the routine diagnosis of all cases on Staten Island. By the passage of a special resolution through Congress it will be possible for the authorities of the city to use also the contagious disease ward of the Ellis Island Hospital in which 400 beds are available; doctors and nurses for the care of patients there, however, must be supplied by the city. In order to cover all this emergency work, the Mayor has authorized the sale of bonds up to $80,000. Practically all public places, moving picture theaters, etc., have been closed to children, the play streets have been abandoned, and the playgrounds have been thoroughly disinfected and will be kept as clean as possible. Parents are being advised by visiting inspectors and nurses as well as through the medium of moving pictures to keep their children as much as possible from other children. Cases of the disease have also been reported from many places in the State outside of New York City and also from Pennsylvania, Illinois, Missouri, Kentucky, Massachusetts, Wisconsin, Kansas, Iowa, and Indiana.

Brooklyn Dental College.—The committee which is soliciting funds for the establishment of a new college of dentistry in Brooklyn, to be conducted in cooperation with the Long Island College Hospital, announces that one-half of the necessary amount has already been subscribed; it is hoped that the college may be prepared to receive students and patients by next October. A dental infirmary for children and a clinic in oral surgery will be included. At present, Brooklyn has no dental college.

Medical Advance in China.—A public health department has recently been organized in the province of Kiangsu, China, in which Shangai is situated. The department will regulate food, drug, and sanitary inspections, as well as control home sanitation and medical education.

Floating Hospital Opens Season.—The first trip of the *Helen C. Juilliard*, the new floating hospital of St. John's Guild, was made on July 5, and a numbers of mothers and babies from New York and Brooklyn were taken down to the Lower Bay, where the boat anchored off the Seaside Hospital, New Dorp, S. I. The boat will continue to run each week day during the summer on a regular schedule. Tickets for the trips, which are absolutely free for sick babies, mothers, and children, are distributed through the various hospitals, dispensaries, nurseries, and like institutions.

Aiding the Red Cross.—A number of prominent physicians of New York City are serving on a special committee for the purpose of assisting the American Red Cross in its campaign to attain a membership of 1,000,000 throughout the United States. An appeal to the medical profession to join the Red Cross is signed by Dr. G. D. Stewart, Dr. G. E. Brewer, Dr. G. L. Gibson, and Dr. N. E Brill, representing the Red Cross Units of Bellevue, Presbyterian, New York, and Mt. Sinai Hospitals, respectively.

Home for Nurses.—A six-story home for the nurses of the Manhattan Eye, Ear, and Throat Hospital, New York, is to be erected on East Sixty-third Street, directly in the rear of the hospital building. The structure will have a frontage of 125 feet and a depth of 40 feet, and will, it is estimated, cost $300,000.

Merger of Journals.—The *New Orleans Medical and Surgical Journal*, which with the July number began its sixty-ninth volume, announces that the *American Journal of Tropical Diseases* has been incorporated with it, and that the combined journal, which will continue under the title of the former, will be the official organ of the Orleans Parish Medical Society and of the American Society of Tropical Medicine. One effect of the consolidation of the two papers will doubtless be to widen the area of circulation of the *New Orleans Journal*, which will be to the advantage not only of the journal itself but also and especially of the new readers of this old established and excellently conducted periodical.

Bequests to Charities.—By the will of the late Mr. Fredrick K. Trowbridge of this city the Flower Hospital, New York, receives a bequest of $5,000.

The Brooklyn Hospital and the Long Island College Hospital, Brooklyn, receive bequests of $2,500 each by the will of the late Miss Mary Baylis of that city.

Personals.—Dr. Harry Plotz and Dr. George Baehr of the staff of Mt. Sinai Hospital, New York, who have for over a year been studying the sanitary conditions, especially as regards typhus fever, in Eastern Europe, returned to this city on July 6.

Dr. E. V. Morrow of Portland, Ore., returned to this country recently, after having spent eighteen months as chief operating surgeon at the hospital at La Panne, Belgium. Dr. Morrow received from King Albert the decoration of King Leopold.

American Hay Fever Prevention Association.—The annual meeting of this association was held in New Orleans on June 15, when Dr. William Scheppegrell of New Orleans was re-elected president. Dr. Rupert Blue, surgeon-general of the Public Health Service, honorary vice-president, and Dr.

N. L. Thiberge of New Orleans, corresponding secretary. The president reported that thirty-four of the State boards of health had co-operated with the association in its campaign against hay fever, and that the research department had done excellent work in completing a list of the hay fever weeds for the Southern, Middle, and Eastern States, and was now preparing a similar list for the Western and Pacific States.

Pacific Coast Oto-Ophthalmological Society.—At the closing session of the annual convention held in Portland, Ore., on June 23 and 24, the following officers were elected: *President*, Dr. Clarence A. Veasey, Spokane, Wash.; *Vice-Presidents*, Dr. P. A. Jordan, San Jose, Cal., and Dr. Frank A. Burton, San Diego, Cal.; *Secretary-Treasurer*, Dr. L. D. Green, San Francisco.

Kentucky Valley Medical Association.—Officers were elected at the annual meeting at Richmond on June 29 and 30, as follows: *President*, Dr. Clarence H. Vaught, Richmond; *Vice-President*, Dr. Wilgus Bach, Jackson; *Secretary-Treasurer*, Dr. John H. Evans, Beattyville.

Women's Dental School.—The first dental school to be devoted exclusively to the training of women in dentistry will, it is now announced, be opened next month in connection with Hunter College (the New York City free college for women). There will be three terms of instruction, extending over a year, the first term beginning on July 10, and under the Seeley bill passed last April by the New York State Legislature, the students will be graduated as dental hygienists. Graduates of the school will be eligible for employment as dentists' assistants, as assistants in dental clinics, and as school inspectors under the Department of Health, in which case they will instruct the school children in the essentials of dental hygiene.

Conference on Eugenics.—The annual meeting of the Eugenics Research Association and the conference of the Eugenics Research Office were held at the Carnegie Station for Experimental Evolution, Cold Spring Harbor, N. Y., on June 23. Dr. Adolf Meyer was elected president of the association.

Philadelphia Medical Club.—At a recent meeting of the club a reception was held in honor of Dr. Charles A. E. Codman, president-elect of the Medical Society of Pennsylvania; Dr. John B. McAlister, the present president; Dr. George I. McKelway, president of the Delaware State Medical Society, and Dr. Alexander Marcy, representing the president of the Medical Society of New Jersey.

Hospital Sued.—Charging that six inches of rubber tubing was left in his body, after an operation three years ago, and that as a consequence he has suffered greatly, a former patient of Christ Hospital, Jersey City, N. J., has brought suit against the hospital for $20,000 damages.

Maine Homeopathic Medical Society.—The fiftieth annual convention of this society was held in Augusta, Maine, on June 12 and 13, when the following officers were elected for the ensuing year: *President*, Dr. Luther A. Brown, Portland; *Vice-Presidents*, Dr. Franklin A. Ferguson, Portland, and Dr. W. H. Walters, Fairfield; *Treasurer*, Dr. W. S. Thompson, Augusta; *Secretary*, Dr. Carrie E. Newton, Brewer.

Obituary Notes.—Dr. CHARLES S. WOOD of New York, a graduate of the College of Physicians and Surgeons, New York, in 1886, died at his home on July 6, aged 52 years.

Dr. WILLIAM BLUNDELL of Paterson, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1861, and a member of the American Medical Association, the Medical Society of New Jersey, and the Passaic County Medical Society, died at his summer home in Allendale on June 30, aged 79 years.

Dr. ANDREW JACOB KOONTZ of Independence, Va., a graduate of the College of Physicians and Surgeons, Baltimore, in 1887, and a member of the Medical Society of Virginia and the Grayson County Medical Society, died suddenly at his home on June 20, aged 57 years.

Dr. JOHN F. W. WHITBECK of Rochester, N. Y., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1870, president of the medical staff of the Rochester General Hospital, and a former president of the Medical Society of the State of New York, died at his home on July 3, aged 72 years. Dr. Whitbeck was a fellow of the American College of Surgeons and a member of the American Medical Society, the Medical Society of the State of New York, the Monroe County Medical Society, the Rochester Pathological Society, and the Academy of Medicine.

Dr. WALTER JAY BELL of Atlanta, Ga., a graduate of the Medical Department of the Tulane University of Louisiana, New Orleans, in 1891, died at his home on June 17, aged 47 years.

Dr. I. R. AULTMAN of Meigs, Ga., a graduate of the University of Georgia, Medical Department, Augusta, in 1893, died at his home on June 22.

Dr. ROBERT J. GILLILAND of Easley, S. C., a graduate of the University of Maryland, School of Maryland, Baltimore, in 1883, and a member of the South Carolina Medical Association, and the Pickens County Medical Society, having at one time served the latter as secretary, died at his home, after a short illness, on June 26, aged 56 years.

Dr. LUTHER B. ETHEREDGE of Wagener, S. C., a graduate of the University of the South, Medical Department, Suwanee, Tenn., in 1900, and a member of the South Carolina Medical Association, and the Aiken County Medical Society, died at his home, suddenly, on June 24, aged 42 years.

Dr. JOHN P. CORRIGAN, formerly of Pawtucket, R. I., died at the Providence Hospital, Providence, from heart disease, on July 6, aged 59 years. Dr. Corrigan was graduated from the New York University Medical College in 1883, and practiced in Pawtucket until a few years ago, when he retired to join the Dominican Order, in which he was known as Brother Vincent. He was at one time a member of the American Medical Association, the Rhode Island Medical Society, the Providence District Medical Society, and the Rhode Island Ophthalmological and Otological Society.

Dr. PAUL PAQUIN, formerly of Asheville, N. C., a graduate of the University of Missouri, Medical Department, Columbia, in 1887, and a member of the American Medical Association and the Medical Society of the State of North Carolina, died at his home in Kansas City, Mo., after a long illness, on June 23, aged 55 years.

Dr. HEBER WHEAT JONES of Memphis, Tenn., dean emeritus and professor of clinical medicine in the University of Tennessee, Medical Department, and president of the Tennessee State Board of Health for twelve years, and of the Memphis Board of Health for eight years, died at his home, after a long illness, on June 26, aged 68 years. Dr. Jones was graduated from the University of Virginia, Department of Medicine, Charlottesville, in 1869.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GENERAL MEDICAL COUNCIL—D.S.O. AND OTHER HONORS—CANADIAN ARMY MEDICAL CORPS—A GIFT TO LONDON CHARITIES—SILVANUS THOMPSON—NATIONAL HOSPITAL FOR EPILEPSY AND PARALYSIS.

LONDON, June 17, 1916.

THE General Medical Council in its five days' sitting disposed of a large amount of business, much of which, though necessary, possesses but little interest to the profession at large. Some of it, however, demands careful consideration by those who pay attention to it in this respect as well as to its relation to the public. The report of its education committee is of this nature. To it had been remitted the subject of the ethical relationships of medical practitioners, to the state, to their patients and to each other, with power to make any inquiries deemed advisable. A letter was sent to the teaching bodies which elicited the information that in most cases the subject is included in the courses of forensic medicine and public health, also to some extent in special lectures, but in many instances no attempt to deal with the subject has so far been made. The committee is of opinion that this neglect should not continue, though special arrangements may naturally vary among the different bodies. Accordingly they suggest that a general recommendation should be added to the resolutions of the General Medical Council dealing with the matter. Further, attention should be called to all explanatory notices issued by the Council on the subject.

Reports were also submitted by the University of St. Andrews, by the dental committee, the public health committee, the examination committee, the pharmacopœia committee, and the students' registration committee.

Capt. T. L. Ingram, R.A.M.C., has been awarded the D.S.O. in recognition of his gallantry and devotion to duty on the field. He collected and attended to the wounded under heavy fire, and from the beginning of the war has been conspicuous for his personal bravery on every opportunity.

The Military Cross has been conferred for gallantry and duty on the field on Capt. J. C. Brash, M.B. He went to an artillery dug-out which had had a direct hit, extracted the wounded and administered first aid under heavy shell fire. Capt. H. F. Percival Hart, M.B., Capt. Randall Woodhouse, M.B., and Lieut. W. J. Knight, M.D., for similar devotion under fire. The cooperation between the regular army medical service and members of the civil medical profession who have given their services to the army has largely contributed to the prevention of disease and the successful treatment of the sick and wounded.

A number of honors have been distributed on the King's Birthday. Among them some are of the profession. A P.C. goes to Dr. Christopher Addison. There are three Knights—F. Mark Farmer, Armand Ruffer, Nestor Tirard. K.C.M.G. is conferred on Baldwin Spencer; C.M.G. on Montizambert, Director-General of Public Health, Canada; Major Fred N. White, I.M.S., and Captain MacIlwaine, R.A.M.C. The Kaisar-I. Hind gold medal goes to H. M. Newton, F.R.C.S., Rev. P. Cullen, Brigade-Surgeon, I.M.S., retired, and Robert Geo. Robson, M.A., M.D. Several additions to the Order of the Bath and the Royal Victorian Order have also been made.

All branches of the medical services have lately received the highest commendation for their work both at the front and on the lines of communication. The sick rate has been low, no enteric fever, no epidemic. The results of exposure in the trenches in the winter were to a great extent checked by the precautions carried out. The Canadian army medical corps rendered most valuable assistance. The central laboratory and chemical advisers with the army took prompt action in investigating the gases and other new substances employed in hostilities and devising means of protecting the troops against their effects. The value of this work has been recognized in all directions.

A sum of £25,000, free of legacy duties, has been bequeathed by Mr. Frank Daniels to be distributed by the Lord Mayor of London among such charitable and benevolent objects as he may, in his absolute discretion, select, and in such proportions as he may think proper. Gifts to charity which are so absolutely free from restrictions are sufficiently rare to call for approving comment.

Prof. Silvanus Thompson died on the 12th inst., aged 65. He took B.A., London, in 1869, and proceeded later to the D.Sc., taking honors in science during the course. In 1879 we find him professor of physics at Bristol University College. In 1893 he was a delegate at Chicago Electrical Congress, at which he read a paper on Ocean Telephony. In this he put forward the idea of accelerating the speed of signaling in cables by the use of inductive shunts. He contributed many papers on a great variety of scientific subjects to the Royal and other societies, in some of which he served as president. He was honorary vice-president of the Electrical Exhibition at Frankfort in 1891. He was an able linguist; gave a lecture in Italian before the Volter Centenary Congress at Como, 1899, and one in German before the Urania Society in Berlin in 1901. He was author of "Lessons in Electricity and Magnetism" and other valuable works. He wrote the life of Faraday and of Lord Kelvin.

The National Hospital for Paralyzed and Epileptics has 68 beds for those suffering from shock and they are pretty constantly occupied by patients coming direct from the Expeditionary Forces and from Red Cross and military hospitals.

TREATMENT OF POLIOMYELITIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR: I make so bold as to offer the following suggestions regarding the treatment and prophylaxis of infantile paralysis:

Treatment—Local applications of 10 per cent. silvol or argyrol to the nose, with hexamethylenamine in large doses internally. The performance of lumbar puncture.

Prophylaxis—Silvol or argyrol to nose and hexamethylenamine in moderate doses internally in the case of all children who have come into contact with a positive case.

I base these suggestions upon the facts that the nose is probably the portal of entrance of the infection and that hexamethylenamine when taken internally will be found in the cerebrospinal fluid. Also, on the supposition that lumbar puncture will carry off some of the infecting organisms and their toxins.

SAMUEL W. MYERS, M.D.

BOSTON, MASS.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

June 29, 1916.

1. The Shattuck Lecture. The Etiology of the Diseases of the Circulatory System. Theodore C. Janeway.
2. Respiratory Exchange, with a Description of a Respiration Apparatus for Clinical Use. Francis G. Benedict and Edna H. Tompkins.
3. Diagnosis of Periosteal Sarcoma with the *X*-ray. Frederic J. Cotton.
4. Further Experience in the Treatment of Intracranial Hemorrhage in the Newborn. Robert M. Green.

1. The Etiology of Diseases of the Circulatory System.—Theodore C. Janeway discusses this subject under the tentative classification of known bacterial infections; probable, but unproved bacterial infections; syphilis (a) of the aorta, (b) of the heart, (c) of the smaller arteries; rare infections; parasites and tumors; intoxications, exogenous and endogenous; nutritional disturbances; mechanical disorders; nervous disorders; defects of development; hereditary disease and the relative importance of the various causes of myocardial insufficiency. He has tabulated the histories of his series of hypertensive patients previously reported with reference to past infections. The outstanding fact in this group is the frequency of a history of typhoid fever compared with pneumonia. A study of the statistics of Johns Hopkins Hospital from September 21, 1914, to April 2, 1916, leads him to the conclusion that no evidence has been brought forward to place hypertensive cardiovascular disease in the category of the direct results of syphilis, and that syphilis plays an indirect rôle, if any, in its causation. In discussing the rôle of alcohol in the production of disease of the heart or vessels he says there can be no doubt that the death rate from circulatory disease is considerably higher in those occupations where habitual drinking is the rule. However, a study of his own cases showing hypertension lends no support to the view that alcohol has an important influence in the production of this type of arterial disease. He has tabulated the histories as to tobacco of 226 men with angioid pain and compared them with 285 men with hypertension, and of 300 other male patients and says that no important influence of tobacco is seen in these figures. In the majority of cases of cardiorenal disease he is convinced that the disease is essentially one of the circulatory system, involving the kidney through its vascular apparatus, and sometimes sparing it entirely. Hypertensive arterial disease must be looked on to-day as the type in which heredity plays the largest rôle. The essayist states that his whole group of private patients gave the cause of death as cardiovascular for both parents or one parent, or one parent and other members of the family in 22 per cent., for one parent or brother or sister in 28 per cent., while 50 per cent. had no cardiovascular heredity at all. He has tabulated all his cases having myocardial insufficiency observed during the period mentioned and finds that one-third of their myocardial failures are associated with hypertension. As another large group of these patients die of apoplexy, hypertensive cardiovascular disease assumes a first place as a cause of circulatory death. Chronic endocarditis stands next, with syphilis of the aorta just behind, each accounting for about one-sixth of the failing hearts. To these may be added the deaths from syphilis of the cerebral arteries and ruptured aneurysms. The clinically primary myocardial insufficiencies, a motley group etiologically, but largely arteriosclerotic, follow with about one-eighth of the blame. Emphysema and its congeners are not far behind, then true bacterial endocarditis, then thyroid intoxication, and various minor causes. The practical conclusions are drawn that reduction of the mortality from circulatory diseases is attainable through the diminution of syphilitic infection and the early and intensive treatment of primary syphilis; the further reduction of preventable infectious diseases; the education of the public to consider "rheumatism" a serious disease, particularly in childhood; the provision of suitable employments for cardiac patients and of convalescent hospitals for the necessarily protracted after care of cases of acute inflammatory disease of the heart and of patients recovering from myocardial insufficiency, and through general hygienic measures including the promotion of temperance. The essayist states that no large reduction of the mortality from circulatory diseases is likely to occur until the problems of the ultimate causes of hypertension and chronic nephritis and the infectious agent of rheumatic fever and its portal of entry have been discovered.

4. Further Experience in the Treatment of Intracranial Hemorrhage in the Newborn.—Robert M. Green recalls that he reported seven cases of intracranial hemorrhage in the newborn in the issue of the *Journal* for April 30, 1913, and discussed the classification of cases, and methods of diagnosis and treatment. Since that time he has observed two further cases of this condition which illustrate those methods. He concludes that intracranial hemorrhage in the newborn may be most conveniently classified clinically under two groups, infratentorial and supratentorial. In the infratentorial type of hemorrhage the symptoms and signs are primarily respiratory in character and are probably dependent on the pressure of accumulating blood about the respiratory center in the medulla. In the supratentorial type of hemorrhage the symptoms and signs are primarily convulsive and are probably dependent on the irritation of the motor area by accumulating blood over the cerebral convexity. In any case of doubt, diagnosis should be confirmed by exploratory lumbar or cranial puncture, or both. In the infratentorial type of hemorrhage repeated lumbar puncture is probably the best palliative treatment and may prove definitely curative. In the supratentorial type of hemorrhage, the best treatment is incision along the coronal suture at one or both lateral angles of the anterior fontanelle followed by brief drainage with rubber tissue. More extensive procedures than these are unnecessary and likely to prove fatal. Early diagnosis and operation within the first two or three days of life are essential for the best results. The prognosis becomes steadily worse as time progresses and clotting takes place.

New York Medical Journal.

July 1, 1916.

1. Conservation in Obstetrics. Edwin G. Cragin.
2. Bone Sarcoma Treated by Radium. Joseph B. Bissell.
3. Stricture of the Ureter. Guy L. Hunner.
4. Congenital Syphilis. J. P. Jones.
5. Intradural Nerve Anastomosis in Selected Cases of Poliomyelitic Paralysis. Norman Sharpe.
6. The Contents of Ovarian Cysts. J. T. Leary, H. J. Hartz and Philip B. Hawk.
7. Dementia Præcox. Morris J. Karpas.
8. Autoserotherapy. Francis Huber.

1. Conservation in Obstetrics.—Edwin B. Cragin questions whether in our enthusiasm over radical obstetric surgery we are neglecting the fundamentals of obstetrics, the routine precautionary measures which may make a resort to radical obstetric surgery unnecessary. He says the consultant still sees cases of puerperal sepsis; of ruptured uteri; of undiagnosed posterior positions of the occiput. He sees cases in which the forceps have been applied too early, cases in which version has been attempted too late. The importance of pelvimetry, uranalysis, and blood pressure readings in the pregnant woman should not be overlooked. He

questions whether the fetal heart is watched as closely as it should be and pleads for the early diagnosis of occipito-posterior positions, and as elements in this diagnosis he emphasizes: (1) The absence of the smooth broad fetal back from the front of the mother's abdomen; (2) the location of the greatest intensity of the fetal heart sounds outside of the line joining the umbilicus and either anterior superior iliac spine; (3) the character of the labor pains, the uterine contractions being often feeble, far apart, and ineffectual. This type of labor is so often found associated with a persistent occipito-posterior position and the diagnosis should at least be suggested and should be either verified or excluded by careful examination. The writer regards cesarean section as a conservative procedure when delivery of a living child through the natural passage is shown to be impossible provided the following conditions are present: 1. Labor of short duration or not begun. 2. Unruptured membranes, or membranes only recently ruptured. 3. No recent vaginal examinations, or only one or two under the strictest asceptic precautions with sterile gloved hands, etc. In the writer's opinion placenta prævia, eclampsia, accidental hemorrhage, etc., furnish an indication for a section only as a rare exception. In certain cases of complete placenta prævia with marked loss of blood and cervix not easily dilatable, a section offers the best prospect to mother and child. The same may be said of certain cases of accidental hemorrhage with complete premature separation of the placenta, but it is the writer's custom to deliver most of these women in some other way, usually after preliminary dilatation with the elastic bag.

3. **Stricture of the Ureter.**—Guy L. Hunner states that he has records of fifty cases of stricture of the ureter since November 1, 1915; in the same period he has treated forty-nine cases of tuberculosis of the kidney and thirty-nine cases of stone in the ureter. He is firmly convinced that the majority of ureter strictures, excluding those of tuberculous and stone origin, should be classified as simple chronic strictures and that they have their origin in an infection carried to the ureter walls from some distant focus, as diseased tonsils, sinuses, or teeth. This conception of stricture postulates that in the majority of cases ureter infiltration is primary and that other urinary tract lesions so often associated with stricture are secondary, such as hydronephrosis, pyelitis, and pyelonephrosis. An analysis of these fifty cases seems to support this view. Another argument for a systemic infection is the preponderance of cases in which the stricture occurs in the broad ligament region where the ureter has its chief blood and lymphatic connections. While the ideal treatment for stricture of the ureter is by dilatation from the vesical approach, and in cases without infection and without much renal disturbance we can look for cure by this method, there are cases in which methods for vesical approach fail and retrograde dilatation may be employed. This method consists in exposing the ureter by an extraperitoneal incision; then making an incision into its dilated portion above the site of the stricture, after which increasing sizes of the French gum elastic bougies or metal sounds are passed until the stricture is dilated to a diameter of from 0.5 to 1 cm. The ureter incision is then closed with catgut and reinforced, if necessary, with silk or linen. The writer has treated eight cases by this retrograde dilatation and the results have been perfect in six, so far as measured by relief of symptoms and ability to catheterize easily from below.

5. **Intradural Nerve Anastomosis in Selected Cases of Poliomyelitic Paralysis.**—Norman Sharpe has carried on a series of experiments upon animals in nerve anastomosis in the spinal canal with the object of caudal root anastomosis in marked cases of paralysis of the lower extremities following poliomyelitis. He reports three cases, but states that it is too soon to give the final results. He says that operation of intradural nerve anastomosis of the cauda equina roots is not more formidable that the frequently performed operation of haminectomy with opening of the dura. The operation is performed in two stages as, for instance, in the first case reported a laminectomy was performed; the spinous processes and laminæ of the twelfth dorsal and the first, second, and third lumbar vertebræ were removed, exposing the dura. The wound was closed with catgut and silk. Two weeks later the wound was reopened and the arachnoid incised. The right twelfth dorsal anterior root was isolated, cut near its passage through the dura, and united by single fine silk suture to the fourth lumbar right anterior root which was severed near the conus. In a similar manner the first and second lumbar right anterior roots were united to the first and second sacral anterior roots respectively.

6. **Contents of Ovarian Cysts.** — J. T. Leary, H. J. Hartz, and Philip B. Hawk have made a study of the toxicity of several varieties of cysts, namely, three multiple proliferating cyst adenomata, one papillary proliferating cyst, one multiple follicular cyst, and one simple cyst of the ovary. They found that the contents of the different cysts were sterile in each case. The cysts examined showed no toxicity, regardless of the nature of their contents. No rise of temperature nor loss in weight was noted in any guinea pig after injection. The animals were killed about twelve weeks after injection, and no lesions could be determined macroscopically. In two cases the physical nature of the contents was mucilaginous in the extreme, having the physical appearance of a mucin substance. That this property was due to the globulin content and not to a mucin substance was shown by the precipitation properties and coagulability of the substance in question accompanies by the lack of viscosity in the resulting filtrates. A slight amount of pseudomucin was obtained in each case, but the trace present could in no way account for the physical characteristics of the contents.

Journal of The American Medical Association.

July 1, 1916.

1. Resuscitation Apparatus. Yandell Henderson.
2. A Study of Ophthalmoscopic Changes in Nephritis. George Slocum.
3. Parenchymatous Disease of the Liver a Cause for Rise in Portal Blood Pressure. C. F. Hoover.
4. Proteose Intoxication; Intestinal Obstruction and Acute Pancreatitis. G. H. Whipple.
5. The Use of the Desiccation Method in Ophthalmology, with Special Reference to Epitheliomas of Lids, Canthi and Conjunctiva: Report of Cases. William L. Clark.
6. Bismuth Paste in Chronic Suppurative Sinuses and Empyema: Incorrect Technique as a Cause of Failure in Its Application. Emil G. Beck.
7. Subluxation of the Head of the Radius: Report of a Case and Anatomical Experiments. C. A. Stone.
8. Seven Unerupted Teeth in the Superior Maxilla. E. P. R. Ryan.
9. Orthopedic Treatment in Hemiplegics of Long Standing. George R. Elliott and Samuel W. Boorstein.
10. Report of a Case of Banti's Disease. Karl C. Eberly.
11. Knee Block from Avulsion of Bone Fragment by Posterior Crucial Ligament. Roscoe R. Kahle.
12. Sudden Blindness Associated with Choked Disk and Nasal Sinus Disease. Edward J. Brown.

1. **Resuscitation Apparatus.** — Yandell Henderson describes the various forms of resuscitation apparatus now on the market and points out that the mechanical requirements are easily met. The important thing is that the apparatus should be of such simple character as not to impose on the credulity of the ordinary man. All that any apparatus can accomplish is artificial respiration with air enriched with oxygen. The superiority of a mere pump lies in its simplicity. Universal train-

ing in the prone pressure manual method of artificial resuscitation will accomplish more for resuscitation from drowning, electric shock, and asphyxia than is possible by providing any amount of apparatus. Artificial respiration with apparatus is superior to the manual method, in that the apparatus is capable of giving a normal volume of pulmonary ventilation, while the manual method is not. Nevertheless the immediate application of a poor method is far more important than the application of a perfect method after a delay of even five minutes. The knowledge that apparatus is available is liable to result in a neglect of immediate manual treatment in order to have the apparatus brought from a distance. The Resuscitation Commission, after considering the matter in the light of such evidence as is available, concludes that probably ten minutes is the extreme limit of time beyond which restoration is practically impossible. Oxygen inhalation should be used immediately in gas and smoke cases, but the apparatus employed should be such as will allow the oxygen to reach the lungs in efficient concentration. Such apparatus should go with every artificial respiration device. It has been shown that the oxygen concentration obtained by the pulmotor is not very considerable. The writer expresses the opinion that investigation of the use of artificial respiration apparatus in asphyxia neonatorum is needed.

3. **Parenchymatous Disease of the Liver a Cause for Rise in Portal Blood Pressure.**—C. F. Hoover says that in attempting an explanation of ascites in hepatic cirrhosis we must consider the blood pressure and minute volume of flow in the aorta and cava. If the pressure and flow in the aorta and cava are unchanged, then obviously the only hydraulic considerations are those which may affect blood pressure within the portal vein. From clinical experiences in the study of pylephlebitis and portal anastomoses with tributary to the cava, it seems clear that a rise in pressure in the portal vein must precede ascites. Here, however, experiences are encountered which are very disconcerting to this view of ascites if a rise in portal vein pressure is regarded as only an expression of obstruction to portal flow from fibrous tissue formation. Every clinician sees patients with typical alcoholic cirrhosis who have ascites which accumulate very rapidly. The ascitic fluid is drawn off one or more times, and, in spite of the fact that there is no demonstrable change in the hepatic signs, the patient will live for some years without a return of ascites. Two cases are reported. In the first there was the clinical picture of recovery from an acute hepatitis. An acute toxic hepatitis causing an increase in the parenchymatous volume under such conditions would create a higher pressure within the enclosure of Glisson's capsule than would the same degree of parenchymatous enlargement when it occurs within the enclosure of a normal Glisson's capsule with normal and less resistant interstitial tissue. The behavior of the audible hum and palpable thrill in the *caput medusæ* in this case is clear and direct evidence of elevation of portal pressure due to parenchymatous hepatitis in the presence of an old interstitial hepatitis. In the second case there was insufficient direct evidence of an elevation of portal pressure, and this suggested two possible sources of the ascites, namely, either an elevation in portal pressure on account of an acute hepatitis, or merely a hydrops peritonei which happened to be the only collection of extravascular serum because of some modification of the chemistry of the blood. Whatever the cause may be in this second case, the two cases show how important it is to consider the part parenchymatous disease of the liver may play in the diagnosis and treatment of ascites of hepatic origin.

5. **The Use of the Desiccation Method in Ophthalmology, with Special Reference to Epitheliomas of the Lids, Canthi, and Conjunctiva; Report of Cases.**—William L. Clark describes the technique for the application of the desiccation method to eye lesions, and reports on a series of eighty-four cases of localized epitheliomas. The desiccation method consists in the application of heat just sufficient to desiccate but not to carbonize. This heat is best generated by means of a high frequency electric current, which is subject to accurate regulation. The writer concludes that desiccation is a successful treatment for localized basal cell epitheliomas of the lids and canthi, both from a curative and cosmetic standpoint. In advanced epitheliomas of these regions, when sinus or orbit is involved complete success is not certain because of the inaccessibility of the diseased tissue, and is applied for palliative reasons when operation fails or is contraindicated. The results thus far in round cell and melanosarcoma of the lids and conjunctiva have been good, but a sufficient time has not elapsed in any case to determine ultimate results. Success is assured in benign growths of the lids, such as angiomas, warts, moles, xanthoma, and lupus erythematosus. Desiccation may be used to advantage for the treatment of pterygium, granular conjunctiva, and corneal ulcers. Symblepharon usually does not follow desiccation. There is no danger of applying the desiccation treatment to growths on the cornea, as it is under perfect control.

6. **Bismuth Paste in Chronic Suppurative Sinuses and Empyema: Incorrect Technique as a Cause of Failure in Its Application.**—Emil G. Beck believes a discussion of this subject is warranted, because the present war in Europe will result in a tremendous increase in this class of cases. He presents statistics of 527 cases, exclusive of nose and throat cases, from a wide range of sources, and finds an average of 80.64 per cent. of cures. The failures he attributes pincipally to faulty technique. Some of these errors are as follows: The bismuth may not be sufficiently incorporated with the petrolatum and may contain lumps. A little water dropped into the mixture will curdle the solution and make it unsuitable for the treatment. The instruments used are often improvised and not suitable for this form of treatment. Undue force is used in the injection. An incomplete filling of the entire sinus tract is the most common error, which is responsible for more failures than any other cause. The sinuses are injected too frequently by some practitioners. Some patients are allowed to dress their own wounds, reinfection usually following. Physicians at times do not give the paste sufficient opportunity to do the work. The writer confidently states that this treatment has passed its experimental stage, and the results obtained by surgeons all over the world warrant its more general employment. Stereoroentgenograms should be employed to control the treatment and to prevent useless operations. Bismuth poisoning can be avoided and is now of rare occurrence. Should toxic symptoms appear the paste must be removed by washing out the cavity with warm olive oil and injecting sterile oil, which should be allowed to remain for from twelve to twenty-four hours.

7. **Subluxation of the Head of the Radius.**—C. A. Stone reports a case and describes some experiments which he believes throw some light on the production and maintenance of this deformity. From his experiments on twelve arms that were practically free of muscle but on which the ligaments were intact, he concludes that subluxation of the head of the radius can occur while the biceps are contracted, with the forearm flexed and without adduction. It occurs only while the hand is pronated. The line of traction is parallel to

the shaft of the bone. Supination is resisted, because the tense lateral ligament forces the flattened side of the radial head against the anterior edge of the lesser sigmoid articulation and the inner attachment of the annular ligament. Attempts at this motion throw the exposed two-thirds of the long axis of the head against an already tight ligament, making it more tense. Complete pronation is possible, because the short part of the long axis is behind and moves outward against the loose posterior portion of the lateral ligament.

9. Orthopedic Treatment in Hemiplegics of Long Standing. — George R. Elliott and Samuel W. Boorstein say that it has generally been accepted that if a hemiplegic has not improved within a short time he will never improve; but, on the contrary, contractures develop and he becomes a chronic invalid. They report a case which disproves this and indicates that there is no time limit for improvement in hemiplegia. This case further suggests that a patient with hemiplegia should receive proper orthopedic treatments as soon as he regains consciousness. Light massage should be used, and active and passive exercises should be begun early. As soon as the patient is able he should be urged to stand up. Even in old and neglected cases great improvement can be obtained, especially in walking; hence one should work patiently on any hemoplegic who comes under his professional care.

The Lancet.

June 10, 1916.

1. The Chadwick Lectures on Typhus Fever in Serbia. R. O. Moon.
2. Intestinal Disorders Arising from Protozoal Infection. B. R. G. Russell.
3. Lamblia Intestinalis Infections from Gallipoli. Alex. Mills Kennedy and D. D. Rosewarne.
4. Remarks on the Nature and Distribution of the Parasites Observed in the Stools of 1,305 Dysenteric Patients. H. B. Fantham.
5. An Enumerative Study of the Cysts of Giardia (Lamblia) Intestinals in Human Dysenteric Feces. Annie Porter.
6. Spinal Anesthesia: With Reference to Its Use in the Trendelenburg Position and for the Prevention of Shock. H. M. Page and Harold Chapple.
7. Observations on the Treatment of Anaphylaxis. Albert S. Leyton and Helen G. Leyton.
8. Prevention of Fly-breeding in Horse Manure. S. Monckton Copeman.

2. Intestinal Disorders Arising from Protozoal Infection.—B. R. G. Russell reports three cases of infection with *Entameba histolytica* s. *tetragena* and one case with an infection of *Lamblia intestinalis*. The former three cases showed nothing unusual. The fourth case, however, failed to respond to two courses of emetine and a chronic dysentery was established. Alternate views have been advanced to explain this phenomenon, the first an anatomical and the second a biological. It is possible to conceive a few amebic cysts locked up in a fragment of more or less dried intestinal content, perhaps lodged in a crypt, where the emetine cannot gain access. The other possibility is after the analogy of certain trypanosomes, easily killed by a particular organic compound of arsenic, which may after exposure to this drug, under conditions not exactly determined, become insusceptible to the action of this very arsenical compound. This insusceptibility or arsenic fastness becomes a character of the trypanosome through subsequent generations. The ameba of dysentery may in like manner become immune to the action of emetine. In the third case the relapse occurred after long treatment with emetine and the conditions for the establishment of an emetine-fast ameba were present. Fortunately, however, the cause of the relapse did not lie in the presence of a permanently emetine-fast ameba. Hence it seems that the whole question why certain cases relapse demands further research. In conclusion the author states that the problem for the clinical pathologist is to recognize the causative organisms in the stools. Accurate measurements must be made of these by a micrometer eyepiece whose value has been reckoned out for the various objectives by means of a ruler slide. For a study of active amebæ from an acute case of dysentery a warm stage is indispensable. In detecting the encysted forms of *E. histolytica* double-strength iodine solution, as recommended by Dr. Wenyon, has proved of great service. The solution is made up similarly to Gram's solution, only double quantities of iodine and potassium iodine are measured out. The writer gives the technique for a further cytological study and the permanent preservation of interesting specimens.

6. Spinal Anesthesia: With Reference to Its Use in the Trendelenburg Position and for the Prevention of Shock.—H. M. Page and Harold Chapple express the opinion that for all ordinary uncomplicated cases inhalation anesthesia as improved at the present day is still the method of choice, but that there remain many cases in which great advantages may be obtained by the use of spinal anesthesia. The operations in which these advantages may be of special importance are those for acute abdominal conditions, especially if septic in nature; any prolonged abdominal procedure likely to be followed by shock; amputations; operations of the bones of the lower limbs, especially when the patient's vitality is lowered by exhaustion, sepsis, or hemorrhage; and certain genitourinary operations. The writer reports seventy cases in which the patient was placed in the Trendelenburg position after the intrathecal injection. He states that he might have reported many more cases in which the patient was put on a slight incline, with the head lower than the body, without any trouble occurring, but he included only those placed in the Trendelenburg position. When this position is used it is better to combine a general anesthetic with the spinal injection, for the small quantity of ether or chloroform mixture required to keep the patient unconscious when there is no reflex disturbance has no necrotic effect on the tissues and practically has very little effect on the after condition of the patient. The administration of nitrous oxide and oxygen for prolonged periods is quite easy, either after a spinal injection or in conjunction with satisfactory local infiltration with novocaine. In twelve cases in this series, however, no general anesthetic was administered. In three cases there was a partial failure, and more or less deep inhalation anesthesia was required. No patient died on the table or before recovery from paralysis. There was no case of surgical shock in the series. In some cases there was a fall in blood pressure without quickening of the pulse rate, remediable by raising the legs to a level with the rest of the inverted body. Harold Chapple adds a note to this article in which he states that he has been using spinal anesthesia during the past four years in operations on the female pelvic organs and is thoroughly in agreement with the author as to the value of this method. He finds it specially indicated in operations in which great surgical shock is anticipated, as in a Wertheim operation for carcinoma of the cervix. By this method of anesthesia this operation can be safely performed, especially if normal saline be at the same time introduced into the axillæ after the method of Arbuthnot Lane. From the surgeon's point of view the great advantage it affords is in the complete relaxation of the abdominal muscles. Novocaine with adrenalin was used in the majority of the cases, the dose varying from 2½ to 3 c.c.

7. Observations on the Treatment of Anaphylaxis.—Albert S. Leyton and Helen G. Leyton record their experiments on the excised rabbit's heart, and believe that anaphylactic phenomena is mainly due to a toxic com-

bination of horse serum and patient's or animal's serum and that it is dangerous chiefly on account of the effect on the central nervous system and the cardiac muscle. These observations led the writers to investigate some possible remedies or prophylactics. The problem was attached by a modification of the serum so as to eliminate the toxic element, or by treatment of the patient, either before or after the onset of symptoms. Efforts to effect a modification of the serum have thus far been attended with little success. Nevertheless, the treatment of anaphylaxis, at least in the guinea pig, is not entirely hopeless, if due preparation is made. Rosenau and Anderson state that untreated guinea-pigs never recover if the anaphylactic condition has proceeded to the convulsive stage. This has also been the experience of the writers but they have found, in addition, that the injection of alcohol or of spirit of camphor has in some cases averted death even after convulsions have begun. Inasmuch as the nervous element is almost certainly involved in anaphylaxis, they have tried certain drugs alone and in combination, acting both centrally and peripherally on the nervous system. The drugs which they have successfully used in averting anaphylaxis in a large percentage of instances are hyoscine, scopolamine, morphine, and atropine. In combination both hyoscine and scopalomine have a distinct influence in preventing anaphylactic shock, but only hyoscine will do so by itself. This the observers atribute to the more central action of the hyoscine. Morphine and atropine by themselves do not possess any noteworthy protective power, but appear to counteract the dangerous properties of hyoscine. In concluding, the writers strongly recommend the use of hyoscine previous to the injection of serum for a second time in any case in which the interval since the previous injection has exceeded one week.

British Medical Journal.

June 10, 1916.

1. Notes on Military Orthopedics. On Malunited and Ununited Fractures. Lieutenant-Colonel Robert Jones.
2. Observations on Spirocheta Eurygyrata, as Found in Human Feces. H. B. Fantham.
3. Perforating and Penetrating Wounds of the Chest with Severe Hemorrhage: A Suggestion for Treatment. A. Don.
4. A Suction or Vacuum Bougie for the Treatment of Chronic Gonorrhea. Captain A. Cambell.

2. Observations on Spirochaeta Eurygyrata, as Found in Human Feces.—H. B. Fantham, in examining the feces of soldiers who had contracted various forms of dysentary or diarrhea in Gallipoli or Flanders, found 23 cases of single infection with spirochetes within three months. He found that the spirochetes were seen to be more numerous in a preparation and to occur more frequently in stools if dark-ground illumination is used. Also if stained smears of stools are made, many more infections will be found, perhaps in as many as 50 per cent. of the cases. The same spirochetes were found in the stools of some apparently healthy persons. The organism, which has pointed ends, measures from three to fifteen microns in length and about 0.25 of a micron in breadth. The so-called spirilla mentioned by some of the earlier workers as occurring occasionally in cholera motions are included under the name *Spirochæta eurygyrata*. The number of coils in a spirocheta is not a specific character but is variable, and is primarily an index of the rate of motion, being also partially dependent upon the rate of thickness of the organism.

3. Perforating and Penetrating Wounds of the Chest with Severe Hemorrhage. — A. Don offers a method of treatment for this class of wounds which he thinks is worthy of trial by surgeons at the front. He says the severer cases almost all die of hemorrhage within the first few hours, and so far there has been little attempt to check this mortality. A study of the mechanism and physics of respiration show that the suction in the pleural cavity is exerted strongly from the commencement of the act of inspiration to that of expiration, and more feebly during the whole expiration. A bleeding point thus has a suction pump applied to its open rent and a clot is prevented from forming. The same process takes place throughout the lung tissue and there is added the elasticity of the lung tissue itself which pulls apart and keeps open any rent. To overcome both the suction and the elastic forces and to allow the lung a complete rest until hemorrhage has been arrested the idea occurred to the writer of making a temporary opening into the pleural cavity, allowing the lung to contract quickly, and, if necessary, washing out the blood clot. In most of the cases of chest wounds, especially from shells, the hemothorax has later become septic and death from empyema has supervened. This infection of the blood clot is almost certain to occur. The risk, then, of causing by operation an infection which would not otherwise occur is almost infinitesimal, and on all grounds this suggestion wisely used in selected cases seems sound. In the only case in which the writer has done this operation great relief was experienced in breathing; there was a marked diminution of pain and, though the hemorrhage could not be said to have been severe, it was still going on and stopped quickly after the operation. The operation may be done under a general or a local anesthetic, and in any of the usual sites for empyema, preferably the mid-axillary line. Percussion localized the hemothorax and a stab is made with a scalpel through the intercostal space, close to the lower rib. Even if the point of the scalpel wounds the lung, which is most unlikely, the consequence is negligible. The knife is then withdrawn and the center piece of a tracheotomy tube put in. If air has not entered it will now do so, with a hissing noise, and the blood will be coughed up. The whole operation does not occupy a minute and the tube may be removed after twenty-four or forty-eight hours. The patient upon whom this operation was performed went to the base hospital on the third day in quite fit condition.

Statistics of Death Due to Childbirth.—Zinke states that during the past fifty years Germany has lost 400,000 women from puerperal causes, while in the United States, during the same period, the loss is estimated at 1,000,000. During the past forty-five years our population has increased by 40,000,000, while in Germany the increase is about one-half this figure. With a like increase in population during the next fifty years, the death rate from puerperal affections remaining unchanged, the mortality will be appalling and the morbidity is computed now at three or four times the mortality. To show how much of this is really preventable, we only have to bear in mind the absence of mortality in well-conducted maternities when all conditions can be controlled.—*Bulletin of the Lying-In Hospital of New York.*

Contraindications to the Karell Diet.—E. H. Goodman states that there are cases which do not respond to this restricted milk diet, in which the latter is no longer recommended. Patients exhibiting symptoms of uremia should not be put on the Karell regimen, since the latter restricts to a minimum the intake of fluids. It has been shown by Senator and others that in a uremic crisis the fluid intake should be greatly augmented for the purpose of flooding from the system the unknown toxic substance or substances believed to be the causative factor in uremia. Wittich states that the Karell cure in two cases of uremia left him absolutely in the lurch, and the patients were made materially worse. The treatment of such individuals should be that well known to all practitioners of medicine, and the Karell regimen has no place whatever in the management of such cases.—*Archives of Internal Medicine.*

Insurance Medicine.

Cooperation of Medical Director and Local Examiner.—Dr. B. L. Jenkins read a paper before the Section on Life Insurance, State Medical Association of Texas, on this subject. In the course of his remarks he pointed out that the duty of the local examiner is not alone to the company: the applicant also has rights to be considered. So accurately have mortality statistics been calculated, correlated and tabulated, that the expectant period of life, at all ages, and under all the varied conditions and environments, has been reduced mathematically to hours. This being true, all or practically all men and women are entitled to life insurance of some form at some rate. To accurately arrive at just what that form and that rate should be, the local examiner should be able, and it should be his purpose, to furnish to the medical director a pen picture, with the perfectness of the artist's brush, not alone the physical finding and measurements resulting from a careful, painstaking, and competent examination, but the habits, environment and life of the applicant. After such a picture has been transmitted to the medical director, and he has carefully reviewed it from its every angle and studied its every phase, as the art critic should, if in any doubt about any point it is his duty, not only to the company but to the examined and the applicant, and it should be his invariable rule and custom, to at once confer with the examined in an effort to gain more complete information. Or if he does not concur in the recommendation of the examiner, he should at once confer with him, giving specific reasons for such non-concurrence.

A local examiner who would not truly paint is unworthy; and the medical director who fails at any time in dealing frankly and freely with his local examiner is a misfit in the position he occupies.—*Texas State Journal of Medicine.*

Diseases of the Circulatory and Hematopoietic Systems in Relation to Obesity.—In a paper on disease in relation to obesity, Dr. F. Parkes Webber said that it was well known that many obese persons had slight edema about the ankles when they were up and had not been recently lying down. In most cases he believed the edema was not a sign of particularly bad prognostic significance. Occasionally, however, it rapidly increased and became associated with shortness of breath on exertion, out of all proportion to the obesity. It then might constitute an early sign of cardiac failure. Especially was this to be feared in persons who had been formerly addicted to excess use of beer and alcoholic drinks, even when by auscultation of the heart no murmur of valvular disease could be discovered. In such cases signs of so-called "myocarditis" might suddenly arise, accompanied by the characteristic "irregular inequality" of auricular fibrillation. In other cases the slight edema in question might be due partly to varicose veins, and it was only the varicose veins that had to be considered in regard to the assurance. Occasionally a plethoric type of obesity might to some extent mask the presence of arteriosclerosis and commencing aneurysm of the aorta. Symptoms such as shortness of breath and thoracic discomfort might at first be wrongly attributed to the obesity, but more exact examination would probably reveal quickly the complicating disease. In very rare cases in pasty, obese individuals, pallor and slight edema might be due to some hematopoietic disorder, or, for instance, to pernicious anemia or to an atypical form of leucemia.—*The Assurance Medical Society of London.*

"Accident"—Anticipated Consequences.—In an action on an accident indemnity policy it appeared that the insured had been out horseback riding, and, coming home, took a cold plunge, as he had frequently done before, the shock of which cause an acute dilatation of his heart for 29 weeks. The insured had been a well and active man, and had no organic trouble with his heart. The plaintiff recovered a verdict and judgment in the trial court, which was reversed on appeal. "It can hardly be asserted," the court said, "that the act of voluntarily entering a bathtub filled with cold water is an accident. If some one had pushed the insured into a tub so filled, or, for that matter, into a pond of cold water, and the results had followed which ensued when he voluntarily committed his body to the water, then the act would have been an accident in the ordinary acceptation of the term. It is not an accident for which an insurance company would be liable if one so insured, while in a state of lively perspiration, stand before an open window, take cold, and die; nor if, by some gross immoderation in eating, acute indigestion be occasioned, and heart failure result; nor yet if in taking a dose of strychnine, aware of its poisonous nature and knowing that in certain sized doses it is a heart stimulant, and not deadly, but mistaking the effect of a given quantity, death ensues. It is urged that heart dilatation is not usually attendant on the taking of a cold bath. When it does occur, it is unexpected, unusual, and unforeseen, and therefore an accident. Undoubtedly an accident, in both its technical and commonly accepted meaning, is an event which occurs without one's foresight or expectation and wholly undesigned; yet it is not true that every unusual, unforeseen, and unexpected event is an accident within the true meaning of the term as used in insurance policies. * * * In this particular instance the weakened heart failed to do its work properly; the sudden contraction of the surface blood vessels must have necessarily and correspondingly increased the blood pressure, thus throwing an additional burden on the heart. It failed to respond to the work of propelling the blood over the body, and acute dilatation occurred. * * * The court is constrained to hold that the result which followed the taking of the bath by the insured was not an accident upon which recovery can be had under the wording of the policy (which insured against bodily injuries effected solely and exclusively by external, violent, and accidental means). A case is cited where recovery was had by reason of a ruptured blood vessel occasioned by the mere lifting one's self naturally out of a chair. It is felt by this court that in such a case, as in the case at bar, such a conclusion would be unduly pressing the construction of the language universally employed in naked accident policies. It would amount to an unfair and unjust enlargement of the company's liability and would convert accident companies into both sick-beneficial and life insurance companies; and, worse than this, the apparent vice of it is that, if countenanced, it would inevitably result in the necessity of requiring constantly increasing premiums from the vast multitude of the laboring classes as well as people of moderate means who chiefly buy this character of insurance."—New Amsterdam Casualty Co. v. Johnson, 91 Ohio St. Rep. 155, 110 N. E. 475.

Book Reviews.

El Problema de la Meningitis. Por el Dr. César Juarros, Medico primero de Sanidad Militar, Professor de Psiquiatria del Instituto español criminológico, Jefe de la Consulta de enfermedades nerviosas del tercer Dispensario de la Cruz Roja; Professor agregado del Instituto de Medicina legal. Price, 4 pesetas. Madrid: Hijos de Reus, 1915.

Those who are interested in the subject of meningitis and who are able to read the Spanish language will find this volume a valuable digest of the latest knowledge of the various affections of the meninges. This knowledge has grown rapidly during the past few years, chiefly through the contributions of French clinicians. The author has made a thorough survey of the literature of meningitis and has succeeded in presenting an epitome of it in a form that is no less interesting than instructive. Chapter I deals with lumbar puncture and ventricular puncture; Chapter II, with the symptomatology of meningitis; Chapters III and IV with laboratory data; Chapter V, with tuberculous meningitis; Chapter VI, with meningococcus meningitis, and Chapter VII, with syphilitic meningitis, and the types of meningitis caused by the pneumococcus, the typhoid and influenza bacilli, the gonococcus, the streptococcus and other microorganisms, and the meningitis associated with parotitis. In Chapter VIII there is discussed the so-called toxic meningitis, including the uremic and serous, and those caused by salvarsan and carbon monoxide. The types of meningitis of difficult classification are described in Chapter IX: these types are the otitic and traumatic meningitides, and the meningitis associated with zona, insolation, Pott's disease, cysticercus, and trichinosis. The meningeal reactions are dealt with in Chapter X. The author believes that the term meningism should be discarded, for in all cases in which the meningeal syndrome is present he believes there are distinct pathological changes in the meninges. Chapter XI deals with the localized types of meningitis: the spinal and the cerebral. A most important topic constitutes the subject-matter of the following chapter, namely, the meningeal hemorrhages, the various types of which may be differentiated by an examination of the cerebrospinal fluid. The treatment of meningitis is exhaustively discussed in Chapters XIII and XIV. Various important points are summarized in Chapter XV, and Chapter XVI deals with meningococcus meningitis as it has been observed in Spain. An idea of the thorough manner in which the author has elaborated his theme may be gleaned by noting the subdivisions of the type of meningococcus meningitis as observed in the newborn. The following varieties are mentioned: the typical, the abortive, the prolonged, the fulminant, the hypersthenic, the posterior basilar, the tetanic, the type accompanied by paralysis of the neck muscles, and the uremic. The book on the whole is one of the most important contributions that have been made within recent years to the literature of meningitis, a contribution out of all proportion to the modest size of the volume.

A Handbook of Colloid Chemistry. The recognition of colloids, the theory of colloids, and their general physicochemical properties. By Dr. Wolfgang Ostwald, privatdozent in the University of Leipzig. First English edition translated from the third German edition by Dr. Martin H. Fischer, professor of physiology in the University of Cincinnati, with the assistance of Ralph E. Oesper, Ph.D., instructor in chemistry, New York University, and Louis Berman, M.D., staff physician, Mount Sinai Hospital, New York. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co.

The first part of Wolfgang Ostwald's textbook on colloidal chemistry has passed through a number of editions in German, and has been generally accepted as a standard presentation of the physics and chemistry of bodies whose surfaces are very large in proportion to their other dimensions. Unfortunately, the second part has never appeared, and it is to be regretted that the translators of the present volume have not deleted references to this proposed continuation, as on pages 39 and 82. In some instances, also, as at the bottom of page 28 and the end of the second paragraph on page 158, the statement is made that a matter will be discussed in detail later; as the details are not to be found in this volume in connection with some of these references, it is to be presumed that they refer to the unpublished volume. The only other errors noted are the use of "exterpolations" for "extrapolations" on page 58, and the inclusion on page 98 without criticism of some highly improbable statements on the increased radioactivity of substances in colloidal form. If there is anything we know about radioactive substances it is that they are not influenced in their energy emission by any physical or chemical means at our disposal. These minor defects, however, in no way diminish our obligations to Dr. Fischer and his collaborators in the production of a very admirable translation of an extremely valuable book. While the results of the study of colloidal chemistry are important in commercial life, applying to many processes of manufacture, especially dyeing, they are also fundamental in many biological reactions, as substances of large molecular weight, such as proteins, soaps, and some of the carbohydrates of the body are subject to mechanical laws which govern colloidal suspensions. It is generally held, also, that the reactions between the various antibodies and antigens are best explained by supposing that their condition is colloidal. While the details are highly technical, the physician will find much of interest in this volume, for there is no question that in the future a much fuller use of the methods of analysis here presented will be made in physiology and pathology. At the present time the science is not advanced sufficiently far to result in important practical applications to medicine, though general biology has greatly benefited.

Principles and Practice of Physical Diagnosis. By John C. DaCosta, Jr., M.D., Assistant Professor of Medicine, Jefferson Medical College, Philadelphia. Third edition, thoroughly revised. With 243 original illustrations. Price, $3.50. Philadelphia and London: W. B. Saunders Company, 1915.

Though progress in diagnosis has of recent years been effected rather through developments in laboratory procedures than by innovations in the methods of immediate examination of the patient, still in this field, as in all other departments of medicine, there have been advances of some importance. Accordingly there has been no lack of new material to incorporate in the third edition of this most excellent treatise on physical diagnosis. Electrocardiography naturally is one of the most important of the added subjects and is discussed clearly and explicitly, with its practical applications indicated as far as present knowledge permits. Radiography in gastroenterological diagnosis and also in the study of thoracic disorders receives much new space, as well as the recent lore in regard to cardiac irregularities, auricular flutter, fibrillation, etc. Especial attention must be called to the very numerous and unusually useful illustrations which form so vital a part of any book on physical diagnosis and are particularly well chosen in the present admirable volume.

A Treatise on Medical Practice Based on the Principles and Therapeutic Applications of the Physical Modes and Methods of Treatment. By Otto Juettner, A.M., Sc.M., Ph.D., M.D. Price, $5. New York: A. L. Chatterton Co., 1916.

This is a one-man cyclopedia, the matter being arranged alphabetically. From the numerous affiliations of the author, which are too many to reproduce, we gather that he is well qualified to write on the physical and dietetic treatment of disease. But it is strange to find a reference work comprising such subjects as radiography, electrotherapeutics, Swedish movements, etc., without a single illustration! And this, too, in an era when pictures seem to count for more than text.

Manual Practico de Anestesia (General, Local, Regional y Raquidea), por J. Blumfeld, M.D., Cantab, Primer, Anestesiador del Hospital de San Jorge y Profesor de Anestesia del de Santa Maria en Londres. Traducido directamente de la tercera edicion inglesa y completado con un apéndice por D. Julio Optega, Doctor on Medicina. Prólogo del Dr. D. Juan Bravo Coronado Cirujano de numero de la Beneficencia provincial. Price, 3.50 pesetas. Madrid: Hijos de Reus, 1914.

This work is a translation of the third edition (1912) of Blumfeld's "Anesthetics: A Practical Handbook." The translator has added some text on somnoform and liquor somniferus, which substances appear to be in favor in Spanish and Portuguese speaking countries; also on intravenous and conduction anesthesia. A brief critical summary completes the text.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW JERSEY.

One Hundred and Fiftieth Annual Meeting, Held in Asbury Park, June 20, 21 and 22, 1916.

(Special Report to the MEDICAL RECORD.)

Tuesday, June 20—First Day.

THE PRESIDENT, DR. WILLIAM J. CHANDLER OF SOUTH ORANGE IN THE CHAIR.

House of Delegates.—After the call to order by the President, the presentation of credentials by the delegates, and the adoption of the minutes of the last meeting the following reports were presented.

Report of the Recording Secretary.—Dr. THOMAS N. GRAY of South Orange presented this report, which showed that the membership of the Society on June 1, 1915, was 1,649; that there had been a gain of 187 new members; that after deducting the losses occasioned by death, resignation, and failure to pay dues there was a net gain of 51 members, making the membership at the present time 1,700.

Report of Committee on Publication.—Dr. AUGUST A. STRASSER of Arlington reported for this committee. He stated that for the first time in the history of the State Journal it had shown a profit, a little over seven dollars. This was small indeed, but it held much that was promising for the future. They had found that co-operation with the Advertising Bureau of the American Medical Association had been greatly to their advantage. Their advertisements were all ethical and they recommended that when members could conveniently do so they patronize those who had contributed by their advertisements to the financial success of the Journal. It should be remembered that medical defense in malpractice suits was only given to subscribers to the Journal. The July, August, and September numbers of the Journal would be of special value and would constitute a memorial of the One Hunderd and Fiftieth Anniversary of the Society.

Report of Committee on Legislation.—Dr. HENRY B. COSTILL of Trenton presented this report in which he cited the principal measures which had come before the Legislature during its past session which affected the welfare of the medical profession. Among these were bills aiming to relieve the physician of his obligation to guard professional secrets on the witness stand, and bills legalizing the practice of osteopathy and chiropractique. All of these bills were defeated, the osteopathy bill not before it had passed the lower House and the chiropractique bill not until after it had passed both Houses of the Legislature. This committee urged stronger co-operation on the part of the county societies in the efforts to influence legislation affecting the practice of medicine and public health. In view of the amount of time that was required of those who attended hearings at Trenton it was recommended that a tax of one dollar be levied on every member of the Society to defray the expenses of such men as should be chosen to assist the Legislative Committee of the State Society. It was pointed out that the members of the county societies frequently could exert greater influence on the assemblymen and representatives from their localities than could be brought to bear at Trenton by physicians who were unknown to the assemblymen.

A lengthy discussion on these recommendations emphasized the need of sending men before the State Legislature who were familiar with the problems of the medical profession and who were able to present their viewpoint in a way that would carry conviction. The various cults when they wished to secure the passage of legislation favorable to their interests hired the best legal talent available to present their side and had their supporters flood the mails of assemblymen with letters urging the special measure in which they were interested. It was further pointed out that the family physician of a representative was in a position in which he could do a great deal to enlighten that representative and to bring a direct influence to bear on him; it was his duty to exert this influence. After a lengthy discussion as to the advisability of levying an additional tax of a dollar on each member this question was referred to the Business Committee for further consideration.

Resolutions on Stream Pollution.—Dr. LUTHER M. HALSEY of Williamstown stated that the New Jersey State Department of Health was in session and has passed resolutions opposing the discharge of partially purified sewage into the streams of the State and that they would like to have the State Medical Society endorse these resolutions. The resolutions were endorsed by the Society, but it was pointed out that it should have specified more definitely what was meant by partially purified sewage.

Report of the Treasurer.—Dr. ARCHIBALD MERCER of Newark presented this report, which showed the finances of the Society in thriving condition, there having been $5,194 in the treasury on January 1, 1916.

Report of Board of Trustees.—Dr. JOHN M. WARD of Trenton presented this report, in which satisfaction was expressed with the reports of the officers. It was announced that Dr. Edward J. Ill of Newark had been appointed Chairman of the Board of Trustees and Dr. David C. English of New Brunswick had been re-elected Editor of the Journal.

Report of Special Committees.—Committee on Standardization of Hospitals.—Dr. JOHN C. MCCOY of Patterson made this report. He stated that this committee had inspected forty-three hospitals in the State of New Jersey. The importance of standardizing hospitals was evident since the Board of Medical Examiners of New Jersey required that every applicant for a license to practice medicine should have had one year's hospital experience. In this inspection notice had been taken of the physical plans of hospitals, the conditions with reference to financial management, and the provisions for the care of patients. A great deal of information had been collected and analyzed. The facts which had most impressed the committee were the lack of uniformity in the essentials of hospital management and the failure in some instances to achieve the main object of the hospitals, the proper care of the patient. The hospital must be judged by its results and many hospitals failed to give value received for the money expended. The statistics of some of the hospitals gave very little information as to the efficiency of hospital management. There was a lack of attention in the medical department to historical data, and the management had failed to require such data. The committee suggested that a blank form should be incorporated and that the use of such forms should be made compulsory and introduced into the annual reports of all hospitals. The reports from the hospitals should give the wages of all employees, the average stay in the hospital of the patients, the average cost of maintenance of each patient, etc. The State Board of Medical Examiners had given their hearty co-operation in this investigation and had assisted the committee in deciding upon the minimum requirements in the way of equipment for a pathological laboratory. It was found that a hospital laboratory could be equipped at a cost of $600. The detail of such equipment was given in the full report. The results of this effort at hospital standardization had been given to the American Medical Association. This organization had congratulated them on their work and had stated that this was the first instance in which a hospital standard had been submitted to them. It was difficult to make the standard as high as it should be at the present time, but with a minimum standard once established the standard could gradually be raised. This investigation had also shown them that co-operation between the boards of managers of the different hospitals, if it could be brought about, would offer great economic advantages.

Report of the Judicial Council.—Dr. WILLIAM H. ISZARD of Camden presented this report, in which he emphasized the advantages of medical defense and cited a number of cases which had come up during the past year. In several instances the mere fact that the physician against whom action was brought applied for medical defense was sufficient to bring about a withdrawal of the case.

Report of Committee on Economics.—Owing to the death of the chairman of this committee, Dr. Frank N. Gray of Jersey City, one of the members of the committee presented this report. This report stated that it had been conservatively estimated that the illegal practice of medicine cost the people of the State of New Jersey $7,000,000 annually. It had also been estimated that the illegal practice of medicine cost the people of the United States $400,000,000 annually. There was a book published called "The Druggist's Manual," which contained 2,800 prescriptions, of which 1,400 were so-called "cures." With such a state of affairs it was not to be wondered at that the members of the Society would not stand a further tax of one dollar a year.

Report of Committee on Tuberculosis in Childhood.—Dr. GORDON K. DICKINSON of Jersey City presented this report, which embodied the results of the work of a special committee appointed by the Society to investigate the prevalence of tuberculosis in children and to make suggestions. This report emphasized the well-known fact that infection with tuberculosis in childhood was responsible for the large majority of cases of tuberculosis in adults. Future generations would wonder why, when we possessed this information, we had not acted upon it in such a way as to control this disease. This committee recommended that resolutions be passed to the effect that the State Board of Health be called upon to look to the sanitary condition of the schools in regard to the prevention of tuberculosis; this meant open air, not open window, schools, for tuberculous and anemic children. It was further recommended that the influence of this Society be brought to bear on legislative bodies in order that sanatoria or preventoria might be established for the care of tuberculous children. This action was urged as a fitting memorial of the One Hundred and Fiftieth Anniversary of the Society.

Election of Honorary Members.—The following were elected honorary members of the Medical Society of the State of New Jersey: Dr. J. K. Mills of Philadelphia, Dr. Hugh Cabot of Boston, Dr. George W. Crile of Cleveland, and Dr. James B. Deaver of Philadelphia.

Report of Publicity Committee.—Dr. JAMES HUNTER, Jr., of Westville made this report. He stated that inasmuch as the general public were showing great interest in matters pertaining to public health and inasmuch as the newspapers published articles on these subjects which were incorrect and misleading, they had selected 125 papers and had sought to co-operate with the editors in the publication of suitable articles. Seven such articles had been prepared and published without the names of their authors in a considerable number of newspapers. Later inquiry was made as to how they had been received; the replies received showed that the newspapers would be glad to continue to print articles of this kind provided they were short, were on subjects of general interest, and preferably, if possible, had some local coloring.

Report of Business Committee.—Dr. THERON T. SUTPHEN of Newark reported for this committee, to which the reports had been referred for consideration. The committee approved the recommendations made by the Committee on Tuberculosis in Childhood. The recommendations of the Legislative Committee were referred to the house for decisive action. After long discussion it was decided to leave the matter of paying the expenses of delegates sent to appear before the Legislature to the county societies. The resolutions presented by the Women's Christian Temperance Union asking that the Society endorse resolutions calling attention to the harmful effects of alcoholic beverages and to the growing disuse of alcohol as a therapeutic remedy by members of the medical profession. This resolution was then referred to the Committee on Public Health for further consideration. With reference to the subject of prize essays, the committee recommended that the Trustees be empowered hereafter to choose a subject, since no essay had been presented under the present way of allowing anyone to choose his own subject. The House of Delegates had been asked to endorse a resolution recommending the reporting of venereal diseases. In the opinion of the committee this was a matter that should be left to boards of health under present conditions.

The House of Delegates acted in accordance with the suggestions of the Business Committee on these matters.

GENERAL SESSIONS.

Tuesday, June 20—First Day

Invocation.—Rev. A. E. BALLARD of Ocean Grove made this invocation.

Address of Welcome.—Mayor C. E. F. HETRICK made a brief address welcoming the Society to Asbury Park.

Indications for Surgery.—Dr. EDWARD J. ILL of Newark made this address. He said that a foreign surgeon visiting this country had expressed his admiration of the technical qualifications of American surgeons, but regretted that about 50 per cent. of the cases were operated upon without indications. If the object of surgery was to get rid of a diseased organ, or organs, or tissues which gave the patient no inconvenience, if it was for the purpose of getting a rare or interesting specimen, if it was for the purpose of doing an operation, if it was for an imaginary danger to the patient, or, though one hesitated to say it, if it was for the exaction of a fee, it should not be done. Operation should be considered only when it was necessary to save the patient from a real or impending danger or to restore him to health, that was, to remove certain symptoms which incapacitated him from enjoying life and which interfered with his usefulness as a member of society. In the former instance the indication was absolute; in the latter the choice should be left to the patient. Indications for operations must never be based on laboratory or *x*-ray findings, though these might be of incalculable value as corroborative evidence. These were no longer the days when one said the patient had recovered from the operation; the question now was "Will he be well and free from symptoms?" With a good surgeon at hand it might be well to err on the safe side and operate; with a poor surgeon it was better to take one's chances with nature. Among the diseases calling for prompt surgical interference were perforation of the intestinal, biliary, urinary tract, or intestinal obstruction. The lower down in the intestinal tract the perforation had taken place the more urgent the indication for operation. Nowhere was this more forcibly illustrated than in cases of intussusception in children. No condition of the kidney except fracture or wound called for immediate attention. Other operations on the kidney should be done only after careful estimation of the functional capacity of the kidney by laboratory methods. Deliberate and time taking consideration should precede all stomach, intestinal, and intra-pelvic operations. The essayist protested against the removal of ovaries containing small cysts due to simple thickening of the albugenia or simple adherent or displaced ovaries. All ovarian neoplasms, however, he believed should be removed. Fibroids of the uterus should be removed only for good and sufficient reasons. In over five hundred operations on fibroids he had never seen an instance of malignant degeneration. Acute simple inflammatory or suppurating diseases of the genital tract rarely needed operation. Cesarean section in many instances of abnormal labor had become the least mutilating and the safest of any obstetrical operation. Labor should never be induced before term for the convenience of the patient, the nurse, or the doctor, but only with all the indications and care of a major operation.

Education of the Nurse.—Dr. GORDON K. DICKINSON of Jersey City presented this paper, in which he stated that an increasing number of well-educated young women had entered the profession of nursing with the result that they had idealized the profession, and as a consequence the nursing profession had exerted an influence on hospitals, allied institutions, and legislatures. Laws had been enacted which affected more or less severely the source from which the nurses were acquired. The work of the nurse in general practice was uncertain, irregular, and sometimes very tiring; this together with the high standard of educational requirement afforded the reason for the small number of girls applying to the training schools. An investigation of twenty-two hospital superintendents, seventeen physicians, and seven nurses showed that the large majority felt that the present demands were not exorbitant, that they should be lived up to, and that the present condition did not warrant change. The time had come for a reconsideration of the whole matter. The question arose as to whether it was fair to the applicant who came to the hospital to be trained to use her as much as she was used for the convenience of the institution and to neglect so largely the bedside training. Too often the nurse's training was left to a subordinate nurse, while those paid for that purpose were seldom seen at the bedside. Gross errors were too often controlled by severe discipline instead of being remedied by precept and example. The essayist, in closing, requested that the Society should appoint a committee to investigate the methods of instruction and training in the training schools of the State, the principles underlying hospital training schools, to consult with the nurses who had graduated and those who were in training, and to report at the next annual meeting as to whether the present method of training nurses was the most satisfactory, or whether it would not be more wise to take the young woman from the grammar school, give her two years intensive training at the bedside, supplemented by book instruction, and then with hospitals standardized, to inquire whether a diploma from such an institution would not be sufficient without compelling a second examination at Trenton. It must be remembered that nurses were needed for homes, and for physicians, and surgeons in their general practice, and that preparation for

higher positions might be left to a post-graduate course.

Dr. Edward J. Ill of Newark said he agreed with much that Dr. Dickinson had said. The average life of active service for a nurse was about ten years. If for this ten years she spent three years of preparation in a hospital one need not look long for the cause of the diminishing supply. A nurse could learn all she need know in two years. An instance had come to his attention in one institution where ten lectures were given the nurses on the care of special accidents and eight on scarlet fever. Dr. Ill thought he could tell a nurse all she would need to know about scarlet fever in fifteen minutes.

President's Address.—Dr. William J. Chandler of South Orange delivered this address in which he reviewed the history of the Medical Society of the State of New Jersey. He said, in part, that compared with the zone of time since the crust of this sphere began to harden or from the earliest signs of animal life, one hundred and fifty years seemed like a mere point in the cycle of time, but to us, living from day to day and from year to year, it seemed quite venerable and in this latter conception they had met to celebrate the sesquicentennial of the Medical Society of the State of New Jersey, the oldest medical society in this country. Conditions of life in 1776, when New Jersey was a province in the colonial possession of Great Britain, were quite different from what they were to-day. The geographical boundaries of New Jersey were at that time coterminous with those of to-day. The early settlers settled along the Hudson and Delaware rivers while between these streams lay dense forests of the oak and cypress so that communication between East Jersey and West Jersey was difficult. There were also essential differences in the characteristics of the people. In the east the doctrine of John Calvin prevailed; in the west the Quakers largely predominated. In those days it took more days to make the journey from Philadelphia to New York than it took hours at the present time. The physician of 1776 relied upon his horse and saddle and took not the road but the trail through the forest, fording rivers and streams, and thus travel was only possible during daylight. Danger beset him from bandits, horse thieves, and Indians. The country was overrun with itinerant doctors, mountebanks, fakirs, natural bonesetters, etc. French and English military establishments brought with them educated physicians, and young men of this country either studied with them or went abroad to receive academic or medical training. Many clergymen took medical courses so that they could minister to the body as well as the spiritual needs of the people. The first president of the society was the Rev. Robert McKean of Amboy. He came to this country as a missionary from the Society for the Propagation of the Gospel in Foreign Parts. On his tombstone was inscribed the following: "An unshaken friend, an agreeable companion, a rational divine, a skillful physician, and in every relation of life an honest man." A number of physicians devised a plan for bringing together all the physicians of the province into a society. An advertisement asking them to assemble was placed in the New York *Mercury* calling the meeting for June 27, 1766, in New Brunswick. One of the early and important matters that came before the society was the arrangement of a suitable fee bill for medical and surgical services. Those fees were small in comparison with the fees of the present day, but it was to be remembered money had a greater purchasing power at that time and the doctor furnished medicine and blisters, cups, bleeding, enemata, etc., for all of which he charged extra. The fee for an ordinary visit was one shilling sixpence, and about one shilling a mile for mileage; above fifteen miles it was one shilling sixpence per mile, and above twenty-five miles two shillings. Consultations were fifteen shillings; phlebotomy, one and sixpence; extracting a tooth, one and sixpence; amputating an arm, three pounds; delivery in natural labor, one pound and a half. In conformity with the provisions of the constitution local or "inferior" societies were at once established which were to meet every two months and were to report their proceedings to the General Society at its semiannual meetings. The second meeting of the society was held in Elizabethtown, November 4, 1766. At this meeting Dr. Kean reported a recipe given to him by Dr. Ayres of Newport, R. I., of which the main ingredient was powdered glass. In order to be effective this was to be administered in quantities sufficient to cause violent pain in the stomach and contractions of the extremities. After discussing this remedy the consensus of opinion was that they could not rely too much on this new remedy until they knew something more about it. It was not to be expected that a society having as its object "the advancement of medical science, the elevation of professional character, and the rendering of efficient service to mankind" could be established in a community full of professional jealousies and overrun with irregular practitioners without arousing antagonism. Considerable opposition was encountered and the society finally published its legal instruments in the lay papers and explained its purposes. The fee bill was a constant bone of contention and it was years before one was evolved satisfactory to the members of the society. At the third meeting of the society the subject of medical education was taken up. The society agreed that for the advantage of youth and the honor of the art of medicine no man should be taken as an apprentice who was not competent in Latin and did not have some knowledge of Greek, and no man could take less than four years preparation as an apprentice and one year in some school of medicine in this country or abroad. This work of raising the standard of medical education had been going on ever since and allied with it had been the labor of endeavoring to suppress quackery and all forms of irregular practice. This work would be continued until the laws of New Jersey were inferior to none and applied alike to every practitioner of medicine in this State with justice and equality. The meetings of the society were interrupted during the Revolutionary War, not enough members having been left in their homes to hold a meeting. They gave their services and their lives freely for their country at that time. Meetings were convened in 1781 and in 1783 application was made for a charter of incorporation or such other act as might seem proper to regulate and restrain the practice of medicine and surgery in the State. There seemed to have been some difficulty in getting what they wanted for the charter was not issued until 1793, fifty-two names appearing as incorporators. This charter expired by limitations in 1815. The new charter obtained in 1816 provided for the establishment of a district society in every county and placed the control of the State society under the control of fifteen managers. This arrangement was not satisfactory and in 1818 a supplement was passed making the State society to be composed of four delegates from each of the district societies. The officers of the State society were ex-officio members and the ex-presidents were ranked as fellows and given the rights and privileges of delegated members. The society was conducted on practically the same basis to-day. The American Medical Association found practically nothing to change in the charter and only a few changes in the phrasing of the constitution and by-laws of the society in order to make them conform to their models for State societies. In 1820 the society established a standing committee which did the work of the present committee on scientific work, the judicial council, the committee on publication, and a large part of the work assigned to the board of trustees. The power of examining candidates for medical practice and the conferring of the degree of doctor of medicine was given to the society in 1816. For many years candidates were examined and licensed to practice medicine by the society. This power as still vested in the society through the State Board of Medical Examiners did the work. Some of the examination papers were still available and showed that certain applicants even in those days did not come up to the standard set. Of this the following was an example: *Question*—"What do you mean by an hour-glass contraction?" Graduate, embarrassed and slow in answering, so the examiner asked: "What would you do in a case of hour-glass contraction?" *Answer*—"I would pass a wire." The following was another example: *Question*—"What causes the secretion from the bronchial tubes?" Embarrassed student did not answer. *Question*—"What do you mean by expectoration?" *Answer*—"I can't exactly tell." *Question*—"What would you prescribe as an expectotant?" *Answer*—"James' expectorant; it always works well." *Question*—"What are the constituents of James' expectorant?" *Answer*—"I do not know; he won't tell." These applicants were not granted a degree. Of the recent changes in the constitution and by-laws of the society two were worthy of passing attention, the establishment of permanent delegates and the enrollment of all active members of county societies as associate delegates of the State society. This plan had worked greatly to the advantage of both the State and the county societies. Dr. Chandler said he regretted that time would not permit him to review all the activities

which the society had engaged in for the benefit of the medical profession and for the state at large, such as the institution of insane asylums, founding a relief fund for physicians, prize essays, the *State Journal*, etc.

Oration in Surgery.—Professor JOHN G. CLARKE of Philadelphia delivered this address which he prefaced with a quotation from Samuel Sharpe's treatise on "The Operations of Surgery," published in 1758. He said with reference to the removal of the breast for cancer: "The success of the operation is exceedingly precarious from the great disposition there is in the constitution after an amputation to form a new cancer in the wound, or in some other part of the body. When a scirrhus had admitted a long relay before operation the patient seems to have a better prospect of cure without danger of relapse than when it has increased very fast and with acute pain." When it was realized that it had been one hundred and fifty years since these lines had been printed and took into consideration the widespread skepticism as to the benefits accruing from the surgical extirpation of cancerous growths among many physicians and laymen, one realized most vividly that small progress had been made in the great majority of cases. Little was known of the exact etiology of cancer. Nothing thus far had been accomplished in preventing it and each decade witnessed a steady increase. Each year the number of deaths from cancer in the United States approximated 75,000 and in the civilized world 500,000. All we had to pin our hope on at the present time was the motto of the American Society for the Prevention of Cancer, "In the early recognition and treatment of cancer lies the only hope of cure." The layman must be taught that cancerous growths in no part of the body were painful in the earlier stages and therefore a lump in the breast or abdomen, a small ulcer on the tip of the tongue, or cheek, or on the cervix, was the one condition which should have immediate attention on the part of a competent physician. Any ulcer that did not heal had cancer potentialities. Usually when the patient was stricken with cancer of so advanced degree that there was persistent pain, and when emaciation and a bad sallow color were present, she had passed the possibility of cure. Two fallacies of former years had been cast into the waste basket; first, that cancer was a general blood disease, and second, that it was of hereditary origin. Agnew, in what proved to be his valedictory address (for he died a few months later) given before the speaker's class of the University of Pennsylvania twenty-five years ago, said he could not count one single cure following the removal of the breast in his many years of surgical practice. Since that time methods had so far improved that skillful surgeons of the present era confidently count 30 to 50 per cent. of permanent cures from thorough removal of the disease by radical operation. So long as the theories of former days were held the surgeon could soothe his feelings of professional inadequacy by the theory of incurability. That day had passed and soon the laity would hold the physician to as strict accountability who allowed a patient to drift beyond the safety zone in cancer as they did now when the agonizing pain of appendicitis was falsely diagnosed as acute indigestion or ptomaine poisoning. The essayist stated that in his twenty years' experience he had found nothing to convince him that cancer had an hereditary tendency. A study of all the combined statistics showed that cancer was a disease of middle life, occurring between forty and fifty years of age, and therefore women in the critical period of their lives should be especially alert to bring to the attention of their physicians any decided change in the way of excess. Childs of England had well pointed out the danger signals of cancer. (1) A small lump or thickening of any kind in a woman over thirty-five years of age was a starting point of cancer in 90 per cent. of the cases and the finding of a lump in the breast should be followed by its immediate removal. (2) The danger signal in cancer of the uterus was irregular bleeding, especially after the menopause. (3) The danger signal in cancer of the lip, mouth, or tongue, or skin was a wart or sore that would not heal. (4) In cancer of the stomach and intestines the danger signal was not so apparent; obstinate, persistent diarrhea, vomiting or the passage of blood were danger signals that should be heeded at once. In speaking of cancer of the uterus, Dr. Clarke said that in less than two years he had treated forty-nine cases of inoperable cancer of the uterus with radium and during the same period only twelve cases had been considered as within the radical operative limit. During the preceding ten years about sixty radical operations were performed. Although radical operation had given the best ultimate statistics the primary death rate was unavoidably high and serious operative sequelæ occurred. The essayist said they had abandoned extensive glandular dissections because they added to the hazards and did not increase the permanent cures. There was no middle road in cancer of the cervix; the surgeon had better perform a simple vaginal hysterectomy or a high amputation of the cervix with extensive cauterization than to attempt the radical operation if he was not prepared to execute details. If the growth had invaded the parametrium to a point beyond the outer limits of the ureters or if it had found lodgment in the iliac glands the case must, with rare exceptions, be regarded as hopeless so far as surgical extirpation was concerned. In cancer confined to the fundus, recurrence did not take place in more than 50 per cent. of the cases while in cancer of the cervix in only about 30 per cent. of the cases was there no recurrence. The crux of the matter was that surgery should be attempted only in clearly operable cases, leaving the large remainder to secure relief from therapeutic efforts. Radium offered the most hopeful outlook of any remedy thus far presented in the palliative and even the curative treatment of the borderline and inoperable cases. In the gynecological clinic of the University of Pennsylvania during the past two years forty-four cases of carcinoma of the uterus, vagina, and urethra had been treated. These cases were practically all classed as inoperable. From 85 to 100 grams of radium were applied in a platinum capsule shielded by rubber for twenty-four hours; this was repeated at the end of six weeks. The results of too intensive treatment with radium had in some instances been even worse than the disease itself. In this series, with the exceptiion of two cases, there had been no disagreeable effects. They had adhered to the rule never to attempt to operate in any case that had been healed by radium. Radium as shown by this series of cases was by no means a universal panacea for cancer, even when the growth was strictly localized. In operative cases the average stay in the hospital was three weeks, while for the application of radium not more than three days was required. Dr. Clarke discussed the Percy method of treating cancer of the cervix and expressed the opinion that the results fell far short of those obtained by the use of radium. Removal of the uterus in cases of cancer of the fundus had yielded such good results that taking chances with radium was not justified in these cases. His attitude toward cervical cancer was just the opposite. In the borderline cases of cancer of the cervix they employed radium. Dr. Clarke illustrated his paper by lantern slides.

(*To be concluded.*)

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Held Wednesday, April 5, 1916.

DR. J. WILLIAM TAYLOR, VICE-PRESIDENT, IN THE CHAIR.

DR. A. C. ABBOTT read a Memoir of the late Surgeon-General Sternberg.

A New "Muscle Substitution" Operation for Congenital Palpebral Ptosis.—Dr. JOHN B. ROBERTS presented this contribution from the Surgical Laboratory of the Philadelphia Polyclinic. In November, 1914, a three-year-old girl had been sent to him by Dr. H. A. Stout of Wenonah, N. J., for operative treatment of very marked double ptosis and a moderate degree of epicanthus of both eyes. The child had been taken previously to an ophthalmic hospital but no operation had been performed. Because of the generally unsatisfactory results in operation for ptosis Dr. Roberts devised an operation which he had suggested in 1912 based on the myoplastic methods used in traumatic and orthopedic muscular deficiencies. Believing it best, however, to try at first one of the already recognized ophthalmic procedures the Tansley method was followed in an operation upon both eyes. Following this the child could uncover the eyeball so that in the right eye about one-half the cornea was visible. The left eye was not so satisfactory in result, although the lid could be lifted somewhat better than before the operation. In March of this year the child was returned for further treatment. It was determined upon the present occasion to lessen the epicanthus by an arrowhead-shaped excision of skin and superficial fascia by Berger's method to get rid of the deformity at the inner canthus of the eye, and to try the author's previously devised "muscle substitution" method which he had employed

only upon the cadaver, to relieve the ptosis of the left upper eyelid. The left eyebrow was shaved and an incision carried from the root of the nose along the superciliary ridge almost to the external angle of the frontal bone. From the nasal extremity of this cut a vertical incision was made through the tissue of the forehead almost to the hair line. The flap was turned upward and outward so as to expose the occipito-frontal muscle and tendon. Just beneath the upper orbital margin an incision down to the fascia of the upper lid was made from the nasal to the temporal side following the curve of the bone. The skin flap was turned downward and the tarsal plate exposed and its upper edge identified. A tunnel was then cut beneath the soft tissues about half an inch in width extending under the orbicular muscle to the incision made through the shaved eyebrow. From the muscular belly of the occipitofrontal muscle, immediately about the tunnel opening, was cut a strip of muscular fibers about a third of an inch wide and an inch and a quarter long. The parallel incisions, making this strip, diverged a little at their upper ends so as to make the muscular band wider near its upper extremity. A cross incision was made at the upper end converting the strip into a long flap. This flap was turned downward, thrust through the tunnel, and attached to and upon the upper edge of the tarsal plate by three silk sutures. The two corner sutures were put in as mattress stitches and held the flap on top of it—that is, superficially to the tarsal fibrous plate. Returning to the frontal region, the operator cut on each side of the turned down flap two strips of muscle, each half the width of the inverted flap, having their attachment to the muscle above. These were drawn toward the fold of the inverted flap, attached to it on its superficial surface, which formerly had been the under surface, by a mattress suture at each edge, and were united in the middle line by a third suture, also put through the turned over portion of flap so as to make a mattress suture. An additional suture was inserted at one edge where the first flap was bent over to keep it thus folded. The skin and superficial flap of the forehead were then replaced and sutured in position by worm gut sutures. The result of the operation was excellent, although the time has been but four weeks. Subsequently the Berger operation with arrowhead excision on each side will be performed for the epicanthus. The sutures were so placed as to lift a little the canthus of each eye. The wound all healed by first intention. In addition to the ability to raise the eyelid a satisfactory result of the operation was the making of a normal furrow in the lid at the seat of the upper edge of the tarsal plate. It was suggested that if the incision through the eyebrow to that at the middle line of the forehead for any reason seemed to be undesirable, the flap might be turned outward and downward instead of outward and upward by making the horizontal incision within the hair line instead of in the eyebrow.

Birth Traumatisms of the Upper Extremity; The So-called Birth Palsies.—Dr. G. G. Davis in this paper stated that until comparatively recently injuries of the upper extremity, commonly called birth palsies, had been regarded by him as true nerve paralyses. Even at the present time the pathology of the injuries and their treatment were perhaps not definitely settled, although much had been accomplished. To his mind the greatest advance had been made by Dr. T. Turner Thomas, who, while not denying the occasional existence of distinct nerve lesions, had claimed that the main element of the lesion was articular, and to be treated by operative means. Dr. Davis had long been convinced that the essential element was an articular lesion and that the most successful treatment must be based upon this fact. He was not yet convinced, however, that the luxation described by Duchenne, treated by manipulation by Whitman, and operation reduction by Thomas, was the essential lesion of disability. While treatment of the luxation had been of value, he attributed the improvement in function to the changes produced in the soft parts by the operation. From his experience he believed that the condition consisted usually of lesions of the nerves, muscles, and ligaments about the affected parts, the extent and character of which varied with the mode of production of the original injury and the length of time after birth that the patient came under observation. Operations upon the brachial plexus have shown that absolute rupture of some of the nerves did take place, although rarely. The paralytic symptoms observed were usually due not to a rupture, but to a contusion or stretching of the nerves, under which circumstances the probability of recovery was excellent. There was too often the tendency in a young infant to consider the nerve lesion the prominent factor, when the quietude of the arm was due almost or quite entirely to the articular lesion, the remaining disability after healing of the contused nerves, was due to the cicatricial and damaged condition of the articular structures. This fact, unfortunately, was not generally recognized and the necessity of treating the condition was consequently ignored and a crippled arm might remain through life. In treatment obviously efforts should be made at the earliest possible moment. Delay in operative treatment in the very young, because of the problem of nourishment, might have no effect upon the nerve lesions but was decidedly harmful to the articular lesions. The essential part of treatment was said to be first to stretch or manipulate the parts that they might be placed in their normal positions by passive motion, with restoration of muscular power by training and exercise. Operative measures which might later become necessary because of fibrous obstructions and continued abnormal position of the limb would, of course, vary with individual cases. The good results following operation upon so-called luxations in these cases Dr. Davis attributed to the free division of the restraining tissues and the placing of the parts in better position and not to replacement of the head of the humerus. To his mind, conditions which had been termed luxations were rather sub-luxations, and the malposition in itself seemed scarcely of sufficient extent to account for the disability or to justify the expectation of much functional improvement by its correction. For the restricted motions in the shoulder joint, those of abduction and external rotation the operation employed by Dr. Davis was described and in the few cases in which he has used it marked improvement was obtained. He regards it as neither crippling nor dangerous. Operation upon the elbow for increasing flexion or extension was not regarded as advisable. In one patient aged about twenty, in whom supination was impossible, an incision was made over the middle of the radius and the insertion of the tendon divided. This allowed an additional degree of supination but not enough, and another incision was then made over the head of the radius, the external lateral and orbicular ligaments divided and the tissues detached for a short distance down the inner side of the neck and shaft. Upon supinating the hand, the head of the radius rose directly out of its bed and projected forward. Apparently the radius in its growth had become twisted so that when supination was performed the head was thrust forward. Therefore, the head and neck were removed nearly or quite down to the insertion of the biceps muscle at the radial tubercle. Dr. Davis urged the use of the greatest care in this procedure not to wound the posterior interosseous nerve. After closure of the wounds the forearm was dressed on a splint with the hand in extreme supination. In the one case in which the author had done this operation the results were extremely satisfactory. Attention was called to the possible prevention of many cases of injuries at birth and to the responsibility of the attendant; further, that the profession, since these injuries and their treatment are better understood, should cease to ignore them, and see that they receive efficient treatmnt.

Dr. T. Turner Thomas, remarking upon the etiology of birth palsies, said that it had been but a few years since there was but the one view that they were due to injuries of the brachial plexus; to-day many believed them due to injuries of the skeleton; thus was the profession reverting to the position of Duchenne in the beginning of his work upon this subject.

Dr. A. P. C. Ashhurst, relative to the frequency of the condition, said that in addition to the cases seen with Dr. Davis in his clinic, he had within the last two or three years nearly forty cases under his care. Of this number a large proportion had been shoulder dislocations. It was the dislocation of the shoulder to which Dr. T. T. Thomas called particular attention which had first aroused Dr. Ashhurst's interest in these conditions and given a clue to the best means of their treatment. In a child of three months in whom a posterior dislocation was confirmed by *x*-ray treatment was instituted as would be indicated in the same condition in the hip. Reduction was done under ether, and the shoulder held in a plaster dressing in abduction and external rotation. Dislocations, however, were not the only lesions occurring, and the dispute at present was whether the dislocation was caused by the original injury at birth, or followed a traumatic paralysis of

the shoulder muscles. Up to three years of age Dr. Ashhurst had secured permanent reduction without open operation, but in cases over this age recurrence had followed bloodless reduction. In none of the five cases in which he had operated by bloody reduction had dislocation recurred. In all he had used the approach to the shoulder joint described by Kocher with Senn's modification of the skin incision. In Dr. Ashhurst's opinion, if patients were treated from the time of birth, as emphasized by Dr. Davis and in the way he advised, most would recover with little permanent disability; that in a few of these cases at a later period, and in almost all seen for the first time a number of months after birth (especially if dislocation of the shoulder were present) it would be necessary to treat the upper extremity in plaster of Paris in abduction and external rotation for a period of not less than three months; that dislocation should be reduced, if necessary under anesthesia, as soon as practicable after its recognition; that in patients over three years of age, bloodless reposition seldom would be permanently successful; that operative treatment must secure anatomical reposition of the humerus in the glenoid, with restoration of free external rotation and abduction, which should be maintained by fixed dressings for a period of not less than three months; that in the vast majority of cases nerve lesions were insignificant, requiring no special treatment.

Dr. DAVIS, in closing, observed that while at the present the matter of pathology and treatment was unsettled much could be done for the improvement of cases. In spite of the fact that some of his cases exhibited were not brilliant from a demonstrative standpoint, from a utilitarian standpoint they were well worth the time and effort expended upon them.

The Use of the Karell Cure in the Treatment of Cardiac, Renal, and Hepatic Dropsies.—Dr. EDWARD HARRIS GOODMAN regarded drugs, physical therapeutics, and diet in the treatment of these conditions as the triad upon which reliance was usually placed, and believed that, generally speaking, in the lay as well as in the professional mind, the greatest of these was drugs. In many dropsical cases all three agents were indicated; in many, physical measures might be safely dispensed with; and, in very many cases of severe renal and cardiac breakdown, drugs as well as physical measures might be disregarded. There were no cases, however, in which diet had not earned a well-deserved fixed place. The majority of cardiac dropsies and a large proportion of dropsies of renal origin he believed would improve under rest in bed and an appropriate diet. The diet which had served him best, and which he had employed successfully for the past seven years, was that known as the Karell diet or Karell cure. Although half a century had elapsed since Karell had published his paper, this diet seemed to be but little known and but rarely used. Under the technique of the treatment the patient should receive daily at 8, 12, 4, and 8, 200 c.c. of raw or boiled milk, warm or cold, and no other food. Thirst formed the greatest cause of complaint during the first three or four days, and it might be necessary to allow the patient to rinse out his mouth with water. If hunger were urgent a small piece of toast or zwieback might be given with each portion of milk. The rapid loss of weight encouraged the patient to persist with the treatment. Continuance of the diet depended upon the diminution of edema and the patient's plea for more food. Usually the diet might be increased at the end of a week by giving a soft boiled egg (without salt or pepper) at 10 A.M. and a piece of zwieback at 6 P.M.; the next day, an egg at 10 A.M. and at 2 P.M. with a piece of white bread. Following this the food should be increased gradually to a full diet. Such "full diet," however, was a misnomer, since it should be salt poor and comprised of selected foods. Until the patient received the full diet the daily amount of liquid (which should be milk) must not exceed 800 c.c. Entering upon the full diet cocoa or tea might be substituted for the milk, limited to the same amount, however; such limitation was to be continued for from two to four weeks after the disappearance of edema. During the treatment the patient should be in bed. The bowels should be kept open; preferably by laxatives in pill form, since no water was required for their administration. Improvement should be noted at the end of three days. If this did not cure, drugs and other measures were indicated. Twelve illustrative cases of the effect of the Karell cure in edema were reported. The first three charts showed only loss of weight; the fourth, a rapid increase of diuresis, then a decrease indicating the need of other therapeutic measures; the fifth and sixth, loss of weight and increase of diuresis amounting to 531 ounces in four days with unusually rapid loss of weight; the eighth, the effect of the milk diet in hepatic cirrhosis; ninth, the failure of the cure; tenth, lowering of blood pressure, systolic and diastolic; the eleventh, retention of chlorids on a salt poor diet, with prompt elimination of chlorids and increased diuresis on Karell cure plus caffein and hot packs; twelfth, curves of body weight, chlorids and urine. The minimum amount of work given to the human organism was regarded by Dr. Goodman as the most important feature of the Karell cure. The good effects were seen by the patient almost before being noted by the physician, and these effects were the reward of strict observance of the cure, viz: the taking of only 200 c.c. of milk at 8, 12, 4, and 8, the purpose of the treatment being immediately defeated were the milk taken at the pleasure of the patient, or in larger quantity. While an attempt had been to ascribe the benefits following the Karell cure to reduction in the amount of fluid, the minimum of salt contained in the milk, and to the melting of body protein, it would seem more probable to the author that several problems were involved: (1) Absolute rest in bed; (2) the low amount of fluid and food which also limited cardiac effort; (3) the low amount of sodium chloride; (4) a combination of the salt-poor diet and the low amount of fluid. To whatever factors the results were due, in dropsical conditions of renal, cardiac, and perhaps hepatic origin, the Karell milk diet given as taught by Karell was in Dr. Goodman's opinion the diet par excellence. While in the majority of cases drugs in combination with the Karell cure would be found unnecessary, in marked dyspnea, cyanosis, frequent and irregular pulse, such drugs as camphor, digitalis, strophanthus, caffeine, and morphine were indicated in emergencies. In the prognostic significance of the Karell cure a positive chloride balance was of unfavorable import. The treatment was regarded as contraindicated in the presence of symptoms of uremia since it had been shown by Senator and others that in such crisis the fluid intake should be greatly augmented to eliminate the toxic substance causative of uremia.

Dr. JAMES TYSON recalled that fact that some of the early work of Dr. S. Weir Mitchell included the use of the Karell diet, which possibly was also the foundation of his little book on "Fat and Blood." In 1884 Dr. Tyson had read a paper on "The Milk Treatment of Disease."

Dr. JAMES M. ANDERS observed that the Karell cure was much more used abroad than in America. In the opinion of His the cure was not only effective in renal and cardiac dropsy, but alleviated the disturbance in breathing and other distressing symptoms not dependent upon the edema present in many of these cases. Dr. Anders agreed with other authors upon the value of the treatment before actual decompensation had taken place; for example, in cases of aortic valvular disease showing simply premonitory symptoms, associated perhaps with a mild grade of arteriosclerosis. After positive involvement of the kidneys and the presence of uremia it would be altogether contraindicated. Dr. Anders did not advocate the use of the treatment in valvular disease with dropsy in which the kidneys were intact, but in all such cases felt there should be allowed more food of a higher caloric value with aid to elimination by other means such as rest, cardiac stimulants, etc. It seemed to him that the use of iron could be utilized to advantage in connection with the Karell cure, particularly in the lengthened periods of its employment recommended by Dr. Goodman. Following the recommendation of His, Dr. Anders' custom had been to give 1,000 c.c. for five or six days at intervals. He hoped that Dr. Goodman's paper would bring this subject to the attention of the profession.

Dr. CLIFFORD B. FARR remarked that one of the chief theoretical objections to the treatment was the insufficiency of the diet even for a patient in bed, and suggested the possible advantage of the addition of sugar of milk or cream to the measured amount of milk. This would bring the nutritive value more nearly to the proper level and add nothing to the amount of fluid or chlorides.

Dr. GOODMAN in closing said that some food was given after three to six days, during those days, however, the diet was limited to 800 c.c. of liquid in the form, preferably, of milk. He thought the addition of cream or sugar of milk would be of advantage.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

State Medical Board of the Arkansas Medical Society.

November 9 and 10, 1915.

(*Concluded from page 46.*)

BACTERIOLOGY.

1. (a) Give method of blood staining. (b) What is the normal blood count, and how is it affected by disease?
2. (a) What is the value of Widal's test for typhoid fever? (b) At what stage of the fever is it most reliable?
3. What general conditions predispose to bacterial infections?
4. (a) Give general method of procedure for staining bacteria. (b) What are counterstains?
5. (a) What is the most effective method of sterilization? (b) How are culture mediums sterilized?
6. (a) Describe in detail the process of finding tubercle bacilli in the urine. (b) Give method of determining the location of the infection. (c) From what other bacilli would you have to differentiate them?
7. Name some of the diseases of which the pneumococci may be the chief etiologic factor.
8. What culture-medium is essential in the growth of the organisms producing the following diseases: Cerebrospinal meningitis, gonorrhea, and diphtheria?
9. Mention five general or systemic diseases produced by microorganisms, and in connection with each give name and chief morphologic characteristic of organisms concerned.
10. What is the cause of difference in the virulence of diphtheria?

PRACTICE.

1. Name four types of malarial infection, and give treatment of remittent fever.
2. Give the etiology and treatment of acute tonsillitis.
3. Give the treatment for habitual constipation.
4. Differentiate between pleurisy with effusion and acute lobar pneumonia, giving treatment of the latter.
5. Give the treatment of facial erysipelas.
6. How would you make an early diagnosis of tuberculosis?
7. Give the treatment of ophthalmia neonatorum.
8. Give the treatment of convulsions caused by nephritis.
9. Give the medical treatment of ulcer of the stomach.
10. Give the symptoms and treatment of pellagra.

OBSTETRICS.

1. Into what stages is labor divided, and where do these stages begin and end?
2. Give diagnosis and management of a breech presentation. What are the dangers?
3. Give indications for the use of forceps, internal podalic version, and cesarean section.
4. What are the causes of hyperemesis gravidarum, and the clinical features and the treatment of the condition?
5. What is placenta prævia? Name its causes, varieties, symptoms, dangers, and treatment.
6. Eclampsia: etiology, premonitory symptoms, and treatment?
7. Describe the delivery of the placenta after the method of Credé.
8. Give two indications for the induction of premature labor, and describe one method of performing it.
9. What are the symptoms of inevitable abortion, and how should a case be managed?
10. How would you manage a case of primary postpartum hemorrhage?

GYNECOLOGY.

1. (a) Name two causes of sterility in the male. (b) Name three of sterility in the female.
2. Name the objective signs of extrauterine pregnancy.
3. Name two most common causes of dysmenorrhea.
4. What symptoms of cystitis are first noted?
5. Name the indications for the use of uterine tampons following abortion.
6. Name three varieties of fibroids of the uterus.
7. Name three etiologic factors in acute endometritis.
8. Give treatment for inoperable carcinoma of cervix.
9. Would you remove *in toto* an ovary with a small cyst?
10. What are the objections to ventral fixation of uterus?

SURGERY.

1. Define inflammation, septicemia, and pyemia. What organs are most prone to pyemia?
2. What general term denotes control of hemorrhage? State all the methods which may be used to stop the flow of blood from a wound.
3. What would be the proper treatment for backward dislocations of the femur at knee, with rupture of the popliteal artery?
4. Give causes, symptoms, diagnosis, and treatment for acute suppurative osteomyelitis.
5. Define shock, and state how you would treat same.
6. If called to a patient with a compound fracture of leg in lower third which had been produced by kick of horse in a barnyard, state in detail how you would treat such case.
7. Define ankylosis; give varieties; also describe a surgical method for restoration of joint function in case of bony ankylosis of the knee joint.
8. Give points of differential diagnosis between pyloric (or duodenal ulcer) and cholecystitis.
9. Give varieties of ileus, and state some of the causes of each.
10. Give symptoms, diagnosis, and treatment of stone in ureter.

HYGIENE.

1. Name four points in personal hygiene to prevent acquiring or imparting tuberculosis.
2. Name some special precautions a child should observe at school in order to avoid contracting disease.
3. What is the hygiene of pregnancy, and what advice would you give a pregnant woman from a hygienic standpoint?
4. Give prophylaxis of filth diseases.
5. What are the dangers from (a) the house fly? (b) The mosquito? (c) How would you exterminate them from a community?
6. (a) Name the chief sources of contamination of drinking water. (b) Give several methods of purifying drinking water.
7. Name some diseases that are communicated to man through cow's milk.
8. (a) Name all diseases due to microorganisms. (b) Methods of transmission.
9. What hygienic precautions should be employed around a patient with scarlet fever and diphtheria?
10. What necessary precautions should be taken to insure healthy sleep?

ANSWERS.

BACTERIOLOGY.

1. The film is properly made and fixed. It is then stained for five minutes with 0.5 per cent. alcoholic solution of eosin diluted with water; it is then rinsed in water, and dried with filter paper; it is then stained for half a minute with a saturated aqueous solution of methylene blue; and again it is rinsed and dried, and then mounted. The normal blood count is about 5,000,000 red corpuscles to the cubic millimeter, in women the number is about 4,500,000. The colorless corpuscles are about 6,000 to 10,000 to the cubic millimeter. The red corpuscles may be *increased* in: Chronic heart disease, with cyanosis; and in conditions in which the blood is concentrated owing to a severe watery diarrhea. The red corpuscles are *decreased* in: Anemia (particularly pernicious anemia) and leucocythemia. The colorless corpuscles are *increased* in: Leucocythemia, leucocytosis (due to inflammation, suppuration, toxins, etc.). The colorless corpuscles are *decreased* in conditions of starvation and malnutrition, and sometimes in pernicious anemia.
2. The diagnostic value of the Widal reaction is believed by some to be great; others place little reliance on it. It may be absent in cases of typhoid fever; it may be present for several months after an attack of typhoid; the reaction may not be obtained till the third week of the disease; it may be present in other diseases or in perfectly healthy persons. The above have all been urged as objections; certainly only positive results have any value at all. Enthusiastic advocates of it have asserted that it is present in over 95 per cent. of all cases of typhoid. It is probably most reliable during the second week of the disease.

3. *Conditions which predispose to bacterial infection:* The bacteria must be sufficiently virulent, must enter in sufficient numbers and by the appropriate avenue, and the host must be susceptible to their action. The latter condition is aided by anything which depresses or diminishes the general physiological activity of the host, such as depressing hygienic conditions, old age, weakness, extreme youth, fatigue, disease, exposure to cold, insufficient diet, intoxications of all kinds, the inhalation of harmful vapors, and traumatism.

4. *General method of staining bacteria:* "Nearly all the known bacteria are readily stained by the watery solutions of any of the basic anilin dyes. The film on the slide or cover-glass, properly prepared, is covered by a few drops of the stain, or the cover glass, *film-side down*, is floated in a watch-glass full of the staining solution; at the end of from one-half to two or three minutes the staining fluid is poured off, the slide or cover-glass washed rapidly in water and then allowed to *air-dry;* after which, in the case of cover-glass preparations, they are inverted upon a drop of Canada balsam on a slide and examined with the oil-immersion lens; or, when slides have been prepared, after washing and drying a drop of cedar oil is put over the preparation, and the same is examined with the oil immersion objective, without the use of a cover-glass."—(Archinard's *Bacteriology.*)

A *counterstain* is a stain used to bring into contrast bacteria or parts of tissues colored by another stain.

5. Heat is the best sterilizer; hot air or steam may be employed. Culture media are sterilized by steam in an autoclave, at a temperature of 110° C., at 6 pounds pressure, for half an hour. If an Arnold sterilizer is used the intermittent plan must be adopted, otherwise the spores will not be destroyed.

6. *To find tubercle bacilli in the urine:* "Withdraw the urine by a sterile catheter into a sterile conical urine glass. The urine so withdrawn is allowed to stand until the sediment collects. The supernatant fluid is poured off and the sediment is centrifuged. The supernatant fluid is poured out of the centrifuge tube, the tube filled with distilled water that is free from tubercle bacilli, shaken so as to wash out the urinary salts, which interfere with the staining, and centrifuged again. This process is repeated once or twice. The sediment remaining after the third centrifugation is smeared on clean glass slides and allowed to dry in the air. The smears are fixed by passing three times through the flame, and then stained for five minutes with warm carbolfuchsin, washed in water, submitted to the action of the acid-alcohol solution for one minute, washed in water, counterstained with Löffler's alkaline methylene-blue for thirty seconds, dried, and examined under a 1/12 inch oil immersion objective. If acid-fast bacilli are found by this method, a second smear should be decolorized in the acid solution overnight, washed in water, and counterstained in the Löffler's alkaline methylene-blue in order to be sure that they are not smegma bacilli. Urine obtained by the catheterization of the ureters may be treated in the same way."—(Anders and Boston's *Medical Diagnosis.*)

If tubercule bacilli are only found after ureteral catheterization, the lesion is not in the bladder, but in ureter or kidney. The cystoscope may show lesions in bladder or urethra. The tubercle bacilli must be differentiated from the smegma and leprosy bacilli.

7. *Pneumococci* may cause pneumonia; they may be found associated with other microorganisms in diphtheria, tonsilitis, otitis media, endocarditis, lobular pneumonia, pericarditis, meningitis, arthritis, osteomyelitis, and conjunctivitis.

8. *Cerebrospinal meningitis* is caused by the *Diplococcus intracellularis meningitidis;* it grows well on blood serum, ascitic fluid, and culture media containing meat infusion.

Gonorrhea is caused by the *Diplococcus gonorrhæ;* it grows on blood serum, or mixtures of meat infusion agar with blood serum or hydrocele or ascitic fluid.

Diphtheria is caused by the *Bacillus diphtheriæ;* it grows upon blood serum and meat infusions.

9. *Typhoid fever* is caused by the *Bacillus typhosus* of Eberth. This organism is rod shaped, with rounded ends, is from 2 to 4 mikrons in length, and about three-fourths of a mikron in breadth; it does not stain by Gram's method, but stains with all the anilin dyes; it has flagella, no spores, is aërobic and facultative anaërobic, and is motile.

The *characteristics of the bacillus of diphtheria* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are non-motile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Löffler's alkaline-methylene blue.

The cause of *syphilis* is the *Treponema pallidum.* It is a very slender spiral, about 4 to 20 mikrons in length, with very close and regular turns, the curves vary in number from three or four to twelve to twenty. At each pole is a fine flagellum. It can move forward and backward, and also rotate on its axis. It is not settled whether division is transverse or longitudinal. It has not yet been cultivated on artificial media.

Plague is produced by the *Bacillus pestis.* This is non-motile, with rounded ends, is about 1½ mikrons in length and a little more than half a mikron in breadth; it stains readily with all the anilin dyes, but not by Gram's method; it has no spores, and is not encapsulated.

Tetanus is produced by the *Bacillus tetani.* This is a small, slender rod with rounded ends; at one end is a spore, which gives the bacillus the appearance of a pin or a drumstick; it is from 2 to 4 mikrons long and from ¼ to ½ mikron in breadth; it is slightly motile, is anaerobic, and stains with the ordinary anilin dyes and by Gram's method.

10. *The difference in the virulence of diphtheria* may be due to the difference in the number of bacilli present, or to the variation in the tenacity with which they retain their virulence, or to variations in the body defenses and general vitality of the patient affected.

PRACTICE.

1. *Four types of malarial infection*:—Tertian (intermittent), quartan (intermittent), estivoautumnal (remittent), and malarial cachexia, or chronic malaria.

Treatment: "In the remittent estivoautumnal type it is often impossible to anticipate the paroxysms. The quinine must then be given at regular intervals and in sufficiently large doses to produce physiological effects in the shortest time possible. It often happens, particularly in the pernicious form, that the remedy is not retained, or, if retained, it fails to produce the desired effect, more especially when it is administered in capsule or cachet. It is then better to administer it hypodermically in the form of the hydrobromide, hydrochloride or bisulphate, in doses of 15 to 30 grains once or twice a day. The method advocated by S. Solis-Cohen is to give but three subcutaneous injections of 10 or 15 grains (0.65-1.0) during seven days following the last paroxysm, repeating the injection, however, after each paroxysm, in the event of recurrence. Unfortunately there is great liability to cause abscesses by this method.

It is of the utmost importance in this form of infection to get the gastrointestinal canal into a condition favorable to the absorption of quinine. A calomel or blue-mass purge, followed, if necessary, by a full dose of magnesium sulphate, often seems to double the effect of the previously ineffective doses of quinine, and Warburg's tincture often arrests a remittent fever on which much larger doses of quinine in other forms have had no influence. It should be given in doses of ʒ ss every two or three hours. In some instances the use of one of the more soluble salts by internal administration will be found more effective than that of the sulphate."—(French's *Practice of Medicine.*)

2. Acute Tonsillitis. *Etiology*: The *Staphylococcus pyogenes* and *Streptococcus pyogenes* are the chief organisms found; acute rheumatism is often associated with the disease. Predisposing causes are exposure to cold and wet, and poor hygiene. *Treatment*: Rest in bed; a calomel purge followed by a saline; salicylates gr. x-xv every three hours, or tincture of aconite; liquid diet; antiseptic sprays, and cold applications.

3. *Treatment of chronic constipation:* "The cultivation of habits of regularity is of the utmost importance. The patient should go to stool at the same time every day, whether there is a desire to evacuate the bowels or not, and every such desire should be immediately gratified. The diet should comprise considerable fruit and vegetables (which leave a residue). A glassful of cold water before breakfast, an orange or oatmeal at breakfast, and stewed fruits and salads at dinner subserve a useful purpose in many cases. Persons of sedentary habits are often benefited by exercise; abdominal massage is useful in some cases, and an abdominal binder is of value to those with a pendulous flabby abdomen and visceroptosis.

Drugs should be dispensed with as long as possible. Medicinal measures when necessary vary with the nature of the causal factor, which must be diligently searched for. At the beginning of the treatment it is often advisable to clear the intestine thoroughly with castor oil, a blue mass pill or calomel followed by a saline aperient. In many cases the best results are obtained by a daily injection of tepid water with or without soap; in other cases injections of oil are much better; but enemas should not be too long continued. Some patients are much benefited by a saline aperient water, sodium phosphate, or other saline, taken a half hour before breakfast. Should a course of medicine be necessary, the desired results may usually be secured by the use of cascara sagrada, which has the advantage that, having been continued for some time, the dose necessary to secure a daily evacuation may be gradually reduced, and the drug ultimately dispensed with, should the patient continue habits of regularity. The pill of aloin (⅛ grain), strychnine (1/40 grain), and extract of belladonna (1/10 grain), though much abused, is very useful in many cases."—(Kelly's *Practice of Medicine.*)

4.

PLEURISY WITH EFFUSION.	LOBAR PNEUMONIA.
Onset marked by chilliness persisting for a few days.	Onset acute, with rigor, lasting one hour or longer.
Cough is irritating; no expectoration, or, if present, catarrhal in character.	Cough more marked, and accompanied by rusty or bloody, tenacious expectoration.
Sputum negative; tubercle bacilli rare.	Dense aggregations of pneumococci present.
Moderate fever of continuous type; declines by lysis.	Fever, 102° to 104° F.; falls by crisis.
Prostration moderate.	Prostration extreme.
Unilateral distention of the thorax.	Absent.
Countenance pale and anxious.	Mahogany-colored flush of cheeks.
Limited expansion at base of chest on the affected side.	Degree of expansion slightly, if at all, inhibited.
Tactile fremitus diminished or absent.	Increased over area of consolidation.
Interspaces bulging at base of chest.	Absent.
Percussion shows flatness, with great resistance to the pleximeter finger.	Dullness with less resistance, and sometimes a tympanitic note.
Diminished or absent breath-sounds over effusion the rule. Respiration murmur diffuse, distant, and generally unaccompanied by rales. Bronchial breathing may be present over the entire affected side of the chest.	Harsh bronchial breathing and presence of rales in first and third stages, unless a bronchus is plugged.
Friction sound heard in early and late stages.	No friction murmur; rales present.

(Anders and Boston's *Medical Diagnosis.*)

The *treatment of pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent?

"In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset.

"In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to. Many prescribe it from the outset.

"The diet should consist of milk, beef-tea or broths, white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential.

"Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided.

"The results of *serum treatment* are not unequivocally encouraging but vaccine treatment would seem to be of better promise. Where possible, an autogenous vaccine should be used." (Wheeler and Jack's *Handbook of Medicine.*)

5. *Treatment of facial erysipelas* includes isolation of the patient, and antisepsis; light and nutritious diet, and tonics and stimulants are indicated; tincture of the chloride of iron, ηχv in water, thrice daily; ichthyol ointment, 15 to 20 per cent, may be applied; antistreptococcus serum has been tried.

6. The early manifestations of pulmonary tuberculosis are: (1) *Physical signs:* Deficient chest expansion, the phthisical chest, slight dullness or impaired resonance over one apex, fine moist rales at end of inspiration, expiration prolonged or high pitched, breathing interrupted. (2) *Symptoms:* General weakness, lassitude, dyspnea on exertion, pallor, anorexia, loss of weight, slight fever, and night sweats, hemoptysis.

7. The *treatment of ophthalmia neonatorum* is: (1) *Prophylactic:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the new-born child with clean warm water, and drop on the cornea of each eye one drop of a 1 or 2 per cent. solution of nitrate of silver, immediately after birth. (2) *Remedial:* Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

8. *Treatment of convulsions caused by nephritis:* Chloroform during convulsions, wet cupping, venesection if patient is otherwise robust, hot pads, free purgation, pilocarpine to produce sweating (only if there is no edema); the food must be nutritious (chiefly milk), but nitrogenous food in general must be avoided; salt, stimulants, and diuretics are prohibited; the patient should have sufficient water to drink.

9. *Medical treatment of gastric ulcer:* Rest and a light and easily digested diet are absolutely essential. Abstinence from food by stomach and gastric lavage with feeding may be necessary for a time. Sodium bicarbonate, bismuth subnitrate, silver nitrate and opium are the most frequently used drugs. Pain, vomiting, and hemorrhage are treated as they arise; perforation demands prompt operative interference.

10. In *pellagra* "the symptoms develop insidiously, the earliest manifestations usually being gastrointestinal—anorexia, stomatitis, salivation, epigastric pain or distress, diarrhea and a gradually increasing anemia, disinclination to exertion, and psychic depression. The fully developed disease is characterized by cutaneous, digestive, and nervous symptoms. There is at first a characteristic pellagrous erythema that usually comes on first in the spring, tends to subside and recur (in the fall and spring). It develops bilaterally especially on the exposed surfaces, the hands, arms, face, and neck; that is, it seems to be related to the action of the actinic rays of the sun; it may be dry (usually early) or wet; the lesions become pigmented (liver yellow or chocolate color) and usually progress to desquamation, exfoliation, and gangrene of the skin, which are followed by cicatrization. The characteristic digestive symptoms consist of stomatitis, the cardinal red tongue the bald tongue or the stippled, bluish black tongue; salivation, pyrosis, and diarrhea (fetid, slimy, greenish stools), sometimes bloody stools, may occur. The nervous symp-

toms consist of neuromuscular pains in the back and legs, spinal tenderness, headache, vertigo, unilateral or bilateral mydriasis, muscular spasms, exaggerated reflexes, later paralysis with lessened or absent reflexes, mental depression delusions, hallucinations, melancholia, and insanity. Mild cases may be afrebile, but fever (102° to 105° or more) is not uncommon. Improvement may occur after the lapse of several months, but recurrences especially in the fall and spring are common."—(Kelly's *Practice of Medicine.*)

The *treatment* is mainly symptomatic; liberal diet, and proper hygienic surroundings are indicated; fresh fruit, milk, eggs, fresh peas or beans, lean meat. The drug which has given the best results is arsenic (Fowler's solution, soamin, salvarsan, or atoxyl). Change of climate may bring about improvement.

OBSTETRICS.

1. Labor is divided into three stages: The *first stage* begins with the commencement of labor, and ends with the complete dilatation of the os uteri. The *second stage* begins with the complete dilatation of the os uteri, and ends with the birth of the child. The *third stage* immediately follows the second, and ends with the expulsion of the placenta and the beginning contraction of the uterus.

2. *Diagnosis of breech:* Abdominal palpation reveals the head above and the breech below. The heart-sounds are heard above the umbilicus. Vaginal examination shows high position of the presenting part, and when the os is dilated the characteristic features of the breech may be detected. Meconium is evacuated.

Management: First stage.—Keep the patient in bed and at rest, so as to preserve the membranes as long as possible. Warn the relatives of the risk to the child. *Second stage.*—Prepare warm towels to wrap around the child's body and limbs, and a warm bath, and everything likely to be required for the treatment of asphyxia. Allow the breech to be born without hurrying it. Support the perineum as in a vertex case. As soon as the body is born as far as the umbilicus, draw down a loop of the cord, at the same time maneuvering it to the corner of the pelvis, where it is least likely to be compressed. This loop by its pulsations is an index of how it is faring with the child. Wrap the limbs and trunk in a warm towel, and hold them slightly towards the mother's abdomen so as to aid the lateral flexion of the body. At the same time exert suprapubic pressure upon the fundus which aids expulsion and promotes flexion. When the elbows appear the hands may be gently disengaged with the finger. Meantime carefully watch the pulsations of the cord. Provided it is beating regularly and the child is not making convulsive movements, there is no need for anxiety. Wait for the next pain and with the aid of suprapubic pressure expel the head in a fully flexed attitude. *Extraction of the head.*—If the head be delayed more than a few minutes after the birth of the trunk as far as the umbilicus, it will almost certainly require to be artificially aided. The two best methods of doing this are (1) the Prague seizure, and (2) the Mauriceau-Smellie-Veit grip. Both are designed to extract while at the same time promoting flexion. Therefore aid the latter by making the nurse or assistant exert suprapubic pressure while the extraction is being performed. Either method is more easily performed if the mother is in the cross-bed position on her back. This position can only be maintained by the aid of assistants, but if such aid is available it is often desirable to place the mother in this position as soon as the breech reaches the vulva. Anesthesia is also required. *Prague seizure.*—Seize the feet and legs by one hand and carry them well forward between the mother's thighs. Place the first and second fingers of the other hand over the child's shoulders to steady the head. Pull upon the legs in a direction at right angles to the mother's abdomen. This forces the occiput against the pubes and so increases flexion, while it also effects extraction, which is controlled by the fingers over the shoulders. In a primipara this method may require such force that the head comes out with a suddenness that causes severe tearing of the perineum. In these cases the second method is perhaps better. *Mauriceau-Smellie-Veit grip.*—Place the child astride upon the left forearm, and slip the two first fingers of the left hand into the vagina and apply them to the superior maxilla on each side of the nose. With these fingers try to draw down the chin and nose, and so promote flexion. At the same time the two first fingers of the right hand are passed over the shoulders and traction made by them in an upward direction. An alternative is to pass the left forefinger into the mouth, but this is apt to cause injury to the jaw."—(*Johnson's Midwifery.*)

The danger to mother and child in a case of breech presentation are: (1) Compression on the umbilical cord; (2) premature respiration; (3) asphyxiation of the child; (4) the child may suffer from fractures, dislocation, hemorrhage, or paralysis; (5) extension of the head, or of the arms over the head; (6) increased tendency to rupture of the perineum.

3. *Indications for the use of forceps* are: "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ in., true conjugate; moderate obstruction in the soft parts. 3. *Passenger at fault:* A. Dystocia due to (*a*) occipito-posterior, (*b*) mento-anterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute.) 4. *Accidental complications:* Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both.—From Jewett's *Practice of Obstetrics.*)

The indications for podalic version are: (1) In transverse presentations; (2) in placenta prævia; (3) in malpresentations of the head; (4) in simple flattened pelvis, and in minor degrees of pelvic contraction; (5) in prolapsus funis; (6) in sudden death of the mother; and (7) in any case where speedy delivery is imperative.

The *absolute indications for cesarean section* are: Extreme pelvic contraction or deformity in which delivery by forceps or version or symphyseotomy is impossible, and in which craniotomy is either impossible or would be more dangerous to the mother; the presence of extreme atresia of the vagina; rupture of the uterus; sudden maternal death.

4. *Hyperemesis gravidarum* is occasionally seen in pregnancy, and becomes "so excessive as to threaten the patient's life. It may arise from a variety of causes. The most common are: Reflex disturbance, caused by the rapid growth and distension of the uterus; some pathological condition of the uterus or its adnexa; some pathological condition of the gastrointestinal tract; excessive sexual intercourse; kidney insufficiency. The principal symptom is continuous vomiting, which results in exhaustion and death unless relieved. The outlook is very grave. The *treatment* consists in rest in bed in a quiet, darkened room and the administration of easily digested foods, such as milk, broths, eggs, etc. A careful search must be made for some local exciting cause, and if any such condition is found it should receive appropriate treatment. Sexual intercourse should be interdicted. The bowels should be kept freely open. Sodium bromide, camphor, cocaine, silver nitrate, cerium oxalate, hyoscine, hydrobromide, antipyrin, etc., are among the drugs used internally. Rectal alimentation may be necessary, and, as a last resort, dilatation of the cervix and internal os, or abortion may be performed."—(*Pocket Encyclopedia.*)

5. *Placenta prævia* is the condition in which the placenta is attached in the lower uterine segment and may be near or over (partially or completely) the internal os. The *causes* are unknown; multiparity, frequent pregnancies with subinvolution, and abnormalities of uterus, placenta or cord are said to predispose to this condition. *Varieties:* (1) *Central,* when the placenta completely covers the os. (2) *Partial,* when the placenta overlaps the os. (3) *Marginal or lateral,* when the placenta reaches the margin of the os but does not overlap it. *Symptoms:* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. *Dangers:* Hemorrhage, sepsis, death of the mother, death of the fetus. *Treatment:* Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version and immediate extraction of the child.

6. PUERPERAL ECLAMPSIA is an acute morbid condition, occurring during pregnancy, labor, or the puerperal state, and is characterized by tonic and clonic convulsions, which affect first the voluntary and then the involuntary muscles; there is total loss of consciousness, which tends either to coma or to sleep, and the condition may terminate in recovery or death. *Etiology:* Uremia, albuminuria, imperfect elimination of carbon dioxide by the lungs, medicinal poisons, septic infection; predisposing causes are renal disease and imperfect

elimination by the skin, bowels, and kidneys. *Premonitory symptoms:* Headache, nausea, and vomiting, epigastric pain, vertigo, ringing in the ears, flashes of light or darkness, double vision, blindness, deafness, mental disturbance, defective memory, somnolence; symptoms easily explained by the circulation of toxic blood through the nerve centers. These may be preceded by lassitude, and accompanied by constipation, or by diarrhea. Headache is perhaps the most significant and common warning symptom. In bad cases the urine is reduced in quantity (almost suppressed), very dark in color, its albumin greatly increased, so that it becomes solid on boiling. Next comes the final catastrophe of convulsions. For *preventive treatment:* (1) The amount of nitrogenous food should be diminished to a minimum; (2) the production and absorption of poisonous materials in the intestines and body tissues should be limited and their elimination should be aided by improving the action of the bowels, the kidneys, the liver, the skin, and the lungs; (3) the source of the fetal metabolic products and the peripheral irritation in the uterus should, if necessary, be removed by evacuating that organ. The *curative treatment* includes: (1) Controlling the convulsions (by chloroform, veratrum, or chloral); (2) elimination of the poison or poisons which are presumed to cause the convulsions; (3) emptying the uterus under deep anesthesia, by some method that is rapid and that will cause as little injury to the woman as possible.

7. *Crede's method of delivering the placenta* "is to reinforce the expulsive strength of the uterine contractions by grasping the fundus through the abdominal wall, with the thumb in front and the fingers behind, and, at the acme of the pain, not sooner, compress the fundus firmly downward in the axis of the birth canal. The fundus should be carried well back during the manipulation to bring the uterine axis more into the line of the vaginal axis. This process may be repeated with each pain, at the acme of the contraction, until the placenta is delivered. Vaginal bleeding will appear in the interval between contractions when the placenta begins to separate. This bleeding is from the placental site which cannot retract until the placenta is completely detached. No traction should be made on the cord to assist the delivery of the placenta. Occasionally when the placenta is in the vagina or in the grasp of the lower segment, funic traction is admissible. The separation and expulsion of the placenta from the upper, contracting segment of the uterus may be recognized by an upward movement of the fundus, as the placenta passes into the lower segment and vagina."—(Polak's *Obstetrics.*)

8. *Two indications for the induction of premature labor:*—Placenta prævia, and toxemia of pregnancy. It may be accomplished by introducing a catheter, under proper aseptic and antiseptic percautions, between the membranes and the lower uterine segment; care must be taken to avoid rupturing the membranes; more than one catheter may be inserted; the instrument is left to be expelled with the child.

9. *Symptoms of inevitable abortion:*—Hemorrhage, severe cramps, dilatation of cervix, uterus soft and enlarged, the discharge consists of dark blood, clots, and portions of the ovum.

Management of inevitable abortion: "Two methods of treatment have been advised for these cases. The first is *the expectant plan:* Place the patient in bed, and if the bleeding is profuse insert a tampon of iodoform gauze (one yard) well up against the cervix. If this fails to control the hemorrhage, reinforce it by another yard or two of gauze and a perineal pad and binder. Small doses (5½) of the fluidextract of ergot should now be given every two or three hours. At the end of from eight to twelve hours remove the tampon, when the ovum may be found extruded from the cervix; if not, a vaginal douche of mercuric chloride (1:4000) must be given, and another tampon introduced. If, upon the removal of this second tampon at the end of ten or twelve hours, the ovum is not discharged, then more vigorous methods to secure its expulsion must be adopted. *Active plan:* The physician's hands and instruments are sterilized; the patient is etherized and placed on an approprite table; the genitalia are thoroughly cleansed and a vaginal douche of mercuric chloride (1:4000) is given; the anterior lip of the cervix is brought down to the vulvar orifice; the cervix is dilated if necessary; the placental forceps is introduced into the uterus, and as much as possible of the ovum is removed; the uterus is thoroughly curetted, and an intrauterine douche of sterile water is given. A light tampon of iodoform gauze is placed in the vagina; the patient is then returned to bed. A strip of gauze may be placed in the uterus in cases of sharp retroflexion, to secure free drainage, and occasionally an intrauterine tampon will be necessary, when the uterus refuses to contract and hemorrhage persists after the use of the curette."—(*Pocket Cyclopedia.*)

10. *Treatment of postpartum hemorrhage.*—Grasp the uterus at once, through the abdominal wall, and massage it firmly. Anything in the uterus should at once be cleaned out. Pass one hand into the uterus, and with the other on the outside make firm pressure. A hypodermic of ergotin, or ergot can be given by an assistant. An intrauterine douche of hot sterilized water (about 115° F.) may be given. Sometimes a very thorough packing and plugging of gauze of uterus and vagina may be necessary. Whatever is done must be done promptly; and everything likely to be needed for this emergency should be prepared beforehand in every labor.

GYNECOLOGY.

1. *Two causes of sterility in the male:*—Abscess of virile spermatozoa, and hypospadias.

Three causes of sterility in the female:—Abscess of uterus, tubes or ovaries; atrophy of uterus or ovaries; and gonorrhea.

2. *Objective signs of extrauterine pregnancy:*—"When extrauterine pregnancy exists there are: (1) The general and reflex symptoms of pregnancy; they have often come on after an uncertain period of sterility; nausea and vomiting appear aggravated. (2) Then comes a disordered menstruation, especially metrorrhagia, accompanied with gushes of blood, and with pelvic pain coincident with the above symptoms of pregnancy; pains are often very severe, with marked tenderness within the pelvis; such symptoms are highly suggestive. (3) There is the presence of a pelvic tumor characterized as a tense cyst, sensitive to the touch, actively pulsating; this tumor has a steady and progressive growth. In the first two months it has the size of a pigeon's egg; in the third month it has the size of a hen's egg; in the fourth month it has the size of two fists. (4) The os uteri is patulous; the uterus is displaced, but is slightly enlarged and empty. (5) Symptoms No. 2 may be absent until the end of the third month, when suddenly they become severe, with spasmodic pains, followed by the general symptoms of collapse. (6) Expulsion of the decidua, in part or whole. Nos. 1 and 2 are *presumptive signs;* Nos. 3 and 4 are *probable signs;* Nos. 5 and 6 are *positive signs.*"—(*American Text-Book of Obstetrics.*)

3. *Two common causes of dysmenorrhea:*—Pelvic congestion and underdevelopment or lack of development of the genital organs.

4. *Early symptoms of cystitis:*—Vesical tenesmus, frequent urination, pain, urinary changes.

5. A uterine tampon may be necessary after an abortion if the uterus does not contract, and if the hemorrhage continues after curettage.

6. *Three varieties of fibroids of the uterus:*—Interstitial, submucous, and subperitoneal fibroids.

7. *Three etiologic factors in acute endometritis:*—Sepsis following labor or abortion, gonorrhea, and instrumental interference with the uterus.

8. *Treatment for inoperable carcinoma of cervix:*—Careful nursing, scrupulous cleanliness with douches containing potassium permanganate or bichloride of mercury; morphine for the pain; the dead tissue may be removed by scissors or curette; tonics and nourishing food are indicated.

9. "The *treatment of an ovarian cyst* is ovariotomy by the abdominal route. The tumor should be removed at once, as there is less danger in operating upon a small pelvic tumor than a large abdominal growth which has undermined the general health and formed adhesions with adjacent organs."—(Ashton's *Gynecology*).

10. *The objections to ventral fixation of the uterus* are thus given by Hermann (*Students' Handbook of Gynecology*):

"(1) Its risk. Oversights will occur in the practice even of the most careful; but the risk is very small. (2) Adhesions within the peritoneum are sometimes absorbed. They are absorbed often enough to make stitching of peritoneum to peritoneum unsatisfactory. After abdominal section ventral hernia may first develop after the scar has held firm for twelve years; and possibly the new attachment of the uterus may also, after many years, give way. (3) The operation lifts up the uterus. If the vulval orifice is very large there

may still be a protrusion of the vaginal mucous membrane. It is well, therefore, to precede ventral fixation in women past child bearing by posterior colporrhaphy. (4) It is said to cause difficulty in labor, should the patient become pregnant. It does not always do so; and in many cases reported as illustrating such difficulty, the ventral fixation was not the cause of the difficulty. Ventral fixation after colporrhaphy, if the result be permanent, relieves the patient of any necessity for the continual readjustment of a pessary, and lifts the uterus up effectually. Ventral fixation is not advised in cases in which the womb can be comfortably kept up by a pessary."

SURGERY.

1. *Inflammation* is the name given to the succession of changes occurring in a part after an injury, provided the injury does not at once destroy its vitality.

Septicemia is an acute surgical infection caused by the absorption and development of bacteria in the blood of the patient.

Pyemia is an acute surgical infection caused by the diffusion of septic emboli throughout the circulation; metastatic abscesses are thus produced. *The organs most prone to pyemia* are the lungs, kidneys, spleen, liver, brain, and large joints.

2. The term denoting control of hemorrhage is *hemostasis. The methods of controlling hemorrhage* are: Pressure, forced flexion, forceps, clamps, torsion, ligature, cold, heat, cautery, elevation, styptics, suprarenal extract, ergot.

3. The popliteal artery should be ligatured and the dislocation reduced. The leg must then be carefully observed for some time, and if loss of vitality of the limb becomes evident amputation above the knee will be necessary.

4. ACUTE SUPPURATIVE OSTEOMYELITIS. "*Causes.*—The general vitality is lowered, and there is some focus of ulceration in the mouth or throat, by which organisms enter and circulate in the blood. All that is now necessary is that some part of a bone should have its vitality depressed by a blow, strain, or exposure to cold, and the organisms then attack it. The bacteria most commonly found are the staphylococci, but streptococci are present occasionally. The disease usually begins in the new growing bone at the end of the diaphysis, rarely in the epiphysis. The lower ends of the femur and radius, the upper ends of the tibia and humerus, are the commonest seats.

"*Symptoms.*—The disease begins with a rigor, high temperature, and severe pain. The part becomes swollen, infiltrated, and congested, with distended veins over it. The pulse is rapid and small and the tongue dry, and delirium soon comes on. It should be distinguished from acute rheumatism by the fact that the interarticular and not the articular region is affected. Fluctuation can be detected if the bone be superficial, or the abscess may burst on the surface. The bone is then found to be bare over the extent of the abscess cavity. When the bone is deeply seated or the disease confined to the medulla, the swelling is later in evidence, but the pain and toxemia are very severe, and the child may die from this before local signs show themselves. When the epiphysis is attacked, septic arthritis often quickly follows, and a loose flail joint may result.

"*Treatment* must be very prompt. A free incision must be made through the periosteum and the pus evacuated. In any case, whether pus is found or not, the surface of bone must be gouged away to expose the medulla freely, and any gangrenous tissue scraped out. The cavity must then be washed out and freely drained. The wound in the soft structures is not closed in any part. If symptoms of pyemia occur, it may be necessary to amputate the limb through the joint or bone above, so as to cut off the source of emboli. When a large portion of or the whole diaphysis is necrosed, there are two courses; either to cut short the disease by removing the dead portion at once, or to leave the sequestrum to stimulate the formation of an involucrum. Where there is a single bone, as in the arm and thigh, the sequestrum is left; where there is a double set of bones, as in the forearm and leg, the sequestrum is removed at once. Celluloid, zinc, and ivory rods have been inserted to stimulate osteogenesis. In most cases it is doubtful how much bone is actually dead, so that it is better to open up the cloacæ in the newly formed involucrum to remove the sequestrum. The cavity heals by granulation."—(*Aids to Surgery.*)

It is to be *diagnosed* from (1) *Rheumatism*, in which more than one joint is affected and the tenderness is *in* the joint, and not *near* it. (2) *Tuberculous arthritis*, in which the onset is slow and the trouble starts in the epiphysis rather than in the diaphysis. (3) *Cellulitis*, in which the bone and periosteum are not affected, and in which there is always a wound.

5. *Shock* is the name given to a sudden and general depression of the vital powers due to some strong stimulation (such as injury or emotion) acting on the vital centers in the medulla, and producing vasomotor paralysis.

Treatment of shock: Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant and give a hot saline infusion; morphine hyperdermically, may be necessary for the relief of pain. Adrenalin solution is administered into the arterial system.

In surgical operations *shock may be largely prevented* by reassuring nervous patients, keeping the patient warm, the avoidance of the excessive catharsis and semi-starvation that often prevail before operations, the administration of strychnine and atropine before operation, the avoidance of delay and undue handling of parts during the operation, prompt checking of hemorrhage, and by using the utmost gentleness.

6. "In the treatment of compound fractures the main object is to render the wound aseptic and to give efficient exit to the discharges. For this purpose the patient should in all cases be anesthetized, the limb shaved, and thoroughly purified, and the wound enlarged and thoroughly washed out with some reliable antiseptic. It may be advisable to excise torn and dirty fragments of skin, muscle, and tendon, especially when dirt has been ground into them. Loose fragments of bone are removed and portions denuded of their periosteum may be taken away lest necrosis should ensue; where fragments retain any considerable connection with the soft parts they may be left without fear. When a sharp end of one of the fragments is protruding through a small opening in the skin it is first purified thoroughly before attempting its reduction and then replaced after enlarging the wound in the skin, or a portion sawn off. Hemorrhage is dealt with in the usual way, and the fragments are placed as nearly as possible in their normal position. If the fragments can be brought accurately into position it is well to fix them by some mechanical appliance; but where the ends of the bone are much comminuted the small portions must be arranged in position as well as possible, and no attempt made to wire them. A good-sized drainage tube is inserted, and, if need be, counteropenings are made; the external wound is closed or not, according to circumstances, and dressed, and suitable splints are then applied. Under such a régime the majority of cases do well. Immovable apparatus may be used after a time, windows being left in the plaster casing to allow wounds to be dressed."—(Rose and Carless' *Manual of Surgery.*)

7. *Ankylosis* is the condition in which the mobility of a joint is restricted or abolished. *True ankylosis* is caused by intra-articular lesions; *false*, by extra-articular lesions. The *true* ankylosis may be *bony* or *fibrous*. Ankylosis is also said to be *complete* or *incomplete*.

In bony ankylosis of the knee joint, if in false position, resection of a wedge-shaped piece of bone is necessary to make the limb straight. This is followed by extension, massage, and passive movement.

8. In *duodenal ulcer* there will be pain in the right hypochondriac region occurring about 3 hours after meals; intestinal hemorrhages which produce tarry or red stools; and anemia.

In *cholecystitis*, the pain is in the right hypochondriac or epigastric region, and occurs in paroxyms and without reference to time of eating; nausea, vomiting and jaundice may be present; constipation is common; and there is generally severe prostration.

9. ILEUS. *Varieties:*—(1) *Strangulation*, due to bands or adhesions or apertures; (2) *Volvulus*, due to twists on the axis of the mesentery or bowel; (3) *Intussusception*, due to excessive mobility and irritability of the intestine; (4) *Stricture*, due to cancer or scar tissue; (5) *Obstruction* by tumors, foreign bodies, fecal accumulation, or following an operation; the latter may be due to paralysis of the bowel or diminished peristalsis.

10. STONE IN THE URETER. *Symptoms:*—Severe colic, with pain radiating along the ureter; tenderness over the ureter; hematuria; the stone may be felt through rectum or vagina; a skiagram may show the stone; ureteral catheterization through the cystoscope may allow of the stone being touched by the catheter, and a waxed tip may receive a scratched impression.

It is *diagnosed* from *cystitis* (in this the urine is

alkaline, and pus is found at the beginning or end of urination); from *tuberculosis of bladder* (in this there are tubercle bacilli in urine, frequent urination, and the symptoms are not relieved by rest); from *prolapsed inflamed ovary* (the ovary is further from the vaginal wall, and the stone is felt in the antero lateral fornix). *Treatment:*—Except when anuria is present, observe the case to see if the stone is fixed or moving; if it is moving, allow time for it to pass into the bladder. If it is impacted near the kidney, attempt to push it back and remove it through pelvis of kidney; failing this, incise ureter and remove it, and then suture ureter. If impacted lower down, it should be removed by lumbar or sacral incision. In the renal colic, morphine, with hot fomentations is given. In case of anuria, nephrolithotomy is indicated.

HYGIENE.

1. *Four points to prevent acquiring or imparting tuberculosis:* (1) Compulsory notification of the disease; (2) prohibition of spitting except in proper receptacles, the sputum should be burnt or disinfected; (3) proper disinfection of houses or rooms occupied by tuberculous persons; (4) proper sanitary supervision of dairies, farms, cattle, milkshops, and workshops.

2. *The principal means of preventing the spread of contagious diseases in schools* are: Regular and efficient inspection by physicians; prompt exclusion and isolation of anyone suffering from a contagious disease, or coming from a house where such disease is; compulsory notification of all infectious and contagious diseases; individual towels, drinking vessls, and other implements; children who have had a contagious or infectious disease or who have come from a house where such disease prevailed should not be readmitted to school until sufficient time has elapsed since the occurrence of the last case to insure safety.

3. By the *hygiene of pregnancy* is meant the care which should be observed by the pregnant woman for the preservation of health and strength both of herself and of the fetus. The pregnant woman should take moderate exercise in the open air; in the last month massage may take the place of exercise. Daily bathing in tepid water, care of the teeth, regularity of the bowels, ample sleep in a well-ventilated room, plenty (but not too much) of simple, nourishing and easily digested food, at regular hours, clothing not too tight, especially about the abdomen and breasts; attention to the nipples, regular examination of the urine, and the restriction of marital relations are the main points to which advice should be directed.

4. *Prophylaxis of filth diseases* consists in the prevention of the ingress and accumulation of dirt, proper methods of removal by cleaning, and of destruction by burning; by having proper, tight receptacles for waste matter; by having proper plumbing and water supply; by proper ventilation of and sunlight in living and sleeping rooms; by not keeping domestic animals in the house, and by keeping such animals clean; by keeping out rats, mice, flies, mosquitoes and other insects as much as possible, and by personal cleanliness.

5. The *dangers from the housefly* are: Transmission of diseases, such as typhoid, tuberculosis, cholera, dysentery, diarrhea, anterior poliomyelitis, and possibly other diseases. The *mosquito* may transmit malaria, yellow fever, dengue, and filariasis.

To exterminate flies: "Since flies breed only in filth, the first thing to do is to render it impossible for the fly to reach any of the accumulations unavoidable around habitations. This is done: (1) By destroying filth wherever found. (2) By rendering it distasteful or poisonous to flies or their larvæ by the use of lime, kerosene, oil of pennyroyal or cresol. (3) By excluding light from the receptacle or by screens which the flies cannot pass. The most difficult part of an anti-fly campaign is teaching the people to dispose of their garbage properly. No amount of screening, trapping or poisoning will make up for careless disposal of filth and waste. All such materials must be promptly destroyed or buried. If a really good suspension of milk of lime (calcium hydrate) is mixed with the garbage or refuse, the eggs and pupæ or maggots of the fly are at once destroyed, but it must be made to come in contact with the eggs or maggots to do any good. Kerosene oil is more effective, but more expensive. Where crude oil or low grade distillates are procurable, the expense is much lessened. Oil of pennyroyal, in the proportion of 1 ounce to 1 quart of kerosene, is very distasteful to the adult fly, as well as fatal to the young, and a small quantity sprinkled around the garbage can is sufficient to keep away all flies. The greatest drawback is the expense. Cresol is not expensive, and may be used freely in 2 per cent. emulsion. Privy vaults, manure bins, and similar places must be made and kept perfectly dark. Screens must be made automatically self-closing, otherwise they are sure to be left open and to fail of their object."—(Gardner and Simond's *Practical Sanitation*). Fly poisons, flytraps and fly papers may also be used.

"*The most efficient way of getting rid of mosquitoes* is to make it impossible for them to breed. The eggs of a mosquito are laid in water, and water is absolutely necessary for the larval and pupal stages, which must be passed through before the adult mosquito is produced. Fish destroy developing mosquitoes and large sheets of water are too rough for them; so mosquitoes must have, for breeding, rather small collections of fresh water free from fish. Mosquitoes will soon disappear from a locality if all such collections of water within a quarter of a mile of it are filled up, drained, or covered with a film of coal oil so as to make it impossible for the mosquitoes to breed in them. Those who live in a malarious district should protect themselves from mosquito bites by the careful use of mosquito netting."—(Marshall's *Microbiology.*)

6. *The chief sources of contamination of drinking water* are: Sewage, including not only solid and liquid excreta, but also house water and waste water; manufacturing refuse, such as from dye works, bleaching works, tanneries, and numerous other industrial places; improper storage or service of water.

Drinking water may be purified by: Distillation, boiling, filtration, precipitation, and various chemical methods.

7. *Diseases specially liable to be conveyed by the ingestion of milk:* Tuberculosis, typhoid fever, scarlet fever, diphtheria, tonsilitis, cholera, and gastrointestinal disorders.

8. *Diseases due to microorganisms: Typhoid*, transmitted by food, water, milk, fingers, flies, and "carriers"; *dysentery*, transmitted by water, milk, vegetables, direct contact with patient and his discharges, flies; *cholera*, transmitted by food, water, and flies; *smallpox*, method of transmission is not known, possibly by air, flies, mosquitoes; *scarlet fever*, transmitted by secretions from nose, throat, and ear (suppurating), and scales from skin; *measles*, transmitted by direct contagion, fomites; *diphtheria*, transmitted by infected articles, "carriers," milk, fomites, domestic animals, secretions from throat or nose or ear; *influenza*, transmitted by "carriers," sputum; *mumps*, transmitted by contact; *plague*, transmitted by the flea, rats, squirrels, marmot; *Malta fever*, transmitted by milk of goat and possibly by biting insects; *anthrax*, transmitted by animals, wool, skin, rags; *glanders* and *farcy*, transmitted by inoculation; *foot and mouth disease*, transmitted by secretions of infected animals, and milk, butter, and cheese made from milk of such animals; *hydrophobia*, transmitted by saliva and bite of dog or wolf; *yellow fever*, transmitted by Stegomyia mosquito; *malaria*, transmitted by Anopheles mosquito; *dengue*, transmitted by Culex mosquito; *pellagra*, perhaps transmitted by Simulium (sand-fly); *erysipelas*, transmitted by inoculation; *tetanus*, transmitted by inoculation; *tuberculosis*, transmitted by inoculation, inhalation and ingestion; *leprosy*, transmitted by inoculation, contagion with secretions; *typhus*, transmitted by body lice and bedbug; *relapsing fever*, transmitted by bites of insects; *kala azar*, transmitted by bite of bedbug; *anterior poliomyelitis*, transmitted by secretions and flies; *cerebrospinal meningitis*, transmitted by nasal secretions and "carriers"; *syphilis*, transmitted by sexual contact, kissing, instruments, and inoculation; *gonorrhea*, transmitted by sexual contact; fingers or towels may also convey the virus.

9. The patient must be isolated; no one but the physician and nurse must enter the room; the physician should put on a large washable gown when he goes in and remove it on leaving, at the same time washing his hands in a disinfectant; the nurse, when she leaves the sick room, should also remove her clothes and put on others, at the same time disinfecting herself. At the termination of the disease everything should be disinfected: toys and books, etc., are better burned.

10. *Healthy* sleep is more apt to occur when the person is healthy and of correct habits; bodily comfort, mental repose, sufficient warmth, proper ventilation, a slight amount of fatigue, perfect quiet, and a comfortable bed are more or less necessary. Sometimes, in addition to the above, an evening walk, a warm bath at bedtime, and a light repast before retiring may be necessary.

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Original Articles.

ANIMAL EXPERIMENTS UPON THE ACQUIREMENT OF ACTIVE IMMUNITY BY TREATMENT WITH VON RUCK'S VACCINE AGAINST TUBERCULOSIS.

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THE following experiments were undertaken for the purpose of independent observations in respect to the immunizing power of a specific vaccine made from extractives of the tubercle bacillus, as prepared and described by Dr. Karl von Ruck[1] of Asheville, N. C., at whose request one of the authors (F. J. C.) applied to Sir Almroth E. Wright, his former chief, for his consent to have the work done under his direction in his laboratory at St. Mary's Hospital in London. This request being granted by Sir Almroth Wright, arrangements were made accordingly.

In order to expedite the necessary studies, Dr. von Ruck supplied thirty-six guinea-pigs which had been immunized in his laboratory, to be taken to London. Through an unfortunate accident, thirty-two of the animals were drowned on shipboard. In fifteen of the autopsies, the animals showed lesions to which Dr. von Ruck had called the attention of one of us, as seriously interfering with his own experiments, which he then considered as spontaneous tuberculosis. Sections from tissues of two of these animals showed acid-fast bacilli. The four remaining animals were excluded from our experiments.

It was not intended to be within the scope of these experiments to undertake any work with the idea of establishing proof of the clinical value of this vaccine; but the interim caused by the necessity of immunizing a new lot of animals, was utilized for treating a few clinical cases selected by Sir Almroth Wright with this end in view. Realizing the long period of time which would be required to study a comparative series of cases under treatment with Tuberculin BE in routine use in the clinic of the Department at St. Mary's Hospital, Sir Almroth decided to select only cases for treatment with this vaccine, which had failed to show improvement under treatment with Tuberculin BE, and to note any changes that might become manifest through its influence.

Eight cases were assigned for this purpose, being of the type predominating in this clinic, namely six cases of lymph gland affections characterized by chronic sclerotic lesions, in which the enlarged glands varied in size from masses one to four inches in diameter, and two cases of lupus of long standing, one of which had existed for fifteen years and involved nearly all parts of the body; the second case had developed upon scar tissue forming after the removal of tuberculous glands from the neck; the lesions covered a patch one by one and one-half inches in size.

These cases were treated for three months with varying doses administered subcutaneously and, in some instances, intravenously. At the end of that time the clinical experiments were given up on account of the necessity of proceeding with the experiments upon animals. During the course of the treatment, forty-eight observations were made to ascertain the relation between the opsonic contents and the specific precipitins of the sera of these patients; but no uniformity could be established in their inverse proportions, as had been observed by Dr. von Ruck.[2]

In the course of treatment of these cases no permanent changes could be noted in the local lesions; but in four out of six cases of the glandular type, an improvement became manifest in the general condition of the patients, which suggests that the treatment had been beneficial. The other two of the glandular cases had presented no general symptoms and, from the fact that 1 c.c. of the vaccine was administered intravenously, without causing any reaction, it is possible that the lesions were not tuberculous.

The extensive case of lupus had been treated with other specific products for several years, during which periods of improvement and relapses had been noted; consequently no conclusion could be drawn when the treatment was discontinued. In the other, less extensive case, while presenting no definite changes in the local lesions, such a remarkable general improvement occurred that the change was noticeable to any one.

Considering the fact that all these cases which had been assigned, were of a character which implies a minimum circulation in the affected tissue, it is possible that, *no matter how much immune substances might be elaborated in response to a given vaccine, an influence upon the local lesions could hardly be expected by this means alone.*

Animal Experiments.—Great difficulties were encountered in obtaining guinea-pigs free from pseudotuberculosis and, as will be shown later, a large number of the animals used in the experiments were found to be affected with various types thereof.

In our search for normal animals suitable for our experiments, a dealer was found who claimed that

he had never had any infection among his animals, either acute or chronic. From his stock, 104 male guinea-pigs were chosen, and their active immunization was undertaken by the subcutaneous administration of successively increasing doses of the vaccine. A number of these animals died, especially during the early part of their treatment, and on autopsy they were found to present lesions which resembled tuberculosis. Captain Stewart R. Douglas, I.M.S., assistant director of the department, was consulted and suggested that we were dealing with a chronic form of pseudotuberculosis. In our further investigations we isolated a short coccobacillus from some of the lesions, and also a Gram-negative bacillus whic hseemed to be identical with the *Bacillus pseudotuberculosis rodentium* described by Pfeiffer.

It was decided, however, to proceed with the immunization of the remaining animals, because it was doubtful whether a perfectly reliable source of animals could be found. After a certain number of doses of the vaccine had been administered, the sera of the animals were tested by a technique of complement-fixation described by Dr. von Ruck.[3] At this time there remained fifty-one animals of the original lot. In six of these, Dr. von Ruck's criterion in complement-fixation was reached with antigens supplied by him. In the remainder the results were only partial or negative.*

It appeared after many attempts, that the binding power of the antigens for complement was very variable and unstable, especially in the presence of hemolytic amboceptor of high titer, and it became necessary to employ amboceptors of low titer, in order to obtain any results at all. The hemolytic system used was rabbit hemolysin for calf-cells, with either guinea-pig or rabbit serum for complement. The rabbit complement frequently proved so weak and variable, that it had to be abandoned, and the partial results that were obtained occurred when guinea-pig complement had been employed.

To eliminate the possible adverse influence of pseudotuberculosis, in the sera used for complement, a further search for normal guinea-pigs was undertaken. A lot was purchased from a guinea-pig fancier who bred his animals exclusively for purposes of exhibition. These animals were young and, from all outward appearances, they were perfectly healthy. A point was made to autopsy, with great care, each of the guinea-pigs of this lot, that had been killed for the purpose of securing fresh serum for complement, and pseudotuberculous lesions were found in every one of them, over thirty in number. We are not prepared to express an opinion on the exact relation of sera from animals affected with pseudotuberculosis upon the variability and unreliability in complement-fixation tests. We have thought of non-specific fixation, or of deviation of complement through the presence of a large amount of amboceptor for the organisms of pseudotuberculosis; but we did not have the time and opportunity to study the subject critically.

The amazing point about these infections with pseudotuberculosis is the large amount of tissue in vital organs, which can be involved in the local processes and yet permit the animals to live in apparent health. The assumption of a certain degree of an acquired immunity against the bacteria causing the pseudotuberculosis, which prevents generalization through the blood, possibly may account for these observations and also for the earlier deaths which took place after the administration of anti-tuberculosis vaccine, or after infection with tubercle bacilli, which would then cause a disturbance of this acquired immunity. In any case, the presence of an infectious disease, which in its course has caused such extensive involvement of vital organs, may well be considered a hopeless barrier to the successful immunization of the affected animal against tuberculosis or against any other infection.*

Bactericidal Experiments.—Our bactericidal experiments will be considered first, because they preceded the infection of treated animals. Their object was to demonstrate a difference in the germicidal action of human sera, accordingly as they were taken before or after the administration of the vaccine. If such a difference could be clearly established in a sufficiently large number of cases in favor of the sera taken after one or more doses of the vaccine, such a result would have to be accepted as conclusive.

For preliminary experiments, the sera of nine persons were obtained, who had not before been treated with the von Ruck vaccine or with any other product of the tubercle bacillus.

The technique for these and for the bactericidal experiments with sera taken after vaccination, was as follows: Two drops of the person's serum were mixed with two drops of an emulsion of living tubercle bacilli, containing 0.01 mgr. of the bacilli. This mixture was agitated in a test-tube and then placed in an incubator at 37° C. over night. The mixture was then injected subcutaneously into a guinea-pig. For the infection of control animals, an equal amount of normal serum was substituted for the human serum in one group, and normal salt solution in another group of animals, all control test-tubes being otherwise treated exactly like those intended for the principals.†

The results of these experiments are given in Table I.

Apparently the human serum had a slight inhibitory effect, increasing the average duration of life.

It is readily seen that the purpose of the experiment has been accomplished in the above group. Guinea-pig No. 1 (Dick) shows some modification of virulence, and justly so. The serum had given positive results in the complement-fixation test, indicating that its donor had developed a fair amount of immunity to the tubercle bacillus. At a later date

*The antigens were four in number: (1) a fat-free emulsion of tubercle bacilli; (2) a lipoid, neutral in reaction; (3) a fatty acid; (4) a water-soluble protein. The double guide indicating successful resistance to infection, which was conditioned by Dr. von Ruck as essential, was that the sera should give complete fixation in serum dilutions of 1:8 with all antigens; and that 0.2 c.c. of the active serum should cause marked morphological changes upon 0.01 mgr. of virulent tubercle bacilli of human origin, *in vitro*, after incubation for twenty-four hours at 37° C.

*Aside from the disappointing and inseparable complications of infection with pseudotuberculosis in our experiments, the possibility of error in utilizing guinea-pigs for diagnostic experiments became manifest in the course of our studies. The inoculation of a guinea-pig with suspected fluids or tissues may lead to serious error, unless the results are studied and controlled in a more critical manner than is the usual custom. Our observations also raise the question of the reliability of some of the experiments in tuberculosis recorded in literature, in which such critical studies were omitted.

†All emulsions used in these experiments were made by Dr. Achard of Dr. v. Ruck's staff, who placed them in the hands of Dr. Parry Morgan of the staff of the Department. Dr. Morgan put up the serum and bacterial mixtures in this and in subsequent experiments and witnessed their use for the infections.

he responded to the vaccine with a sharp reaction and manifested a decided improvement in his physical condition during the weeks following. Excluding guinea-pigs Nos. 6 and 14, on account of the short time they lived after infection, it will be found that 100 per cent. of the sera which are left show no modifying action upon the virulence, except in the duration of life; or, if the result in G. P. No. 1 is interpreted as manifesting a modifying influence, 85.7 per cent. will be left in which no modifying action upon the virulence was evident.

Table 1—Animal Experiments with Human Sera Taken Before Vaccination

Name	Animal No.	Death	Lived, Days	Autopsy
Hayman	15	Found dead in cage	103	Disseminated lymph gland tbc.
Storrer	13	Found dead in cage	109	Generalized tbc.
Francis	6	Killed	29	Excluded, having been killed through error.
Duff	14	Found dead in cage	1	Excluded on account of early death.
Hardy	5	Killed	117	Disseminated lymph gland tbc.
Menereau	33	Killed.	117	Generalized tbc.
Henry	2	Killed.	117	Disseminated lymph gland tbc.
Edwards	4	Found dead in cage.	102	Generalized tbc.
Dick	1	Found dead in cage.	103	Tbc. of regional lymph glands.
Controls.				
Normal salt.	9	Found dead in cage.	80	Generalized tuberculosis.
Normal salt.	10	Found dead in cage.	80	Generalized tuberculosis.
Normal salt.	11	Found dead in cage.	80	Generalized tuberculosis.
Normal salt.	12	Found dead in cage.	109	Disseminated lymph gland tuberculosis.
G.P. Serum.	8	Killed.	117	Disseminated lymph gland tuberculosis.
G.P.-Serum.	16	Found dead in cage.	80	Generalized tuberculosis.
G.P.-Serum.	17	Found dead in cage.	30	Apparently pseudotuberculosis.*
G.P.-Serum.	18	Found dead in cage.	2	Apparently pseudotuberculosis.*
G.P.-Serum.	7	Killed	101	Tuberculosis of regional lymph glands.

*Serum controls Nos. 17 and 18 are excluded on account of early death.

After these infections had been made, the individuals who had supplied the sera for this group were given each one dose of the vaccine. Excepting one infant (Duff) and a child (Francis), all reacted to its administration, the reactions being attended by fever. The sera of these persons were tested after five days. Bacteriolysis *in vitro*, of tubercle bacilli, could not be demonstrated in any of them* and the same is true for the sera obtained from animals which had been treated with the vaccine, in the subsequent experiments. In the latter sera an obstacle to the demonstration of bacteriolysis was encountered also in the gross contamination of the specimens, which was unavoidable on account of having to bleed the animals from the ear.

The difficulties in the complement-fixation test, which we encountered, have already been described. It was agreed, because of these difficulties, to take specimens of serum from the vaccinated individuals, on three successive days, hoping that a positive serum would be secured on one or more of these three occasions. Two drops of the respective serum were then placed in a sterile test-tube, and 0.01 mgr. of tubercle bacilli in emulsion added, the tubes being placed in the incubator over night. The content of each individual tube was then used for the subcutaneous infection of a guinea-pig. Control experiments were made in a certain number of animals with the contents of tubes containing a like quantity of tubercle bacilli, while the immune human sera were replaced by normal human serum or by normal salt solution.* The results of the bactericidal experiments with sera taken after vaccination with a single dose in four adults, two children and one infant, and with sera from two other adults who had received two doses of the vaccine before the present studies were undertaken, are given below.†

Bactericidal Experiments with Human Sera taken after the Administration of Vaccine.

Adults. Dick. Serum taken vii/20/14. G.P. No. 6, infected subcutaneously in left axilla; weight 500 grams. Killed 124 days after infection; weight 530 grams.

Autopsy: Infection site open lesion. Left axillary glands 3x3 mm., caseous; 3x4 mm., caseous; right axillary gland 2x3 mm., caseous.

Liver, 1½ times normal size; several patches of fibrocaseous degeneration.

Mesenteric glands from a caseous mass, 10x3 mm.

Spleen, 8 times normal size; a mass of fibrocaseous degeneration.

An omental gland under spleen, 2x3 mm., fibrous.

Lungs, numerous greenish tubercles; some caseation.

Mass of bronchial glands, 6x4 mm., caseous.

Smears made for tubercle bacillus: positive, left axillary gland; mesenteric gland; spleen; bronchial glands; retrosternal gland; negative lung and liver.

Cultures for microorganisms of pseudotuberculosis, positive for liver; negative for spleen and lung. *Generalized Tuberculosis.*

Dick. Serum taken vii/21/14. G.P. No. 16; infected subcutaneously in left axilla; weight 330 grams. Killed 122 days after infection; weight 465 grams.

Autopsy: Infection site not found. Spleen normal size, mottled. Mesenteric gland 1x1 mm. Lungs slightly mottled.

Smears from spleen and mesenteric gland negative. *No Tuberculosis.*

Dick. Serum taken vii/21/14. G. P. No. 23. Infected subcutaneously in left axilla; weight 345 grams. Died 38 days after infection; weight 430 grams.

Autopsy: Infection site, nothing abnormal noticed except an axillary gland 3x5 mm., normal in consistency. Abdomen: Exudation and free feces found in peritoneal cavity; quantity 2 c.c. Mesentery, injected at gastroenteric margin. Kidneys, normal; left suprarenal injected. Spleen, size normal, with dark red borders; otherwise normal. Testicles normal. Retroperitoneal glands normal. Liver normal. Diaphragm injected. Lungs, normal.

Smears: No tubercle bacilli found in smears from infection site and from peritoneal exudate.

Cause of death, probably injury. *No Tuberculosis.* Excluded on account of early death.

Achard. Serum taken vii/20/14. G.P. No. 8. Infected subcutaneously in left axilla; weight 520 grams. Killed 122 days after infection; weight 590 grams.

Autopsy: Left axillary glands 3x2 and 2x2 mm., caseous. Mesenteric glands 2x2 mm., fibrous. Liver: normal size; many small miliary patches scattered throughout central and left lobe. Two large areas of miliaries on border of left and central lobes, 3x2 mm. Spleen: Nine fibrocaseous nodules. Lungs: 8 or 10 small gray tubercles scattered through lung.

Smears from left axillary glands, mesenteric glands, liver, spleen, lung, all negative as to T.B.

Cultures for organisms of pseudotuberculosis, from liver, spleen, lung, all negative. *No Tuberculosis.*

Achard. Serum taken vii/21/14. G.P. No. 12. Infected subcutaneously in left axilla; weight 365 grams. Killed 122 days after infection; weight 560 grams.

Autopsy: Infection point not found. Mesenteric lymph gland or fat, 2x1 mm. Liver apparently normal. Spleen normal, dark. Lungs normal except for small patch of consolidation in middle right lobe.

*When decolorization of slides, made for the purpose of demonstrating bacteriolysis *in vitro* of tubercle bacilli, was done with 25 per cent. sulphuric acid, no lysis was demonstrated. Slides decolorized with lesser percentages of acid were not accepted by Captain Douglas, on account of possible retention of stain by contaminating bacteria.

*For this group of principals and controls still another source of guinea-pigs had been utilized. Two of the animals were killed when first received; they were found entirely normal on autopsy, and we were fortunate in finding very little pseudotuberculosis among the rest of these animals. It was a matter of great disappointment that it was not possible to obtain enough animals from this source for all our subsequent experiments.

†Several of the persons who had furnished serum for the preliminary experiments (see Table I.) were not included in the present tests, because it was not practicable to obtain specimens of their blood.

Smears for mesenteric gland or fat, from liver, spleen, lungs, negative as to tubercle bacilli. *No Tuberculosis.*

ACHARD. Serum taken vii/22/14. G.P. No. 21. Infected subcutaneously in left axilla; weight 405 grams. Killed 123 days after infection; weight 600 grams.

Autopsy: Infection point not found. Spleen mottled. Smears from spleen negative as to tubercle bacilli. *No Tuberculosis.*

STORER. Serum taken vii/20/14. G.P. No. 7. Infected subcutaneously in left axilla; weight 480 grams. Killed 122 days after infection, weight 480 grams.

Autopsy: Left axillary lymph gland 3x2 mm., caseous; another 2x2 mm. normal. Spleen 3 whitish nodules, 2x1 mm. Lungs normal except for 2 small grayish spots, ½x1 mm. Smears from left axillary gland, tubercle bacilli found; from spleen and lungs, no tubercle found. Cultures for organisms of pseudotuberculosis, from spleen and lungs, negative. *Tubercle bacilli at Infection Point.*

STORER. Serum taken vii/21/14. G.P. No. 14. Infected subcutaneously in left axilla; weight 350 grams. Killed 122 days after infection; weight 510 grams.

Autopsy: Infection point not found. Mesenteric gland, 1x1 mm. normal. Liver normal except for 1 small whitish patch on outer border of left lobe, and 1 on inner border of left lobe. Spleen mottled. Lungs some intense mottling. Smears from mesenteric glands, liver, and spleen negative as to tubercle bacilli. Cultures for organisms of pseudotuberculosis from liver and lung, negative. *No Tuberculosis.*

STORER. Serum taken vii/22/14. G.P. No. 19. Infected subcutaneously in left axilla, weight 340 grams. Killed 123 days after infection; weight 430 grams.

Autopsy: Infection point not found. Liver normal. Spleen normal, dark. Lungs normal, a little mottled. Smears from spleen no tubercle bacilli found. *No Tuberculosis.*

COLEBROOK. Serum taken vii/20/14. G.P. No. 4. Infected subcutaneously in left axilla; weight 510 grams. Died 119 days after infection; weight 370 grams.

Autopsy: Enormously distended bladder. Infection site: 2 lymph glands 4x3 mm., caseous. Spleen, 2 white patches, 4x2 mm. and 2x2 mm. Lungs intensely mottled; one small greenish surface, 1x1 mm. on posterior surface of lower left lobe; lower right lobe intensely congested.

Smears: Tubercle bacilli found in axillary lymph glands and spleen; none found in lung.

Culture for organisms of pseudotuberculosis from spleen, Gram-negative coccobacillus found; lung negative. *Generalized Tuberculosis.*

COLEBROOK. Serum taken vii/21/14. G.P. No. 13. Infected subcutaneously in left axilla; weight 415 grams. Killed 121 days after infection; weight 500 grams.

Autopsy: Infection point not found. Spleen normal, dark. Lungs slight anthracosis. Smears from spleen, no tubercle bacilli found. *No Tuberculosis.*

COLEBROOK. No serum available on vii/22/14.

HENRY. Serum taken vii/20/14. G.P. No 5. Infected subcutaneously in left axilla; weight 470 grams. Killed 123 days after infection; weight 560 grams.

Autopsy: Open lesion at infection site; caseous. Left axilla, lymph gland 2x1 mm., normal consistency. Spleen normal size and appearance, except a slight line across one end, 3 mm. long, whitish, suggesting scar tissue. Mesenteric glands 6 x 4 mm., fibrocaseous. Lung, 1 green spot, 1x1 mm., border of left upper lobe.

Smears: Infection site, axillary gland, spleen, mesentric gland, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis, from lungs negative. *No tuberculosis.*

HENRY. Serum taken vii/21/14. G.P. No. 17. Infected subcutaneously in left axilla; weight 450 grams. Died 119 days after infection; weight 420 grams.

Autopsy: Infection point not found. 1 mesenteric gland, ½x1 mm., apparently normal. Liver normal except for 2 minute whitish spots, ½x½ mm. Spleen normal, mottled. Lungs: Top of right lung, patch ½x2 mm., white; area of congestion in lower lobes (marked).

Smears: Mesenteric gland, liver, spleen, lung, no tubercle bacilli found.

Culture for organisms of pseudotuberculosis, from liver and lung, negative. *No tuberculosis.*

HENRY. Serum taken vii/22/14. G.P. No. 20. Infected subcutaneously in left axilla; weight 375 grams. Killed 121 days after infection; weight 480 grams.

Autopsy: Left axillary lymph gland 4x3 mm. Spleen slightly mottled.

Smears: Tubercle bacilli found in left axillary lymph gland; none found in spleen. *Regional lymph-gland tuberculosis.*

F. J. C. Serum taken vii/20/14. G.P. No. 2. Infected subcutaneously in left axilla; weight 450 grams. Died 119 days after infection; weight 330 grams.

Autopsy: Infection site, 2 lymph glands, 2x2 mm., caseous. Mesenteric gland, 1x½ mm., fibrous. Spleen normal in size; *2 fibrous nodules*, 2x2 and 1x½ mm. Liver normal except for 1 small whitish patch, 1x1 mm. Lungs intensely mottled; 1 small gray nodule at base of left lower lobe; 1 on lower border of upper lobe.

Smears: Mesenteric gland, spleen, axillary lymph gland, tubercle bacilli found. Lung, no tubercle bacilli.

Cultures for organisms of pseudotuberculosis, spleen and liver negative. Gram negative coccobacillus in lung. *Generalized Tuberculosis.*

F. J. C. Serum taken vii/21/14. G.P. No. 11. Infected subcutaneously in left axilla; weight 375 grams. Killed 121 days after infection; weight 495 grams.

Autopsy: Infection point not found. Spleen normal, dark. Lungs a little anthracosis. Smears: Spleen, no tubercle bacilli found. *No Tuberculosis.*

F. J. C. Serum taken vii/22/14. G.P. No. 24. Infected subcutaneously in left axilla; weight 340 grams. Killed 121 days after infection; weight 460 grams.

Autopsy: Infection point not found. Liver normal except 2 minute whitish spots, under surface of left lobe. Spleen normal size, mottled. Lungs, pneumonic patch, central portion of upper right lobe.

Smears: Liver, spleen, lungs, no tubercle bacilli found.

Culture for organisms of pseudotuberculosis: Liver and lungs negative. *No Tuberculosis.*

Children.

EDWARDS. Serum taken vii/20/14. G.P. No. 3. Infected subcutaneously in left axilla; weight 570 grams. Killed 123 days after infection; weight 625 grams.

Autopsy: Left axillary lymph gland 4x3 mm., caseous. Spleen normal size, mottled; whitish patch at tip 3 mm. Mesenteric gland 2x3 mm., fibrous. Lungs intensely congested; 1 minute greenish spot on lower left lobe.

Smears: Left axillary gland, tubercle bacilli found, spleen, mesenteric gland, lungs, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Spleen and lungs negative. *Regional Lymph Gland Tuberculosis.*

EDWARDS. No serum available vii/21/14.

EDWARDS. Serum taken vii/22/14. G.P. No. 22. Infected subcutaneously in left axilla; weight 370 grams. Killed 122 days after infection; weight 480 grams.

Autopsy: Infection point not found. Spleen normal, slightly mottled. Lungs slightly mottled. Smears: Spleen, no tubercle found. *No Tuberculosis.*

FRANCIS. Serum taken vii/20/14. G.P. No. 9. Infected subcutaneously in left axilla; weight 540 grams. Died 120 days after infection; weight 430 grams.

Autopsy: Infection point not found. One retroperitoneal lymph gland 1x2 mm., apparently normal. Liver normal except for a few whitish spots ½x½ mm. Spleen normal, mottled. Lungs intense congestion.

Smears: Retroperitoneal lymph gland, liver, spleen, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver and lungs negative. *No Tuberculosis.*

FRANCIS. Serum taken vii/21/14. G.P. No. 15. Infected subcutanously in left axilla; weight 500 grams. Killed 121 days after infection; weight 515 grams.

Autopsy: Infection point not found. Spleen normal, very blackish. Smears: Spleen, no tubercle bacilli found. *No Tuberculosis.*

FRANCIS. No serum available vii/22/14.

BABY DUFF (Infant). Serum taken vii/20/14. G.P. No. 1. Infected subcutaneously in left axilla; weight 490 grams. Killed 123 days after infection; weight 610 grams.

Autopsy: Infection point not found. Liver normal except for 1 minute spot, ½x½ mm., central lobe. Spleen dark mottled. Mesenteric gland 3x2 mm.

Smears: Spleen, mesenteric gland, liver, no tubercle bacilli found. *No Tuberculosis.*

BABY DUFF. Serum taken vii/21/14. G.P. No. 10. Infected subcutaneously in left axilla; weight 470 gms. Killed 121 days after infection; weight 565 grams.

Autopsy: Infection point not found. Spleen normal size, mottled. Lungs a little anthracosis. Smears: Spleen no tubercle bacilli found. *No Tuberculosis.*

Baby Duff. Serum taken vii/22/14. G.P. No. 18. Infected subcutaneously in left axilla; weight 365 gms. Killed 120 days after infection; weight 525 grams.

Autopsy: Left axillary lymph gland 2x1 mm., apparently normal. Liver normal except for 3 small whitish patches, ½x1 mm. Spleen normal, dark. Lungs mottled. irregular anthracosis.

Smears: Liver, spleen, lungs, left axillary lymph gland, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver, gram negative cocco-bacillus. *No Tuberculosis.*

Controls for Virulence.—Normal Salt Control. vii/20/14. G.P. No. 34. Infected subcutaneously in left axilla; weight 385 gms. Killed 121 days after infection; weight 540 grams.

Autopsy: Open wound at infection site. Left axilla, 2 glands, 2x3 mm., caseous; cervical gland, 3x4 mm., caseous; Mesenteric gland 6x6 mm., caseous. Liver a mass of small whitish patches. Spleen 3 times normal size, a mass of fibrocaseous areas. Lungs a mass of small tubercles. Mass of bronchial glands, 10x15 mm., caseous. Retrosternals 4x3 mm., caseous.

Smears: Mesenteric and retrosternal glands tubercle bacilli found, liver, spleen, lungs, axillary glands, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver, spleen, lungs, negative. *Disseminated Lymph Gland Tuberculosis.*

Normal Salt Control, vii/20/14. G.P. No. 33. Infected subcutaneously in left axilla; weight 335 gms. Died 117 days after infection; weight 355 grams.

Autopsy: Left axilla, 2 glands, 7x4 mm., caseous; right axilla, 1 gland, 2x3 mm., one 3x5 mm. Right inguinals, one 5x7 mm., one 2x3 mm., caseous. Left inguinals enlarged. Two cervicals 2x4 mm. Mesenteric gland 2x3 mm., caseous, one 3x5 mm. Retroperitoneal gland 1x1 mm., normal. Liver fibrocaseous masses, 2x2 to 4x7 mm., all lobes. Spleen 3 times normal; fibrocaseous masses throughout. Lungs a mass of tubercles, all lobes. Bronchial glands, mass 4x6 mm., fibrocaseous.

Smears: Infection point, mesenteric, inguinal and bronchial glands, liver, spleen, lungs, tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver and lungs negative; spleen, a Gram-positive coccus. *Generalized Tuberculosis.*

Normal Salt Control, vii/21/14. G.P. No. 30. Excluded on account of leaky syringe, losing part of contents.

Normal Salt Control, vii/21/14. G.P. No. 29. Infected subcutaneously in left axilla; weight 350 gms. Killed 120 days after infection; weight 530 grams.

Autopsy: Open lesion at infection site. Left axilla, mass of glands, 40x15 mm., caseous. Right axilla, gland 6x6 mm., caseous. Mesenteric mass of glands, 10x15 mm., caseous. Liver, central lobe several areas of fibrocaseous degeneration. Spleen four times normal; a mass of fibrocaseous nodules. Lungs, base shows number of small tubercles and fibrocaseous areas. Mass of bronchial glands, 12x8 mm., caseous.

Smears: Left axillary lymph glands and bronchial glands, tubercle bacilli found. Liver, mesenteric glands, spleen, lungs, no tubercle bacilli found.

Culture for organisms of pseudotuberculosis: Liver and spleen, negative. *Disseminated Lymph-Gland Tuberculosis.*

Normal Salt Control. vii/22/14. G. P. No. 26. Infected subcutaneously in left axilla; weight 370 grams. Died 58 days after infection; weight 490 grams.

Autopsy: Axillary glands 4 x 6 mm. caseous. Spleen, 5 areas 4 x 4 mm., caseous. Lungs, few white tubercles at base, right lobe: otherwise normal. Peritoneal exudate, 2 c.c., bloody. Left axillary gland, 2 x 2 mm. Retrosternal gland caseous.

Smears: Axillary and retrosternal glands, tubercle bacilli found. Peritoneal exudate, spleen, liver, lungs. No tubercle bacilli found. *Disseminated Lymph Gland Tuberculosis.*

Normal Salt Control. vii/22/14. G. P. No. 25. Infected subcutaneously in left axilla; weight 335 grams. Died 97 days after infection; weight 320 grams.

Autopsy: Left axilla, mass of glands, 10 x 5 mm. caseous. Gland below left ribs 10 x 20 mm. caseous. Left inguinal glands, 10 x 5 mm. caseous; 3 x 2 mm. caseous. Adhesions small intestine to parietal peritoneum; omentum adherent to stomach and spleen. Mesenteric gland, 3 x 2 mm. fibrous. Retroperitoneal, fibrocaseous gland, 3 x 5 mm., two 5 x 2 mm. fibrous. Intestines adherent to liver. Liver, under surface, several whitish patches up to 3 x 3 mm.; top surface all lobes similar. Spleen mass of whitish nodules up to 3 x 3 mm., twice normal size. Pancreas 2 x 11 mm. fibrocaseous. Peritoneal exudate 2 cc. serous. Lungs, upper lobes deeply congested; all lobes several (base) greenish patches 1 x 1 mm.; middle right lobe many greenish patches, 1 x 1 mm.; few on right lower lobe. Left lung covered with greenish patches, 1 x 1 mm. Mass of posterior mediastinal glands, 5 x 3 mm. caseous. Mass of anterior mediastinal glands, 10 x 15 mm. caseous.

Smears: Left axillary glands, gland on margin of ribs. Liver, pancreas, no tubercle bacilli found. Left inguinal, mesenteric, retroperitoneal, posterior mediastinal, retrosternal lymph glands, lungs, tubercle bacilli found.

Cultures for organisms of pseudotuberculosis. Liver: Gram-negative coccobacillus. Spleen negative. *Generalized Tuberculosis.*

Serum Controls.

Normal Human Serum. vii/20/14. G. P. No. 36. Infected subcutaneously in left axilla; weight 355 grams. Died 117 days after infection; weight 400 grams.

Autopsy: Open lesion at infection site. One cervical lymph gland 2 x 3 mm. caseous. Left axilla, mass 8 x 4 mm. caseous. Right axilla, 2 x 2 mm. fibrous. Omentum 3 tubercles, 2 x 1 mm. Mass of mesenteric glands, 3 x 4 mm. Liver full of white fibrocaseous patches. Spleen three times normal size; numerous fibrocaseous nodules. Lungs a mass of small grayish tubercles. Mass of bronichial glands, 6 x 8 mm. caseous.

Smears: Spleen, bronchial glands, left axillary glands, tubercle bacilli found. Liver and lungs, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis, liver, spleen, lungs, negative. *Generalized Tuberculosis.*

Normal Human Serum. vii/20/14. G. P. No. 35. Infected subcutaneously in left axilla; weight 360 grams. Died 112 days after infection; weight 360 grams.

Autopsy: Open lesion near infection site. Two left axillary glands 6 x 4 mm. caseous; right same, and one fibrous. Left inguinal 6 x 4 mm. caseous. Peritoneal exudate 2 cc. Omentum several small whitish tubercles. Mesenteric gland, 6 x 6 mm. caseous. Liver, mass of irregular whitish areas. Spleen mass of fibrocaseous nodules. Pleural exudate 2 cc. Lungs, mass of small, fibrocaseous tubercles. Left lower lobe, large fibrocaseous area, 2 x 3 mm. Mass of retrosternal glands. caseous. Mass of bronchial glands, 10 x 5 mm. caseous.

Smears: Right axillary, mesenteric glands, lungs, tubercle bacilli found. Liver, spleen, brochial glands, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis; liver and spleen, negative. *Generalized Tuberculosis.*

Normal Human Serum. vii/21/14. G. P. No. 32. Infected subcutaneously in left axilla; weight 375 grams. Killed 120 days after infection; weight 570 grams.

Autopsy: Left axilla, mass, 20 x 30 mm. caseous. Right axilla, 3 x 2 mm. normal in consistency. Right inguinals, 6 x 4 mm. fibrocaseous. In front of sternum, gland 4 x 6 mm. Cervicals 3 x 4 mm. Mesentery, mass 10 x 15 mm. caseous. Liver several small whitish areas. Spleen 3 times normal; a mass of fibrocaseous nodules. Lungs, base shows numerous small grayish tubercles. Retrosternal glands, two, 4x4 mm., caseous. Bronchial glands, mass 5x10 mm.

Smears: Mesenteric glands, tubercle bacilli found. Left axilla, liver, lungs, retrosternal gland, spleen, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver, spleen, negative. *Disseminated Lymph Gland Tuberculosis.*

Normal Human Serum. vii/21/14. G. P. No. 31. Infected subcutaneously in left axilla; weight 335 grams. Killed 120 days after infection; weight 540 grams.

Autopsy: Infection point not found. Mesenteric gland, 3x4 mm., fibrocaseous. Spleen normal, mottled. Lungs whitish nodule, 2x2 mm., in right upper lobe.

Smears: Mesenteric gland, spleen, lungs, no tubercle bacilli found.

Culture for organisms of pseudotuberculosis: Lung, Gram-positive thick bacillus. *No Tuberculosis.*

Normal Human Serum. vii/22/14. G. P. No. 28. Infected subcutaneously in left axilla; weight 340 grams. Killed 120 days after infection; weight 630 grams.

Autopsy: Infection point not found. Mesenteric

gland, ½x1 mm., apparently normal. Spleen normal, mottled. Lungs normal except for one small congested spot on left upper lobe.

Smears: Mesenteric gland, spleen, no tubercle bacilli found. *No Tuberculosis.*

Normal Human Serum. vii/22/14. G. P. No. 27. Infected subcutaneously in left axilla; weight 395 grams. Died 115 days after infection; weight 450 grams.

Autopsy: A few cervicals, 2x3 mm., fibrous. Axillæ, one on each side, fibrous. Peritoneum full of exudate, 20 cc. Liver, mass of fibrocaseous areas all lobes. Spleen 8 times normal size, a mass of fibrocaseous areas. Lungs intensely congested, full of small gray tubercles. Mass of bronchial glands, 20x15 mm., caseous.

Smears: Liver, lungs, bronchial glands, tubercle bacilli found. Spleen, no tubercle bacilli found.

Cultures for organisms of pseudotuberculosis: Liver and spleen, Gram-negative coccus. *Generalized Tuberculosis.*

Twenty-three human sera are to be considered in this experiment, and of this number, seven were without lesions, eight had slightly discolored patches or a questionable gland which proved to be of non-tuberculous nature, and two had lesions which can justly be interpreted as pseudotuberculous, since no tubercle bacilli could be discovered in them. Three proved to have generalized tuberculosis, while bacilli could be demonstrated only in the regional lymph glands of the remaining three. This summarizes a resistance to infection with tubercle bacilli in seventeen animals of this group. If we wish to exclude the two with pseudotuberculosis, we have fifteen animals which totally resisted infection.

The salt controls designed to show the virulence of these infections, all acquired tuberculosis, whereas of the normal-serum controls designed for comparison with the results obtained with immune sera, four showed tuberculosis and two did not acquire tuberculosis.

Our autopsies show that the sera from one of the vaccinated individuals had resisted infection on the three days, four on two out of the three days, and four on one of the three days on which the sera had been taken.

Active Immunization.—The treatment of the animals to be considered consisted in the subcutaneous administration of vaccine in doses of 1 to 5 milligrams, at intervals of about seven days, the doses being increased or repeated, not under five days, accordingly as they appeared to be well borne. The total number of doses varied from twelve to sixteen and averaged fourteen for all animals which outlived their treatment.

We have referred to the frequent deaths from pseudotuberculosis, which occurred during the treatment of the animals. We started with 104 guinea-pigs, and only 51 remained living and in good condition when we proceeded to test their sera with a view of determining their contents of specific amboceptors for the several antigens, and the degree of morphological changes upon virulent tubercle bacilli *in vitro*, with a view of selecting those of the animals for infection, which would comply with the standard heretofore mentioned as a guide.

We have stated the difficulties which we encountered in the complement fixation tests. After several attempts to overcome them, we had found only six sera in which the titer reached the requirements; in the sera of the other animals, the results were only partial or negative. But, inasmuch as no better preparations of antigens were available, and the presence of infection with pseudotubercle bacilli might also stand in relation to our failures in obtaining satisfactory results, further tests were abandoned and no additional serological studies were undertaken.

An attempt was made to demonstrate lysis *in vivo* by the reproduction of the Pfeiffer phenomenon. Two guinea-pigs, Nos. 43 and 53 of the group, that showed a complete complement-fixation, and one, No. 14 of the group that showed a partial complement-fixation, were selected for the experiment. Each animal with a separate control was infected with 200 times the supposed lethal dose of the culture employed in all these experiments. Exudate was taken from the peritoneal cavity of each pig and of its control, at intervals of two, four, six and twenty-four hours after the infections were made. The slides of this experiment were studied and examined by Capt. S. R. Douglas who reported that he could find no appreciable difference between the exudates of the immunized animals and those of their controls. These animals all died later; tubercle bacilli were found in all lesions; no cultures for bacilli of pseudotuberculosis were made.

Before infecting the treated animals, eight were killed which had shown negative results in the complement-fixation test, in order to ascertain the probable prevalence of pseudo-tuberculosis. Five of the eight showed lesions which were undoubtedly of pseudotuberculous origin and the related organisms were obtained in pure cultures from two of them. This gave little prospect for a sufficient number of unobjectionable experiments, inasmuch as we considered it but just to comply with Dr. von Ruck's condition that normal animals were necessary in order to resist infection, and that failures in animals which are diseased or have pseudo-tuberculosis, must be eliminated from consideration.

The remaining forty-three animals were nevertheless all infected, together with controls, as will appear in the following tabulation, because we hoped that something of value might be shown on their autopsies, to compensate us for the time and labor expended upon their treatment.

In our tabulation it will be observed that we record our findings only in regard to the presence or absence of tubercle bacilli, to the exclusion of the examination of sections. In this respect we are fully conscious that the simple presence of acid-fast rods is, in itself, not an absolute proof of tuberculosis, and that it is essential to demonstrate typical histological tubercles, in order to establish such a diagnosis. For this purpose, specimens of all doubtful lesions were preserved at the time when the autopsies were made, but, in view of the great prevalence of pseudotuberculosis, as found during the course of the experiments, and because of the fact that it would be necessary to exclude such animals from consideration, it was doubtful whether the large amount of labor required for preparing and examining sections was justified at all. The question, which had been previously discussed with Sir Almroth Wright, was decided by limiting the examination to the search for tubercle bacilli in smears made from caseous or macerated tissues, in both principals and controls.

Our results in these experiments are given in three groups, corresponding with the degree of complement-fixation observed in testing the respective sera.

It will be noted that our infections failed entirely in several of our controls for the treated animals, which obscures the results in the principals. The

TABLE II.

Animal No.	Infection.			Death.			Tuberculosis Found in Lesions.			Pseudotuberculosis	
	Mode*	Dose, Mgr.	Weight, Gm.	Weight, Gm.	Cause	Lived, Days	Infest. Site; Reg. L. Glds.	Distant L. Glands	Internal Organs	Degree	Culture
GROUP 1. COMPLEMENT-FIXATION TEST POSITIVE.											
32 Principal	Intratracheal	0 02	600	600	Died	73	0	0	0	No record	No record
Control	Intratracheal	0 02	390		Chloroform	73	Positive	Positive	Positive	0	0
50 Principal	Intratracheal	0 02	790	950	Chloroform	111	0	0	0	No record	No record
Control	Intratracheal	0 02	505	650	Chloroform	111	0	0	0	0	0
54 Principal	Intraperitoneal	0 01	605	800	Chloroform	111	0	0	0	0	0
Control	Intraperitoneal	0 01	380	600	Chloroform	111	Positive	Positive	Positive	0	0
73 Principal	Intratracheal	0 01	575	800	Died	10	0	0	0	Slight	No record
Control	Intratracheal	0 01	590	715	Chloroform	91	0	0	0	Slight	Positive
GROUP 2. COMPLEMENT-FIXATION TEST PARTIAL.											
1 Principal	Intratracheal	0 01	540	690	Chloroform	108	0	0	0	Slight	Positive
Control	Intratracheal	0 01	430	510	Chloroform	108	Positive	Positive	0	Slight	0
3 Principal	Intraperitoneal	0 01	550	770	Chloroform	112	0	0	0	Slight	0
Control	Intraperitoneal	0 01	340	660	Chloroform	112	0	0	0	Slight	0
31 Principal	Subcutaneous	0 01	464	680	Pseudotuberculosis	12	0	0	0	0	Positive*
Control	Subcutaneous	0 01	370	475	Chloroform	12	0	0	0	0	0
42 Principal	Intratracheal	0 01	647	460	Died	106	0	0	0	Slight	0
Control	Intratracheal	0 01	365	570	Chloroform	106	0	0	0	0	0
51 Principal	Subcutaneous	0 01	742	770	Chloroform	112	0	0	0	0	0
Control	Subcutaneous	0 01	350	570	Chloroform	112	0	0	0	Slight	0
57 Principal	Subcutaneous	0 02	517	420	Died	84	0	0	0	Slight	Positive
Control	Subcutaneous	0 02	490	540	Chloroform	104	0	0	0	0	0
72 Principal	Intratracheal	0 01	663	880	Chloroform	112	0	0	0	Slight	0
Control	Intratracheal	0 01	375	520	Chloroform	113	Positive	Positive	Positive	0	0
101 Principal	Intraperitoneal	0 02	455	660	Chloroform	104	0	0	0	Marked	0
Control	Intraperitoneal	0 02	385	490	Chloroform	104	Positive	Positive	Positive	Marked	Positive
GROUP 3. COMPLEMENT-FIXATION TEST NEGATIVE.											
2	Intratracheal	0 02	465	550	Chloroform	84	Positive	Positive	Positive	Marked	0†
5	Intratracheal	0 02	560	690	Chloroform	85	0	0	0	Slight	Positive
12	Intratracheal	0 02	825	540	Died	61	Positive	Positive	Positive	Marked	Positive
16	Intratracheal	0 02	Animal	lost							
20	Intratracheal	0 02	417	580	Chloroform	84	Positive	0	0	Marked	Positive
33	Intratracheal	0 02	550	720	Chloroform	84	0	0	0	Slight	
75	Intratracheal	0 02	570	460	Pseudotuberculosis	57	Positive	Positive	0	Marked	Positive
63	Intratracheal	0 02	760	790	Chloroform	84	Positive	0	Positive	Marked	
27	Intratracheal	0 01	500	650	Chloroform	114	0	0	0	0	0
37	Intratracheal	0 01	412	750	Chloroform	114	Positive	0	0	Slight	0
62	Intratrachela	0 01	745	710	Died	70	0	0	0	Slight	Positive
65	Intratracheal	0 01	700	700	No cause	70	Positive	0	0	Marked	0
67	Intratracheal	0 01	625	780	Chloroform	117	0	0	0	Marked	0
69	Intratracheal	0 01	617	770	Pseudotuberculosis	114	Positive	0	0	Marked	0
102	Intratracheal	0 01	580	520	Died	61	Positive	Positive	Positive	Marked	0
24	Subcutaneous	0 02	572	560	?	121	No record				
25	Subcutaneous	0 02	640	620	Chloroform	121	0	Positive	0	Marked	0
26	Subcutaneous	0 02	525	650	Chloroform	114	0	Positive	Positive	Marked	0
30	Subcutaneous	0 02	445	695	Chloroform	114	Positive	Positive	Positive	Marked	0
66	Subcutaneous	0 02	567	520	Pseudo and genuine tuberculosi	91	Positive	Positive	Positive	Marked	Positive
70	Subcutaneous	0 02	580	690	?	102	0	Positive	0	Marked	0‡
71	Subcutaneous	0 02	890	910	Chloroform	114	Positive	Positive	0	Marked	0
74	Subcutaneous	0 02	460	435	Pseudo and genuine tuberculosis	56	Positive	Positive	Positive	Marked	Positive
44	Subcutaneous	0 01	680	630	No cause	71	Positive	Positive	0	Slight	Positive
45	Subcutaneous	0 01	645	660	No cause	71	Positive	0	0	0	0
46	Subcutaneous	0 01	537	750	Chloroform	117	Positive	0	0	Slight	Positive
52	Subcutaneous	0 01	529	580	Chloroform	114	Positive	0	0	0	0
55	Subcutaneous	0 01	610	660	Chloroform	117	Positive	0	0	Slight	0
56	Subcutaneous	0 01	702	770	Chloroform	114	Positive	0	0	Marked	
59	Subcutaneous	0 01	717	910	Chloroform	114	Positive	0	0	Slight	Positive
61	Subcutaneous	0 01	640	820	Chloroform	114	Positive	Positive	0	Marked	0
CONTROLS FOR GROUP 3											
1	Intratracheal	0.02	345	430	Chloroform	85	Positive	Positive	0	Marked	0
2	Intratracheal	0 02	315	320	Tuberculosis	82	Positive	Positive	Positive	Marked	Positive
8	Intratracheal	0.02	450	440	Tuberculosis	70	Positive	Positive	Positive	Marked	Positive
9	Intratracheal	0 01	355	410	Chloroform	103	0	0	0	Marked	0
10	Intratracheal	0 01	475	650	Chloroform	103	Positive	Positive	0	Slight	0
4	Subcutaneous	0 02	435	470	Tuberculosis	93	Positive	0	Positive	Marked	0
7	Subcutaneous	0 02	315	320	No cause	109	0	0	0	No record	
11	Subcutaneous	0 02	475	610	Chloroform	103	Positive	Positive	0	Slight	0
3	Subcutaneous	0 01	395	650	Chloroform	107	0	0	0	Slight	0
5	Subcutaneous	0 01	370	470	Pseudo and genuine tuberculosis	107	Positive	0	0	Slight	Positive
6	Subcutaneous	0 01	445	620	Chloroform	103	Positive	0	Positive	Slight	Positive
VIRULENCE CONTROLS											
1	Subcutaneous	0 02	460	560	Doubtful	15	0	0	0	0	0§
2	Subcutaneous	0 01	545	765	Chloroform	63	Not examined				
3	Subcutaneous	0 01	500	650	Chloroform	122	0	0	0	Slight	0
4	Subcutaneous	0 02	515	670	Chloroform	93	Positive	Positive	Positive	Marked	Positive
5	Subcutaneous	0 02	480	670	Chloroform	93	0	Positive	Positive	0	0
6	Subcutaneous	0 01	525	630	Chloroform	122	0	0	0	0	0

*Pseudo organisms cultured from blood.
†Only fibrous lesions in internal organs.
‡Tuberculosis in fibrous mesenteric gland.
§Cultured an anerobic bacillus from pleural exudate.

culture from which the emulsion was prepared, was the same as the one used for the bactericidal experiments, in which the infections with 0.01 mgr. appeared to have been very near to the minimal fatal dose. Less than one week intervened, however, between these infections, and the only factor

that we can consider as most likely to account for the lack of virulence in some of the controls is, that there was a difference in the number of living tubercle bacilli contained in the respective emulsions. These were made in the same manner for both series of infections, a sterile physiological salt solution being used in their preparation, and the emulsion was examined microscopically to assure uniformity of distribution of the tubercle bacilli. The bacilli were, however, weighed on different chemical balances. Those for the emulsion used in the bactericidal experiments were weighed on the balance of the Inoculation Department, which appeared to lack in accuracy. Consequently the more sensitive balance in another department was resorted to for weighing the tubercle bacilli for preparing the next emulsion. Further, while the dose of 0.1 c.c. of the emulsion, equalling 0.01 mgr. of tubercle bacilli, for the bactericidal experiment, was apportioned to the several tubes for incubation on the same day on which the emulsion was made, that employed for the infections under consideration was made on the preceding day and stood for twenty-four hours before it was used. It is therefore possible that the number of tubercle bacilli was less, because of more accurate weighing, or that the normal salt solution favored the clumping and spontaneous agglutination of the tubercle bacilli; or then both conditions may have obtained and influenced the results. The emulsion was, however, well shaken each time before the syringe was filled.

Under the circumstances we submit these experimental results in guinea-pigs treated with vaccine without other comment than that, as a whole and irrespectively of dosage or mode of infection and of the influence of pseudotuberculosis, they seem to show a difference in favor of the treated animals, which does not, however, appear decided enough to warrant positive conclusion.* On the other hand, our results in the bactericidal experiments were clear in their import, and they appear to confirm Dr. von Ruck's claims that active sera, taken after one or more doses of vaccine, reduced the virulence of tubercle bacilli *in vitro* sufficiently to prevent infection in guinea-pigs, whereas in like experiments with sera taken before vaccination, and in the virulence-controls of both series the animals acquired tuberculosis.

We owe many thanks to Sir Almroth E. Wright, who so kindly permitted the attempt to ascertain the facts in regard to this work. His earnest cooperation and desire to see at first hand the evidence on which these claims are based was a source of great satisfaction. It had been hoped that he might add some personal comment on the results and conclusions of this work. His journey with the Expeditionary Force in France, from which he has not yet returned, seemingly makes this impossible. We also tender our thanks to Dr. Parry Morgan who assisted during the earlier work, and to Capt. S. R. Douglas whose continued interest and counsel were of great value to us.

*It is but fair to state that, on the conclusion of the autopsies, a cable was sent to Dr. von Ruck, stating that the experiments had been successful in about 43 per cent. of the treated animals, a conclusion which had been arrived at by comparison with the controls, with reference to the presence of absence of tubercle bacilli in the lesions found on autopsy. It is on this account that we believe the result to be in favor of the vaccine and that, in order to obtain unobjectionable results, the experiments should be repeated upon normal animals, with infections in which the virulence of the cultures is even and uniform.

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THE DIAGNOSIS AND TREATMENT OF POLIOMYELITIS.*

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A FEW years ago if I had been asked to prepare a paper on this subject, it would have consisted of the following sentence: The diagnosis of poliomyelitis is not recognized until paralysis appears and, when known, no treatment is of benefit. To-day, after close study and experimental research, much has been discovered and can be written on the subject. The term poliomyelitis is in use because, on examination after death, it gives the method of classification, based on the lesion found. It is still popularly known as infantile paralysis, probably because it is more frequently seen in infants and young children, although it does occur in adults.

As a preliminary to my paper, and that it may serve the purpose of bringing before you the symptoms of the disease, I will give briefly the history of a case.

D. C., the little seven-year-old daughter of one of our wealthy men, was taken ill three days after her return from her summer home at the shore. Previous to her seizure, she had been in the best of health. From the best information I could obtain, there had been no poliomyelitic infection prevailing either there or in our city. The onset came suddenly while she was at school. It began with a chill, severe headache, a temperature of 102° or more, nausea and vomiting, muscular tenderness, dilated pupils, and a little mental confusion. The symptoms were much like those of intestinal toxemia or acute indigestion. By the fifth day I began to fear typhoid fever and took the blood for a Widal test. She was then suffering severe pain in her left arm and leg. The reflexes were normal at that time but I noticed a strabismus of the muscles of the left eye and, when I asked her to draw up the lower limbs, only the right one could perform the function. On the sixth day, the diagnosis was evident from the partial paralysis of the muscles of the left shoulder group and complete paralysis of the gluteals, quadriceps, and peroneals of the lower extremity of the right side. The child could not sit up in bed or move the leg. The faradic irritability was lost, as were the reflexes of the patellar tendon. There was no impairment of sensation or incontinence of urine. Marked atrophy of the muscles did not occur. Improvement soon began and continued. As time went on the muscles of the arm regained their normal function. Her general health was excellent and she began to play and to use the muscles. Three months after the onset, a slight spinal curvature was noticed and a limp, when walking, was evident, showing cessation in the growth of the bone. Soon after, at Christmas time, she developed pneumonia and was very ill for six weeks, during which time all treatment was suspended. As she began to get about again, the improvement in her muscle tone was very marked, all due, I believe, to the enforced quiet and rest that was absolutely necessary for her while undergoing recovery from the lung affection.

In these days, the increasing prevalence of poliomyelitis makes it one of the most important and practical diseases for our investigation and discussion. Each year, since 1907, has seen its epidemic

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somewhere which has left behind it hundreds of victims. Massachusetts had 234 cases that year. In 1908 the disease raged in New York City, and more than two thousand children were attacked. In 1914 it prevailed in epidemic form extensively in Vermont. I am convinced that sporadic cases often occur with symptoms so mild and transient as not to be recognized.

How helpful to the medical profession, then, by way of the nasopharynx and along the lym- continued work of Flexner and his co-laborers. In their laboratory, through experiments with monkeys, they have discovered:

1. The disease is due to a germ, one of the filterable organisms, so minute that it can pass with readiness, and with no loss of energy, through the pores of a porcelain filter—the smallest one ever discovered by the microscope.

2. By the action of this germ the disease becomes infectious and may, or may not, produce cases, sporadic or epidemic in form, severe or mild in type, depending on its activity and virulence.

3. The entrance of the virus into the system is by way of the nasopharynx and along the lymphatics which follow the filaments of the olfactory nerve to the cerebrospinal fluid.

4. The same portal of entry can, and probably does, act as the pathway of exit for the germ, to be transmitted by contact or carrier to new fields for reinfection.

5. An early diagnosis of the disease, by the finding of organisms in the spinal fluid, is possible but not very probable.

6. One attack tends to afford protection from the disease in the monkey, but up to the present time, with any mixture of virus or serum, immunity in the individual has not been accomplished.

Having stated these important and decisive facts, we can briefly elucidate on the development of poliomyelitis and its attendant results. When the germ reaches the spinal cord by way of the spinal fluid it at once begins active work on the lymph and blood cells of the gray matter of both the anterior and posterior horns, but chiefly the anterior. The arterial supply is greater and richer at the lumbar and cervical enlargements of the cord; which accounts for the lesions found in these zones. When the former is involved the muscular group of the lower extremity is impaired, and when the inflammatory process impedes or destroys the cells of the cervical ganglia the muscles of the upper extremity are paralyzed. The irregularity in the branching of these vessels of supply determines the question as to left or right side paralysis. Of course, at the onset, no one can foretell the result of the infection. It may, or may not, affect the nerve cells. It will all depend on the virulence of the organism and the resistance of the patient. No doubt, many cases are mild and abortive because of the small area congested, the cell function being only incapacitated. Paralysis generally follows the stage of invasion within three or four days. The loss of motion may be rapid or slow. With a severe attack, a large number of voluntary muscles of one or both extremities are simultaneously affected. When the paralysis is gradual, the muscle impairment extends from one group to another, covering several days. The leg muscles are often affected. Cases of partial paralysis occur about twice as frequently as those of complete paralysis. Loss of function in the muscles of the spine is rare, and greatly to be deplored because of its relationship to spinal curvature. Muscles that have not improved in three or four months will never entirely recover. Marked atrophy then exists. The muscle is changed into fat deposit and slowly disappears. This is due to the degeneration of the cells in the anterior horn of the gray matter of the cord, thus interfering with the proper nutrition and function of the nerve and muscle.

Having devoted a few minutes to the end results of this insidious and much-dreaded disease, we will take up one of the divisions of our theme—its *diagnosis*. Generally, the attack is so sudden—like a flash out of a clear sky—that poliomyelitis is not recognized until the paralysis makes plain the localizing of the infection in the spinal canal. Often, in the morning, after only a restless night, the useless member is discovered. If the onset is of three or four days' duration and the cerebral symptoms are unimportant, intestinal toxemia or the beginning of typhoid fever may be suspected. Many abortive cases or those unattended with cell destruction are never diagnosed. Of course, the disease can be, and often is, confounded with cerebrospinal meningitis. Until more knowledge has come to us, I can not see how, clinically, such a diagnostic mistake can be avoided. The two diseases attack children alike; are caused by organisms that reach the nerve centers through a common portal of entry, the nasopharynx; and in both the infectious virus is eliminated from the same site. Epidemic cerebrospinal meningitis occurs generally in the winter months, while epidemic poliomyelitis is said to prevail more often in summer; but neither one will prevail unless the germ is at hand to convey it. In both cases the spinal fluid should be withdrawn and examined. The Kernig symptom—that is, an inability to extend the leg on the thigh when the latter is flexed on the trunk—is obtained in all cases of cerebrospinal meningitis at some period of the disease; so, also, are marked rigidity, petechiæ, and opisthotonos, which symptoms, as a rule, are never found in poliomyelitis, except possibly in some of the bulbar forms. As a matter of fact, the diagnosis probably will not be made until the malady is self-evident.

The *treatment* of poliomyelitis, as in all diseases due to germ infection, may be divided into two varieties: first, the specific treatment directed to the specific cause; second, the symptomatic, directed to the morbid changes and their manifestation as brought out by the symptoms. We now know positively—what had been for a long time suspected—that the cause of the disease is an invasion into the spinal canal of a horde of virulent organisms so intrenched that we are unable to destroy them or lessen materially the damage they may inflict. In our desire to assist the patient, increase his power of resistance, and diminish the action of the infection, we must not forget those in health beside the patient, who are quite liable to contract the infection. Every effort must be made toward prevention. Isolate the patient and his surroundings; notify the quarantine authorities; make the nurse and family understand the absolute necessity of destroying or sterilizing all articles that have come in contact with the virus, which we now know emanates from the nose and throat; keep the parts well sprayed with solution of hydrogen peroxide; adopt rigid precautions against the spread of the disease such as have been essential in other infectious diseases, and administer hexamethylenamine to the unaffected members of the family. We believe, today, that not only the patients are contagion car-

riers, but the well ones who have come in contact with the disease. It adds to the difficulty of prophylactic measures, but it seems desirable to keep the patient in quarantine for at least five weeks. No organisms have been found, as yet, in the fecal or urinary excretions, but I am convinced it is wiser and much safer to disinfect them carefully throughout the disease, at any rate at the onset, as we are accustomed to do in typhoid fever.

There is no known specific or remedy for poliomyelitis. Flexner and his associates, to whom the writer is greatly indebted for some of the essentials of this paper, have not, up to the present time, succeeded in producing therapeutic serum that will neutralize or destroy the effect of the virus, when once the system becomes infected. Dr. Flexner says: "Finally, the serum treatment of poliomyelitis must, at the present time, be regarded as strictly in the experimental stage, and it cannot be predicted how soon, or whether ever at all, such a form of specific treatment of the disease will be applicable to the spontaneous epidemic diseases in human beings." Personally, I have faith to believe that, having discovered the nature and type of the virus and so many important points in regard to the phenomona of immunity, it will not be long before a serum will be secured which will possess sufficient therapeutic value to mitigate the end results of the disease or, at least, to prove of some help in its prevention.

After accomplishing all that is possible in the way of prevention, and having no measure of specific treatment of value to offer, we must rely entirely on the symptomatic medication. Naturally, the bowels should be thoroughly evacuated—my favorite drug being calomel, not alone for its bile-stimulating effects, but also for its germicidal and antiseptic qualities. An icebag should be applied along the spine. The occurrence of convulsions would call for the use of chloroform carefully administered. The headache, tenderness of muscles, and extreme restlessness require acetphenetidin in sufficient doses to relieve and make comfortable the patient. For these symptoms, however, in place of drugs, I prefer to use heat in some form—the electric heating pad always when the house is wired for the current. I know of nothing so valuable in that form of muscle pain. Just how much good heat does in thwarting the progress of atrophy that is present in the later stage of the disease is a question, but it is a helpful method of supplying warmth to the affected parts which are generally from one to two degrees of temperature lower than the unaffected member. For a few days it is always best to administer large doses of hexamethylenamine, combined with benzoic acid for its germicidal action. The use of this medicine is also based on the fact that it is found in the cerebrospinal fluid, and has already given some evidence of a favorable action on inflammatory processes in the brain and spinal canal. Flexner's experiments with this drug showed that it had some immunizing effect, but was of no value after the infection had occurred. Children are not monkeys, however, and drugs may operate on them differently. For example, Dr. Lovett says: "In July, 1911, three children in one family were affected at intervals of three or four days with fever, prostration, and gastrointestinal disturbance. The diagnosis of the first case was made only after the second child was in the height of her attack and before the third was affected. The first child received no hexamethylenamine, the second had a little, and the third had large doses from the beginning. The first child was severely paralyzed from the waist down, the second had weakness of the legs and back for a few months, and the third had no muscular involvement. All were equally sick." After such an observation, its use early in suspected cases seems highly desirable.

Another drug that I want to mention is strychnine, to be given only after all inflammatory effects have subsided. It acts directly by stimulating the motor ganglin, thus counteracting the increasing tendency to muscular atrophy. The consensus of opinion is that its use favors nutrition of the paralyzed parts by its effects on the sympathetic nerve. It should be given at first in small doses, increased week by week, and continued over a long period. It is just as beneficial when given internally as by the subcutaneous method.

As regards the use of electricity in poliomyelitis, authorities disagree, and quite emphatically too. Last winter I asked Dr. William B. Pritchard of New York to see a case with me (the one I have reported), and he suggested the use of galvanism in doses of five milliamperes for ten minutes every day. This was continued for several months, or until the muscles began to respond to the interrupted current; then both were used for months. As a matter of fact, the child still continues to have electricity, though away at the shore and under the care of Dr. Wallace. Whether the treatment was helpful, or in the least beneficial in improving the muscular tone, or whether the condition—which has been slow enough—follows the stimulation of strychnine and the added nutrition to the impaired muscles from good food, fresh air, and delightful circumstances, I am unable to state. There are, however, real doubters of its efficacy. Dr. Lovett of Boston has this to say in regard to it: "Electricity is less highly regarded in the treatment than was formerly the case. The unintelligent use of it, month after month, to the exclusion of other measures, has been one of the handicaps which has stood in the way of the best progress in many cases. It is quite possible that it may improve the muscular condition. Statements of its value rest, as a rule, on bare personal assertion or on the unusually rapid improvement of the individual cases; but cases vary greatly in their rate of improvement, and the only way to judge of the value of electricity is to use it on one side of the body in bilateral cases, and use the other side as a control. In the winter of 1913-1914 some cases in private practice were given daily treatments of galvanic electricity on one side and none on the other, while daily muscle-training was being given by my assistant, who was not told which side was receiving the electrical treatment. At the end of some months she was asked if either side had showed more rapid improvement than the other, and no difference had been noticed. This simply confirmed my general experience of many years of less careful observation." I, myself, feel that the use of electricity is too often left to the nurse or some other inexperienced person. Applications, when used too long or misdirected, fatigue the muscle and do harm.

Massage should go hand in hand with the electricity. It induces a better blood supply; hastens the lymph along the channels; promotes a warmth of the parts, thus preventing muscular deterioration. I have little knowledge of muscle-training or the manner in which it is taught, but I do know that such orthopedists as Lovett of Boston and Wallace

of New York speak of this method with increasing favor, especially in partial paralysis. Dr. Ruhräh, in "Progressive Medicine," reviews the method, and I quote: "The last part of the treatment consists in muscle education. This is best done before a mirror—the patient trying to move the muscle, and when this cannot be done voluntarily, having the person superintending the treatment make the necessary motion. This is difficult in young children, but can be tried in all children over three years of age. This should only be continued for a short time at one sitting. In the correction of deformities one should be particularly careful to avoid exercising the healthy muscles by improperly used exercises. The healthy muscles may be developed very much more rapidly than the deformed ones, thus developing a worse deformity than when the treatment was started. It is therefore necessary to explain to the one directing the treatment just what should be done, and he should not deviate from the directions given. . ." One voluntary contraction of a muscle is now thought to be of greater value than any produced by electricity.

In conclusion, I want to add that, for the deformities that must and will occur in all severe cases, tendon transplantations and bone repair have, by our steady advance in knowledge, reached a stage of perfection never before equaled; to an expert orthopedist I commend early your case, if improvement ceases.

*Child still employing slight support and using electricity, July 16, 1916.

TREATMENT OF UNSTABLE SEMILUNAR CARTILAGES OF THE KNEE JOINT.*

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THE disability first classified as internal derangement of the knee joint is now recognized, as caused in the great majority of cases, by displacement of the internal semilunar cartilage.

The injury is comparatively common, but I am inclined to think that its characteristics are more familiar to those interested in athletics than to physicians, many of whom have but the vaguest ideas as to its causes and consequences. I shall, therefore, describe briefly its anatomy as a basis for argument in favor of effective treatment.

The semilunar cartilages are similar in structure and function to the glenoid and cotyloid ligaments that enlarge and deepen the articulating surfaces about which they are attached. They differ, however, in that they are separated into two parts, and being loosely bound to the margin of the tibia move upon its surface through a range of about one centimeter. In adaptation to the movements of the joint, they change also in contour, becoming longer and thinner in full extension, and correspondingly shorter and thicker in flexion.

The internal cartilage, following the border of the tibia, is more properly semilunar in outline as compared to the external. It is more closely connected with the lateral and capsular ligaments, and is subjected to greater strain by the lateral mobility of the joint. At 30 degrees of flexion, for example, the tiba may be rotated outward on the femur through a range of 30 degrees, or until it is checked, chiefly by tension on the internal lateral ligament. Internal rotation, on the other hand, is limited to 5 or 10 degrees by the resistance of the crucial ligaments.

*Read before the Orthopedic Section of the New York Academy of Medicine, April 21, 1916.

Displacement of the internal cartilage is usually caused by external rotation of the tibia on the femur, or by internal rotation of the femur upon the fixed tibia while the knee is flexed. The sudden strain upon the internal lateral ligament, whose deeper layer is attached to the cartilage, tears the latter loose from the margin of the tibia and displaces its anterolateral portion backward toward the interior of the joint, so that it is caught between the bones when the limb is extended. The general impression seems to be that the displacement is in the other direction, and that the cartilage projects beyond the margin of the tibia, where it may be detected on palpation. This, however, must be very unusual.

In typical cases the injury occurs during violent exercise, as in athletic contests. Thus in England it is known as the "footballer's knee." There is a sensation of sudden strain, and often of something slipping within the joint, usually severe pain and immediate disability, the characteristic symptom being inability to extend the limb completely. Replacement may be spontaneous, but manipulation is usually necessary. An effective method is to place the patient on the back, and to flex the knee on the thigh and the thigh on the trunk. One then abducts the tibia on the femur to separate their inner margins, then rotates the tibia outward and inward and extends the limb. During the manipulation the patient usually feels something slip, and free motion is regained. Effusion often follows the accident, and sensitiveness about the inner side of the joint persists for several weeks.

The immediate treatment after reduction should be fixation for a time sufficient for the repair of the strained or ruptured ligament and reattachment of the cartilage to the tibial margin. Apparently for want of treatment, or in spite of it, such security is not often established, since recurrence is the rule under predisposing conditions. If it occurs at infrequent intervals the reaction is usually severe. If it occurs often the joint becomes more tolerant, the patient learns some effective method of readjustment, or there may be no so-called locking of the joint, the disability being rather from a sense of insecurity than from the direct consequences of the displacement. This insecurity limits activity, not only in athletic contests but under ordinary conditions as well. The patient instinctively avoids predisposing attitudes and movements, and usually knee caps, bandages, and even apparatus are worn to assure security.

The injury is most common in young men, but it is by no means rare in young women, and although the immediate cause is injury, weak feet, weak muscles, and bad attitudes must be recognized more often as predisposing factors in this sex.

Occasionally, the consequences are more serious, when, for example, the cartilage remains displaced, so that limited motion, pain, and synovitis persist indefinitely. In these cases partial recovery is explained by disintegration of the obstruction or accommodation to its presence. In other instances, the cartilage may be broken, or crushed by direct violence without actual displacement, and there are others in which injury or displacement is a complication of degenerative changes in the joint.

This paper is chiefly concerned with the ordinary cases in which the symptoms are recurrent, and are directly dependent on the displacement. In this class, although complete restoration of the function of the cartilage may be possible, it is probably uncommon, the so-called cure being in most in-

stances simply an accommodation to the weakness.

A sense of insecurity is in itself a serious handicap, while recurrent displacement endangers the function of the joint. Repeated injury to the synovial membrane which covers the cartilage leads to hypertrophy; effusion to weakness; distention to laxity of the ligaments; and the secondary muscular atrophy which is almost always present increases the functional disability. In cases of the more serious type, changes characteristic of chronic arthritis follow, which may serve as a predisposing cause of tuberculous disease.

In cases, therefore, of persistent instability, in which the inconvenience is at all serious, particularly if a bandage or other support must be worn constantly, removal of the cartilage is indicated.

The operation would be advisable even if the cartilage were essential to normal function, since if it is loose it is practically a foreign body. It is not, however, thus essential. Experimentally, its removal does not affect the movements of the joint, nor is function impaired in those cases that have been operated on.

It is true that stability may be assured in most instances by a brace that prevents lateral mobility, but the treatment is somewhat burdensome, the outcome uncertain, and, if successful, the result no better than that which is practically assured by the removal of the unstable cartilage.

What may be classed as relatively early operative treatment is, I find, not usually advised or approved either by physicians or surgeons. The operation is thought to be dangerous, requiring prolonged convalescence, and resulting in a weakened or possibly stiffened joint. From practical experience, however, it may be stated that the immediate discomfort and the succeeding disability are usually no greater, and often are less, than when caused by the occasional displacement. In fact, functional recovery is far more often delayed by relaxed ligaments, atrophied muscles, and hypertrophied synovial membrane—the results of persistent irritation and injury—than by the operative removal of the cause.

The only reasonable argument for delay when the diagnosis is clear and the disability recurrent is the danger of infection, and this may be reduced to the most remote possibility by the simplicity and directness of the operative procedure. In favorable cases the cartilage may be removed in a few minutes. There is no necessity for exploration of the joint, and the only assistance required is for retraction of the tissues.

Particular attention is, of course, paid to cleanliness. If time permits the part may be shaved, washed, and protected by gauze for several days before the operation, when it is prepared with iodine in the usual manner. An Esmarch bandage is usually applied in order to avoid swabbing and the like. The patient is then drawn down to the edge of the table, so that the leg, flexed to a right angle at the knee, hangs dependent, as suggested by Jones. In this attitude an incision, slightly convex forward, is made midway between the border of the patella and the condyle, its base being just in front of the internal lateral ligament. The joint is then opened. In most instances the displacement of the cartilage is evident, since the tension on the capsule of the dependent leg draws it upward and away from the tabia. Not infrequently it is detached anteriorly and displaced backward. It may be fractured, or thickened and pedunculated, but in the ordinary case it is not greatly changed in shape. It may be normal in appearance or yellowish in color if the disability is of long standing. By extending the incision downward the cartilage may be divided into two parts; the anterior or free half is then easily detached by a slight pull with the forceps. The posterior part is attached to the capsule, and often to the tibia, and must be separated with the scissors. It is the rule, apparently, to cut away only the loose anterior portion, but I have always removed the entire cartilage, and thus a possible cause of further trouble. In most instances, the evidences of previous irritation and injury may be seen in congestion of the tissues, and particularly in the hypertrophy of the synovial membrane.

After removal of the cartilage the synovial membrane is closed with fine catgut, and the capsule and other tissues in layers with stronger sutures. No drainage is used. The knee is firmly bound with a gauze roller, and a light plaster splint holding the limb in slight flexion is applied. Apparently the bleeding after suturing is insignificant, since no inconvenience has been noted from this source. The plaster splint is of service in lessening the discomfort caused by sudden movements during the sensitive stage. The patient usually remains in the hospital for a week, though not necessarily in bed, activity being regulated by the sensations.

The plaster splint is retained for about two weeks, in order to permit of repair of the capsule. The knee is then strapped to replace the support, and to guard against strain.

The patient is instructed to cultivate an elastic gait in walking. If, as is often the case, there is a tendency toward valgus, the soles are thickened on the inner border, or arch supports are applied if the deformity is more marked, and appropriate exercises are prescribed.

In cases of a favorable type cure is practically complete in a few weeks. In those of long standing, in which the muscles are atrophied, the ligaments relaxed, and the internal structure of the joint disorganized, recovery is slower, and a supporting apparatus may be indicated, but the improvement is immediately apparent and progressive and the result is satisfactory to the patient.

The characteristics of the varieties of the injury and disability may be illustrated by selected cases.

Case I.—The unreduced type. A vigorous young man, 25 years of age, an acrobat by profession, was seen in May, 1914. Three months before, while seated in a chair with the left leg flexed beneath the seat, on turning suddenly he felt something snap in the knee. The pain was acute, and he was unable to extend the limb. The next day a physician attempted to reduce the deformity, but the pain caused the patient to faint. He used crutches for a month, and had since limped about with the aid of a cane. There was marked atrophy of the thigh, slight limitation of extension at the knee, slight outward rotation of the tibia, and the characteristic sensitiveness to pressure on the inner side of the knee. Operation was advised, but the patient was not seen again.

Case II.—Illustrating secondary, or arthritic changes following displacement. A woman 50 years of age was seen in April, 1914. Apparently the knee had been normal until injured by a misstep about 18 months before. The accident was followed by pain, swelling, and inability to extend the limb. Apparently, although the history was indefinite, flexion had since persisted. Nine months after the accident an attempt had been made to reduce the displacement, but without success. The patient had since suffered much discomfort in the knee, and the gait was very awkward because of the flxion to 140°. The joint was infiltrated and sensitive to movement and pressure. Degenerative changes in the joint were ap-

parent in the *x*-ray picture. On operation, the internal cartilage was found to be displaced, and of a yellow color. The synovial membrane was thickened. The articular cartilage of the femur was hypertrophied at the margins, suggesting arthritis deformans. Flexion contraction was so resistant that complete extension was not attempted. In this case it was by no means certain that the arthritis was dependent on the injury, and the prognosis was very guarded, but under rest, massage and protection, practically complete recovery followed.

Case III.—Severe and disabling symptoms persisting in spite of protective treatment. A colleague, 43 years of age, displaced the internal cartilage in April, 1911. This was treated by the most approved conservative methods—by a plaster support, by a protective brace, by strapping, massage, and the like for 6 months. He was meanwhile never free from discomfort, and was frequently disabled by recurrent displacements when support was removed. Eventually he became seriously alarmed because of the possibility of tuberculous disease, and consented to operation. In this case the cartilage was displaced and broken into two parts. Complete and permanent functional recovery followed.

Case IV.—Illustrating persistence of disability for many years. A man 39 years of age was seen in March, 1914, the disability dating from his school days. The knee was weak, and he was constantly solicitous of it. It gave way, and the displacements, which he reduced himself, were becoming more frequent, and were frequently accompanied by synovitis. He had worn various appliances without permanent benefit. The cartilage was removed June 16, the interior of the joint showing the usual congestion. In three weeks the condition of the knee was what the patient considered normal before the operation. Recovery was practically complete in 6 months.

Case V.—A case of the favorable type. An athletic girl of 19 was seen in October, 1913. About a year before, the cartilage had been displaced while she was playing basketball. In August, displacement again occurred, and also on three occasions since then, the pain being so extreme that the patient's health has been impaired by it. The cartilage was removed in November, 1913. In three weeks she was practically well.

Case VI.—Removal of both cartilages. An athletic girl of 20 was seen on April 6, 1911. She had injured the left knee at basketball five months before. There had been some pain and stiffness at that time, but no limitation of motion or swelling. Conservative treatment relieved the symptoms, but 6 months later high kicking induced a severe attack. Since then the discomfort had been constant, and the patient was often conscious of something moving in the joint. The operation was performed on February 1, 1912. To my surprise there was almost complete detachment of the external as well as of the internal cartilage, and both were removed. Recovery was rapid, and practically complete.

Case VII.—Illustrating occupational disability. A man of 32 was seen on December 12, 1912. He was an expert marksman, but the danger of displacement prevented the necessary kneeling position. Removal of the cartilage gave complete relief.

Case VIII.—Occupational disability. A young football player who often displaced the cartilage when kicking the ball. In this case the cartilage was very much hypertrophied, and could be palpated by the patient himself. Removal relieved the symptoms.

Case IX.—Occupational disability. A school boy sixteen years of age had been unable to engage in athletics because of recurrent displacement during a period of two years, and on this account desired relief. He was practically well three weeks after the operation.

Case X.—Illustrating the distinction in symptoms between displacements of the internal and external cartilages. A boy of sixteen was seen in August, 1914. For three years a peculiar snapping sensation had been noted whenever the knee was flexed. There was no locking, swelling, or local sensitiveness—only, as he described it—a deadened feeling in the limb. On operation the external cartilage was found to be detached and displaced backward, obstructing movement, and causing a peculiar jar and displacement of the tibia when it was overcome. Recovery was complete and permanent in three weeks. Several similar cases have been seen in which a "snapping knee" was the most noticeable symptom.

In my experience there is no operation more uniformly successful than this, or in the confirmed cases more directly indicated, since a loose cartilage is of no functional value, but is a dangerous encumbrance to which the habits of the individual and the structure of the joint must accommodate themselves to their mutual disadvantage.

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THE NATURE OF THE LEUKEMIAS; THE PATHOGENESIS OF ACUTE LYMPHATIC LEUKEMIA.

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In this study I will attempt to bring the subject of the nature of the leukemias to a clearer clinical understanding by discussing some phases of this large subject, partly as the result of personal experience, partly as the fruit of the study of the large amount of material which has been gathered together since Virchow's first description.

Virchow spoke of the affection as leukemia, the disease with white blood, naming it from its most charactertistic symptom. He noticed that in one group of cases the most predominant clinical symptom is a marked splenic engorgement, while in another group multiple glandular swellings dominate. Thus Virchow was led to differentiate a splenic form of leukemia presenting a saturation of the blood with white corpuscles containing polynuclear cells from a lymphatic form of leukemia in which the blood contains the lymphatic cells in large excess. In consequence, Virchow speaks of a splenemia and a lymphemia. Even at that date Virchow recognized the universal implication of the lymphatic tissue in the lymphatic type of the disease, as well as the concomitant anemia, the oligocythemia.

Neumann's discovery of the hematopoietic function of the bone marrow and of the changes found in the marrow in leukemic disease were of a nature to modify the views originally held of the histogenesis of the leukemias as referred to above; the splenic form of the disease was now shown to be characterized by a myeloid metaplasia of the spleen as well as of the bone marrow. Thus lymphemia and myelemia were now recognized as characteristic of distinct types of leukemia. Thus it already becomes apparent at this point that in the leukemias we do not see diseases of distinct organs, but of special types of tissues, the lymphatic and the myeloid. To study the pathology of the leukemias satisfactorily, it becomes necessary to investigate the changes in all the tissues, but especially those of the hematopoietic organs. In them we shall find the myeloid or the lymphatic metaplasia, according to the character of the leukemia. The proliferations are of a uniform character and easy of interpretation. Of late a number of chemical tissue reactions have been devised which serve to differentiate the lymphoid and the myelogenous tissues.[1]

The blood has been looked upon by some as a tissue in which the various corpuscular elements can be compared to the cellular structures, and the serum looked upon as the intercellular structure, just as if the blood were a stable woven tissue, not simply an aggregation of cells suspended in a menstruum. Following up this idea, the blood is imbued with certain formative qualities of a developmental as well as of a regressive quality. Led on by this theory, as well as by the hope of incidental pathogenic findings, many investigators of the diseases of the blood have tried to find the solution of the

mystery of leukemia in some special formation in the blood itself. Invariably these investigators have been misled by the will o' the wisp of the fascinating polychrome blood morphology.

By many investigators leukemia was early looked upon as a tumor formation, and the term metastasis, which is still current in speaking of leukemic proliferation, has been persistently used up to our own time. Among modern authors, Banti, Ribbert and Benda are inclined to the tumor theory on account of the seemingly aggressive character of the leukemic proliferation into the surrounding healthy tissues. This apparent malignancy, however, on close study proves to be nothing but a metaplastic overgrowth. Since we are still in ignorance of the essential nature of malignant growth, a further discussion of the theme, is leukemia a malignant growth or not? seems fruitless. At the same time it is advisable to discard the term metastasis in this connection, as this term is associated exclusively with the idea of malignant tumor growth; this, however, is extraneous to the conception of leukemic disease generally held at the present day.

This question of the tumor nature of leukemia has more than a theoretical interest for the reason that there is a class of cases which resemble the leukemias in their clinical aspect, but which, as soon as a blood examination is made, at once appear as diseases of a totally different nature. The blood in these cases is not leukemic and shows no special characteristics more marked than those encountered in clinical conditions of various kinds. Since Cohnheim cases in this group have been called the pseudoleukemias. Lately cases of this kind have been described which have stood for the first stage of true leukemias. Then there are forms of pseudoleukemias which are of a tuberculous, granulomatous or sarcomatous nature. Then there are cases described from time to time which it is necessary to group with the pseudoleukemias, their etiology being as yet undetermined, and because they are surely distinct from the leukemias proper. By a careful study of these cases we arrive at a certain delimitation of the leukemias toward allied clinical states, and incidentally widen our knowledge of the pathogenesis of the leukemias.

Ehrlich's color analytical studies of the blood, undertaken with a novel technique of fixation and stain, have contributed a form of research which can be employed to investigate with finesse the morphological characteristics of the cellular elements of the blood. This method, as applied to the study of leukemia, has given brilliant results.

It has been stated, in connection with this very subject, that morphological hematology has been very much overdone.[2] Morphological hematology has been used in a one-sided, routine fashion; the attempt is made to solve the pathological or biological problems by the exclusive use of Ehrlich's methods of color study of the blood constituents. No doubt a great deal has been learned by this method in leukemia and other so-called blood diseases. But at the same time mention should be made of the fact that some of the broad conclusions which were drawn by Ehrlich himself in his original studies of the granulations had to be considerably modified. And as to the solution of some of the problems of the origin, development, and course of the conditions under discussion—just as in other investigations—these can only be reached by improved histological, bacteriological, and experimental studies, which, until recently, have not held pace with morphological blood studies. Thus, for instance, the theory of the evolution of the leucocyte, based, as it largely is upon the study of morphological hematology alone, can be seriously questioned. And with all the infinite pains which have been expended upon the investigation of the histogenesis of this disease, the springing points from it are still unsettled, and little or nothing has been added to our conception of the pathogenesis and the etiology of the leukemias. This is also in part due to a preconceived notion still held by some of the foremost hematologists, that leukemia—in view of the phenomenal blood changes—are different from all other known diseases. We shall see that this is unfounded. By the empirical method of observation the clinicians have brought the subject near to a solution. Leukemia is based on well-known pathological and clinical processes.

What then is leukemia? In order to be as brief as possible, I have cut the question in two or rather in four, and will confine myself on this occasion to the question: What is acute lymphatic leukemia?

Ever since Ebstein's[3] publication of a case of acute lymphatic leukemia and of his monograph, it seemed more than probable that in acute lymphatic leukemia we are dealing with an infectious disease. Subsequently Albert Fraenkel's[4] series of cases could only tend to strengthen this view in the unbiased observer.

It is not the purpose of the writer to describe in detail all the clinical features of acute lymphatic leukemia with a view to demonstrate the infectious nature of the disease by analogy. For this purpose Ebstein's work may be studied with profit. The writer will attempt to prove the infectious nature of the disease by selecting one or the other striking phenomena commonly observed in well known forms of infectious disease which are similarly observed in acute lymphatic leukemia—first then, the phenomenon of leucocytosis, in this instance of lymphocytosis. Furthermore, he will point out certain clinical group characteristics observed in leukemic disease which are invariably found in the course of infectious diseases. Thirdly, he will describe certain cases which have all the cardinal signs of infectious disease and which are clinically, hematologically and pathologically analogous to, if not identical with, acute lymphatic leukemia. These cases range through various degrees of severity, from the comparatively mild type of infection to the severer and the fatal cases. Hitherto leukemia was invariably considered a fatal disease. By the study of this group of cases it is made evident that the light cases are nothing more or less than a phase of the severe and fatal cases of leukemia. And lastly by a short discussion of the status thymolymphaticus, which presents an important element in the pathogenesis of lymphatic leukemia.

Lymphocytosis.—According to Virchow, leukemia is a progressive leucocytosis. This definition holds good for all cases with rare exceptions. Now, aside from certain well-defined physiological states like hunger, digestion, pregnancy, lactation, and aside from certain variations of the leucocyte count due to stimulation or inhibition of the endocrine organs and the phenomenon of anaphylaxis, leucocytosis is exclusively and constantly associated with infection. The phenomenon of leucocytosis moves in definite cycles, varying in kind, number, and relative proportion according to the nature of the infection—according to certain principles of chemotaxis. Thus, thanks to the labors of Ehrlich and his fol-

lowers, we are now able to diagnosticate and prognosticate infectious disease, according to the nature of the accompanying leucocytosis. Thus in a well marked infectious condition we are led to expect a certain well-defined leucocyte count, which, in conjunction with other signs, will indicate the character, phase, or stage of that case of infection. If this count varies in the kind, number or proportion of the leucocytes, we at once look for complications to explain the atyphical or anomalous blood-count. This rule is as invariable as a mathematical law.

In the present state of our knowledge it is not easy to translate the formulas of the various leucocyte counts into the formulas of the biological blood reactions which give rise to the characteristic leucocytosis under varying conditions. Clinical experience has shown empirically, that some of the well-known infectious diseases instead of being accompanied by the usual polynuclear hyperleucocytosis, exhibit a marked degree of lymphocytosis. Among these may be mentioned variola, lues, tuberculosis, typhoid fever, malaria, pertussis, and some others. The infectious agent of each of the diseases named produces in all subjects who are successfully infected by them, not the ordinary polynucleosis, but a lymphocytosis, absolute or relative. There are certain infectious diseases on record in which the lymphocytosis induced by some special lymphotactic agent reached excessive figures. How can this be explained? Primarily by the character of the infective agent. All individuals react in the same way—in a general chemotactic sense—when infected with certain pathogenic bacteria. Bergel[5] has shown that the lymphocytes contain a fat-splitting lipolytic ferment. Applying this lipolytic property of the lymphocytes to the phenomena of infection, lymphocytosis may be defined as an antagonistic reaction of the blood (Abwehr reaction) against antigens of a lipoid character. Thus it is possible to induce local lymphotaxis by injecting fat into the peritoneal cavity. The lymphocytes take it up and split it up, by means of the lipase; the fat laden lymphocytes are transported into the spleen. In looking into the properties of the infectious agents of some of the diseases mentioned above in which lymphocytosis occurs, the bacillus of tuberculosis, the spirochete of lues, we find that both of these germs have a fatty covering; the lymphocytosis accompanying these diseases may be explained on this basis. It may be noted in this connection that as far back as our knowledge of leukemia extends it has been asserted that the disease develops on the basis of certain forms of cachexia due to severe infection of lues, malaria, or typhoid fever. We may infer that severe infections of a lymphotactic nature may prepare the foundation of a leukemic invasion—probably of a lymphatic nature—by unsettling the balance of the lymphatic and myelogenous tissue systems of the body. I will not dwell on the character of the cells encountered in acute lymphatic leukemia. It is not always the large lymphocyte as Ebstein and Fraenkel thought. In children and young individuals, the small so-called ripe lymphocyte may be the feature of the histological as well as of the blood picture.

The infectious nature of acute lymphatic leukemia must further gain support by drawing attention to the clinical grouping of the cases recorded hitherto, according to clinical type characteristics. There is first the enteric type described by Mosler, which is heralded by severe enteritis accompanied by bloody stools. This suggests a primary infection of the intestinal tract. Then there is the purpuric or Werlhof, or scorbutic type with hemorrhages from mouth and nose and hemorrhages into the skin purpuric enanthemata and exanthemata. Then a type frequently observed starts with an angina accompanied by glandular swelling of the neck. Again we have an aggravated form of the same type with ulceration and necrosis of the mucosa of the throat and nasopharynx, occasionally noma of the buccal membranes. In some of these cases the Klebs-Loeffler bacillus, in others the bacillus and spiral of Plaut-Vincent's disease were found. Although it must be conceded that catarrhal, ulcerative and necrotic changes in gums, fauces, and nasopharynx may partake of a secondary constitutional leukemic nature, the appearance of these lesions at the time or shortly after the inception of the disease with the accompanying infiltration of the lymphnodes of the neck and jaw make it more than probable that the tissues of the mouth, throat, and pharynx serve as the portal of entry of the leukemic infection, as they do in so many other cases of infectious disease.

Through the kindness of Dr. F. E. Sondern I am in the position to mention a noteworthy series of cases of Vincent's disease which have been studied by Dr. Sondern but not published as yet. Dr. Sondern has observed fifteen cases in children and adults in which the bacteriological examination of the throat demonstrated the bacillus and spiral of Vincent's disease, and the blood showed a very high grade of lymphocytosis. In fact, in cases which were clinically diagnosed as acute lymphatic leukemia and were subsequently investigated with especial reference to the throat, the bacillus and spiral of Vincent were found in the large majority of cases (15 cases). These highly interesting observations call for further study. They seem to me to be highly suggestive in demonstrating the connection between a peculiar throat infection and leukemic disease. On searching the literature I find a similar case published by Beltz,[3] from Fridrich Müller's Klinik (Case VII). This was a case of Vincent's angina, with an apparent acute lymphatic leukemia. The study of the organs, however, showed a myelogenous metaplasia. The author is therefore inclined to consider it a case of myeloblastic leukemia.

Acute Lymphatic Leukemic Disease; a Clinical Form of Infection of Mild, Severe, and Fatal Type.—Above we touched upon the subject of lymphocytosis as a specific positive chemotactic reaction, against certain well-known infective agents. We ascribed this phenomenon to which all infected subjects react in the same manner to certain properties of the pathogenic germs which come into play. I will now deal with a group of infections accompanied by a remarkably high lymphocytic blood count, often identical with the leukemic lymphatic blood count. Surprisingly little is known of this phase of the subject, either because the condition is rare, which is not unlikely, or perhaps because little attention has been paid to the subject. These infections are caused by the ordinary germs of catarrhal or purulent inflammation; they are the well-known infections which nearly invariably go hand in hand with the ordinary polynuclear leucocytosis. Richard C. Cabot[6] has described some of these cases under the heading of "The lymphocytosis of Acute Infection." Clinically they may appear under the guise of an ordinary wound infec-

tion, an angina, or enteritis. They are accompanied by a swelling of the spleen, liver, and lymph glands and by high temperature. Kothe reports cases of appendicitis with a very high lymphocytic blood count from Sonnenburg's clinic. Dr. Chas. A. Elsberg was kind enough to report to me two such cases. Evidently certain individuals in attacks of appendicitis and other enteritic infections react by a very high lymphocytic blood count. This fact is not generally known.

A short time ago, the following remarkable case, which at first looked like an ordinary head cold, came under my observation: Male child, seven years old; only child. Mother has chronic hyperthyroidism. Child is subject to head and chest colds. Large lymphatic tonsils at birth. Tonsillotomy and removal of adenoids at five. Vaccination when six months. Measles at four. Pertussis soon after. Milk grade of anemia. Differential blood count normal when in good health.

Present history: All members of household have colds. Patient has head and chest cold. Remittent temperatures 101° A.M., 101°-103° P.M. Enlargement of spleen, continuous, rapid. Liver can also be distinctly felt. Moderate swelling of lymph nodes all over the body, especially cervical and inguinal. At end of second week, lower border of spleen at niveau of navel. Marked prostration. Duration of illness three weeks. Blood examinations.

Day of Illness	Haemoglobin, per Cent	R.B.C.	W.B.C.	Polynuclears, per Cent	Small Lympho., per Cent	Large Lympho., per Cent	Transitionals, per Cent	Eosinophiles, per Cent	Basophiles, per Cent
7th	.....	.....	21,900	19½	65	12½	5	1	.....
9th	73	3,744,000	22,500	36	45	16	1⅔	1⅓	.....
12th	64	3,920,000	19,700	26⅓	62	8	⅔	3	.....
22nd	74	3,880,000	10,200	38	38	16	3	4	1

Remarks: Red cells show some irregularities in size and shape. They stain poorly. Widal test made on the seventh day of illness absolutely negative. Blood culture of same date also negative. Blood examination made some months after illness shows normal blood. During a severe cold, one year later, without fever, there were 6400 W. B. C., small lymphocytes, 21 per cent large mononuclears, 16 per cent. The blood was examined by Dr. A. L. Garbat. The case was twice seen in consultation by Dr. Isaac Adler.

This child was one member of a family, all of whom, at the same time had the usual winter's cold. The illness started in with rhinitis, pharyngitis, subsequently a light bronchitis developed. What first attracted my attention was the considerable and progressive swelling of the spleen, and the enlargement of the lymphnodes which was generalized. The blood was then repeatedly examined; the blood-picture was typical of an acute lymphatic leukemia in a child. It is true the degree of lymphocytosis was not that of a full-fledged case, but the condition having been discovered quite early it gave promise of developing into a fully developed acute lymphatic leukemia. Accordingly we were inclined to make a serious prognosis. However, the symptoms subsided, the lymphocytosis completely disappeared in the fourth week, as also the swelling of spleen, liver and lymph glands.

About the nature of the case, there can, I think, be but one opinion. To speak of it as a catarrhal fever with a severe lymphocytosis would not be an adequate description, or give to the case the distinction it merits. It was more than that. The case bore all the earmarks of an early stage of acute lymphatic leukemia. It ended in recovery. To designate it according to the usual clinical terms, we were dealing with a primitive or abortive type of acute lymphatic leukemia. Türk reports a small number of similar cases, which also occurred in children and young individuals. He speaks of these cases as representing examples of the "lymphocytic biological blood reaction." Inasmuch as these cases are due to an apparent infectious cause, and end in recovery, it is inferred that they are not cases of true leukemia. For so far the infectious origin of lekemia has not been demonstrable; the cases of cryptogenetic leukemia have invariably ended fatally. Long remissions may occur just as in anemia perniciosa, but the outcome is invariably fatal, except in one case of undoubted chronic lymphatic leukemia reported by Türk which has been well more than twelve years. Türk remarks: It is a question whether these cases of lymphatic reaction are identical with leukemia; but, he continues, they present the key to the whole question of the nature of leukemia.

In addition to these comparatively mild and typical cases, which clinically are analogous to, if not identical with what is usually looked upon as leukemia, there is a record of a considerable number of cases which clinically assume the form of sepsis associated with changes in the blood and tissues of a more or less typical leukemic character. The infective or septic nature is at once apparent. The course of the infection is also generally known, having entered by way of the mouth, throat, internal organs, bones, etc. Often to the surprise of the observer, a typical or atypical blood find is incidentally made. The combination of infection and leukemia is generally looked upon as accidental, and the observers are loath to accept the theory that the leukemia is the consequence of the infection—all the more so, as preliminary blood examinations before the advent of the present illness—are missing.

In the blood findings of the cases cited above there happens a rather sudden and increasingly complete absence of all but the smallest percentage of leucoytes, other than the lymphocytes, with the preponderance of the so-called large lymphocytes. Türk interprets these cases as a complete inhibition of the granulocytic elements (Verkeummerung des Granulocyteusystems). By that he means to imply that under the influence of the septic poison the myologenous tissues lose their ability to generate new cells, thus very few or none are thrown into the circulation, and complete lymphemia develops, and with that the power to cope with the infection ceases, and the patient dies of toxemia. I have gone very carefully over the protocols of the autopsies and the histological examinations of the tissues of the cases of this class. Each of these cases is a study. Any generalized statement as to histological findings would be incorrect. The findings vary according to the nature and the degree of the infection—the preponderance of the leukemic process in this organ or that, and lastly the effect of the mixed or terminal infection upon the blood forming and other organs. In a general way it may be stated that here, too, is found a uniform leukemic metaplasia pervading the tissues, just as in the cryptogenetic forms of the disease.

In this connection I may be allowed to cite a short history of a case—incomplete though it may be, which possibly belongs here, from Dr. Waldo's service in the Lebanon Hospital:

Young woman, family and personal history negative. One child living and well. No history of abortus. Menstrual history regular. Patient says that one week before admission she felt weak and chilly. She then noticed swelling of the face and gums. The last two days, bloody flow from the vagina. Examination: Swollen gums, enlarged glands of neck. Uterus not enlarged, no signs of extrauterine pregnancy. Blood exudes from the uterus. Pulse very rapid. Remittent temperatures for four days. Between the fifth and sixth day the temperature rises from 103° to 107°. Exitus. The following blood counts are significant:

On entrance:	
Hemoglobin	55 per cent
R.B.C.	2,690,000
W.B.C.	10,000
Polynuclears	75 per cent
Lymphocytes	25 per cent
Second blood examination:	
Hemoglobin	55 per cent
R.B.C.	2,500,000
W.B.C.	25,000
Polynuclears	3 per cent
Lymphocytes	97 per cent (mostly large)
Third blood examination:	
W.B.C.	30,800
Lymphocytes	99 per cent (mostly large)
Polynuclears	1 per cent

Status Lymphaticus and Acute Lymphatic Leukemia.—So far we have tried to indicate the influence of infectious processes in the etiology of leukemic disease, and although our knowledge of the cause, the immediate and remote effect of the pathogenic element upon the tissues is still disconnected and fragmentary, it now seems more than probable, that certain infections which ordinarily are accompanied by lymphocytosis, may exert an overwhelming lymphatic influence upon the affected individuals. There follows a suffundation of the tissues and generally of the blood too, by the lymphatic cells of various stages of development, and lymphatic leukemia results. And furthermore, it seems that the most ordinary bacteria, those causing the commonplace infections and suppurations, may, under peculiar circumstances, produce a lymphatic instead of a myelogenous blood reaction, a lymphotaxis, instead of a myelotaxis.

Now every individual being exposed at all times to the ordinary infections and very frequently also to the diseases accompanied by lymphocytosis mentioned above, the question naturally arises, what additional factor, exceptional though it may be, is necessary to initiate leukemic disease—which, after all is a comparatively rare affection. There must exist some basic condition in the leukemic individual, in all probability some inborn characteristics without which it is impossible for the leukemic disease to take root.

This theory seems especially plausible in acute leukemic disease, in which the symptoms of invasion become apparent at the turning of the hand. Acute lymphatic leukemia, the majority of which cases occur in the very young, calls for an inherent congenital disposition. Does this exist?

In his original description of lymphatic leukemia Virchow points to the conspicuous enlargement of the thymus. Since then we have learned, that in children, lymphatic leukemia, which is always acute in childhood, is regularly accompanied by thymic overgrowth and by considerable enlargement of the lymph glands of the neck, the submental and substernal region. In other words, acute lymphatic leukemia in children and young subjects is regularly grafted upon—the condition known as status thymolymphaticus. In the true interpretation of this fact lies, I think, the solution of the other half of the mystery of leukemia. Given a constitutional basis—in this instance the thymic or thymolymphatic state—then by the impetus of infection an overwhelming stimulation to lymphatic proliferation is created. We assume at the same time, with Türk, an inhibition of the myelogenous tissue reaction, partial or complete. The significance of this extreme aberrant reaction is not understood. It may be defensive in its nature. The system succumbs to the leucotoxic influence upon the blood and tissues, and to secondary or terminal infection.

From a clinical point of view, the importance of the recognition of the various forms of constitutional deficiency can hardly be over-estimated. The status lymphaticus is only one phase of developmental insufficiency of interest in this connection. Virchow taught us the significance of the hypoplastic constitution and the Vienna school of pathologists and clinicians, Rokitansky, Kolisko, Bartel, Neusser, and many others have worked out the various forms and combinations of constitutional deficiency which form the pathogenic basis of leukemic and other diseases hitherto wrapped in mystery. I mention this to indicate that in leukemic subjects other forms of constitutional deficiency have been found besides the lymphatic state.

The function of the thymus being unknown, the theory that in lymphatic leukemia a revivification of the thymus takes place is hypothetical. In the thymic state we do find a hyperplasia of the lymphatic tissue of that organ; in fact, the thymus may become very prominent and has often been looked upon as a tumor formation. What has been said above regarding the tumor conception of leukemic hyper- or metaplasia also applies to the enlarged thymus;[5] there is no reason why it should not be considered simply in the light of a hyperplasia of the lymphatic tissue, stimulated during the leukemic process by some infection. What interests us here specially is the influence of the thymus on tissue growth and blood formation (lymphocytosis), a question which is in the center of discussion at the present time, as regards the various aspects of thyroid disease. I will conclude by mentioning a very interesting clinical observation: the influence of revaccination in the pathogenesis of acute lymphatic leukemia. In the first case given in detail by Neusser,[9] there was a very strong general and local reaction, the lymphocytes ran up to 90 per cent. The same author describes another case after vaccination—with a sublymphemic blood count. Both individuals belonged to the hypoplastic type. Wilbur[7] describes a similar case. Evidently the patient belonged to the same class, having 54 per cent lymphocytes in 8800 leucocytes. One week after vaccination there were 252,000 leucocytes and 94 per cent lymphocytes, mostly large. The case ended fatally. We know that variola is regularly accompanied by a pronounced lymphocytosis. The pathogenic agent of vaccinia is probably also a lymphotactic germ. To sum up: The nature of lymphatic leukemia can best be studied not so much by means of the hematological method as from the broad standpoint of clinical observation and pathological research. Acute lymphatic leukemia is an infectious disease: It may develop as the result of infection by pathogenic agents, producing an overwhelming chemotaxis of a lymphocytic nature. But it can also be produced by the staphylococcus and streptococcus, and other pathogenic germs in individuals belonging to the thymolymphatic type and other forms of constitutional deficiency.

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FURTHER OBSERVATIONS ON THE VALUE OF SCARLET RED IN THE TREATMENT OF GASTRIC AND DUODENAL ULCER.*

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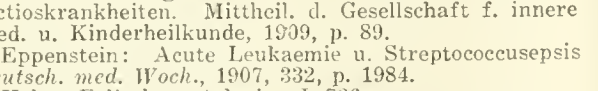
IN a paper published two years ago[1] we reported the result of treatment of thirty-seven cases of peptic ulcer with scarlet red, advocating the use of this drug not as displacing the time-honored rest cure treatments of Leube or the more recent cure of Lenhartz, but simply recommending its employment as a useful adjuvant in the treatment of this affection.

In this paper we noted the fact that John Staige Davis was the first to suggest the use of this drug in the treatment of ulcer of the stomach and to prove its usefulness experimentally in animals.

"Scarlet red has the scientific name tolueneazotolueneazo-betanapthol and is made by a combination of amidazotoluol and betanapthol and has the formula,



(Beta).

It is a reddish-brown powder and gives a scarlet red color in oil solutions. The powder as well as the oil solution is tasteless. Scarlet red is insoluble in water, but is soluble in alcohol, ether, and olive oil."

Davis's conclusions as to the effect of this substance are as follows: "The dyestuff used in this series of experiments is not toxic and apparently has no deleterious effect on either dogs or rabbits. When given by the mouth it is a fat-selecting vital stain. In the course of months the stain is gradually eliminated. Subcutaneous and intraperitoneal injections stain only the fat in actual contact with the scarlet-red oil solution. It is difficult to say from these operative experiments whether the scarlet red has, or has not, a definite stimulating action on the epithelium of defects in the gastric mucosa. However, the scarlet-red oil solution caused a more rapid and better developed growth of epithelium in the group in which it was used than occurred in the duplicate group where plain olive oil was used.

*Read at the annual meeting of the Medical and Chirurgical Faculty of Maryland, April 26, 1916.

The results with dry powder were not so favorable experimentally, but this may have been due to the fact that the material was not continuously in contact with the denuded area. We were unable to determine the relative effect of the scarlet red on chronic gastric ulcers, as it was impossible to produce chronic ulcers in dogs with controls of exactly the same size. Our experiments are suggestive, and, as this dyestuff may be safely administered, we feel that it is worthy of a thorough clinical trial."

According to our observations scarlet red may be administered in doses of from 15 to 20 grains, three or four times daily, without producing the slightest toxic effect, provided a pure preparation be employed (Biebrich). It is best given in 7½-grain cachets, 2 of which may be taken three or four times daily before meals. It may, however, be administered in much larger doses, and only after very large continuous doses can the odor of camphor be detected in the urine. Not the slightest toxic effect of this drug could be observed in any instance during its employment in over one hundred patients.

We reported the results of treatment of thirty-seven cases of ulcer in which scarlet red was employed in the course of treatment. In the largest proportion of these cases a most beneficial effect seems to have been obtained from its use. From the use of the remedy the following conclusions were drawn:

1. Scarlet red is a useful adjuvant in the treatment of peptic ulcer.

2. While it cannot replace the usual forms of treatment, when it is administered in conjunction with them it frequently renders the cure more effective.

3. As a help in the treatment of ambulatory cases it is of great service, and its effect seems to be even more favorable than that obtained from bismuth.

4. Its use need not in any way interfere with the administration of other remedies, such as the alkalies or belladonna, when indicated, and, in fact, the effect of the combination is at times most beneficial.

Since this publication, the use of this remedy has been noted by other observers. Zeublin[2] found it of value in a case of gastric ulcer with hemorrhage. Einhorn[3] points out its use in gastric and duodenal ulcer and Jones[4] has employed it along with the duodenal tube feeding, a daily dose of scarlet red in capsule being given by mouth, along the side of the tube with apparently good results.

We have since employed this remedy in forty-five more cases of ulcer with equally favorable results. As in the last report we have not included those cases in which the Leube or Lenhartz cure had been undertaken and which have made uneventful recoveries, inasmuch as most of such cases would have recovered without the help of any drug whatsoever; but have included only those in which the result of the rest cure was unsatisfactory and have added the ambulatory cases of ulcer, which remained unbenefited by the usual treatment.

Of these cases in which the remedy was employed sixteen were treated by the Leube rest cure, eighteen by the Lenhartz treatment and eleven were ambulatory cases. Of those treated by the Leube cure thirteen or 23.8 per cent. were cured; two or 4.4 per cent. were relieved and one or 2.2 per cent. was not relieved. Of those treated by the Lenhartz method fourteen or 31.1 per cent. were cured; two or 4.4 per cent. were relieved and two or 4.4 per cent were not relieved. Of those given ambulatory

treatment four or 8.8 per cent. were cured; four or 8.8 per cent. were relieved and three or 6.6 per cent. were not cured.

When we consider the fact that all of these cases resisted the usual treatment (that is, were treated by the usual methods first and were not relieved until the scarlet red had been administered), the result is most encouraging. The results obtained are much like those noted in our first report.

The results of treatment in the forty-five cases in which scarlet red was utilized are illustrated in the accompanying table. In it are noted respectively the location of the ulcer, the dose of scarlet red administered, the duration of treatment and its effect.

TABLE ILLUSTRATING THE EFFECT OF SCARLET RED IN THE TREATMENT OF FORTY-FIVE CASES OF PEPTIC ULCER

No.	Name	Age	Sex	Diagnosis	Form of Treatment	Dosage in Grains per Diem	Duration of Treatment in Weeks	Results
1	J.S.	22	M.	Duodenal	Leube	45	4	Cured
2	T.F.	34	M.	Gastric	Lenhartz	30	6	Not relieved
3	C.L.	26	M.	Duodenal	Lenhartz	60	4	Cured
4	H.T.	20	F.	Duodenal	Lenhartz	45	3	Cured
5	L.P.	52	M.	Gastric	Leube	45	4	Cured
6	P.A.	64	F.	Gastric	Leube	60	5	Cured
7	J.J.	58	F.	Duodenal	Lenhartz	45	4	Cured
8	J.S.	44	M.	Gastric	Ambulatory	30	6	Cured
9	F.B.	49	M.	Duodenal	Lenhartz	40	4	Cured
10	K.S.	62	M.	Duodenal	Leube	45	5	Cured
11	T.M.	57	F.	Duodenal	Lenhartz	60	3	Cured
12	N.P.	61	M.	Gastric	Ambulatory	45	5	Relieved
13	B.K.	47	M.	Duodenal	Lenhartz	40	4	Cured
14	O.T.	29	F.	Duodenal	Ambulatory	60	6	Not relieved
15	R.M.	38	F.	Gastric	Leube	45	4	Cured
16	M.F.	47	F.	Duodenal	Lenhartz	60	5	Cured
17	K.W.	52	M.	Duodenal	Lenhartz	45	4	Relieved
18	F.P.	59	M.	Gastric	Leube	30	3	Cured
19	J.H.	28	F.	Duodenal	Leube	45	6	Cured
20	W.C.	71	M.	Duodenal	Leube	60	4	Relieved
21	L.D.	42	M.	Gastric	Ambulatory	40	5	Cured
22	P.B.	64	F.	Duodenal	Lenhartz	40	5	Cured
23	A.F.	54	F.	Gastric	Ambulatory	60	7	Relieved
24	T.B.	49	M.	Duodenal	Leube	60	8	Cured
25	L.K.	37	F.	Duodenal	Ambulatory	45	4	Not relieved
26	O.F.	52	M.	Duodenal	Lenhartz	45	6	Not relieved
27	B.C.	40	M.	Gastric	Ambulatory	40	5	Relieved
28	D.M.	47	F.	Duodenal	Leube	60	4	Cured
29	E.P.	69	M.	Duodenal	Lenhartz	60	3	Cured
30	G.C.	43	F.	Gastric	Leube	40	6	Not relieved
31	M.F.	38	M.	Duodenal	Lenhartz	45	6	Cured
32	O.L.	54	F.	Duodenal	Leube	60	8	Cured
33	R.S.	56	F.	Gastric	Leube	45	7	Cured
34	S.V.	37	F.	Duodenal	Lenhartz	60	3	Cured
35	B.B.	68	M.	Duodenal	Lenhartz	45	4	Cured
36	G.K.	44	M.	Duodenal	Leube	40	6	Cured
37	L.G.	47	M.	Gastric	Ambulatory	40	2	Cured
38	K.B.	52	M.	Duodenal	Lenhartz	60	4	Relieved
39	J.S.	38	F.	Gastric	Ambulatory	45	7	Not relieved
40	M.R.	62	M.	Duodenal	Lenhartz	60	6	Cured
41	F.S.	56	F.	Gastric	Leube	45	8	Relieved
42	O.P.	29	M.	Gastric	Ambulatory	45	4	Cured
43	N.K.	31	M.	Duodenal	Leube	40	4	Cured
44	B.C.	43	F.	Duodenal	Ambulatory	60	6	Relieved
45	C.F.	25	M.	Duodenal	Lenhartz	45	7	Cured

From our experience with this remedy in the treatment of the forty-five cases of peptic ulcer just noted, together with the results in the thirty-seven cases already reported, we believe we are justified in drawing the following conclusions:

1. Scarlet red still remains a useful adjuvant in the treatment of peptic ulcer and while it cannot by any means replace the usual forms of treatment, when administered in conjunction with them, it adds materially to the effectiveness of the cure.

2. It is of great help when administered in the ambulatory cases, the effect being even more favorable than the usual remedies, such as bismuth.

3. Inasmuch as scarlet red in no way interferes with the administration of other remedies, such as the alkalies or atropine, these may be administered when indicated at the same time and in fact, the effect of the combination is at times most beneficial.

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A STUDY OF THE NORMAL BACTERIAL FLORA OF POSTAGE STAMPS.

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THE purpose of this study was to determine the normal bacterial flora of postage stamps, that is, to get some idea of the general character of bacteria found on stamps with especial emphasis in the search for tubercle bacilli, *Bacillus tetani*, the colon group, and diphtherial forms.

The literature on this subject is surprisingly meager and but little record is made of the bacteria of stamps. The subject is usually approached from the viewpoint of the spread of infection by the postal service as a whole, the infection by letters and the fumigation of letters, and but little record is made of infection by stamps or of the bacteria of stamps.

In order to determine this fifty stamps were bought in various stores in Philadelphia, including the central office, branch offices, almost all the large department stores, many drug stores, and some of the small general stores. Most of the stamps were bought from sheets and a few (3) from stamp books. The character of the place was noted, its general cleanliness, the clerk and his appearance, and whether the stamps were placed on the counter with the change or not. In almost all cases they were presented with the glue side up showing that the precepts of public hygiene have had this much effect.

The clerk was then asked to place the stamp in a sterile tube in which it was taken to the laboratory. Each stamp was then smeared over blood serum, agar, and a bouillon tube was inoculated and finally, incubated in sterile water in a centrifuge tube for twenty-four hours. This was centrifuged and the sediment used to inoculate tubes of bouillon, Petroff's medium, and smears made and stained for the tubercle bacillus.

The first fifteen stamps were treated in this manner, and among other growths, two which appeared to be *Micrococcus aureus* were obtained, but as it was believed that many more like these would be found their pathogenicity was not tested. It later appeared that on the remaining thirty-five stamps no similar growths were found.

The other thirty-five stamps were treated in a different manner. Each was cut in half, one-half treated as were the first fifteen smeared on blood serum, agar, and in bouillon, then centrifuged in sterile water and the sediment used to inoculate Petroff's medium, bouillon and smeared on slides which were stained for the tubercle bacillus. The other half was incubated in a centrifuge tube with 3 per cent. sodium hydrate for twenty minutes, neutralized with normal hydrochloric acid and centrifuged. The sediment was used to inoculate tubes of Petroff's medium and smeared and stained for tubercle bacillus. This method rendered two smears stained for tubercle bacilli, two tubes of Petroff's

medium and five of the ordinary media for each stamp.

Concerning the growths found; all were negative with respect to tubercle bacilli, colon and diphtherial forms. A surprisingly small number of moulds were found, only six in all, with practically the same number of *Bacillus subtilis*. A great number of non-pathogenic cocci were found of which a large light yellow form and a small white glistening form were most common. The pathogenicity of these was tested in guinea pigs and found to be negative, not even producing a swelling at the site of inoculation. From their cultural characteristics they were believed to be *Micrococcus citreus* Sternberg or *M. flavus* Flugge and *M. dissimilis* or *M. descidens* for the small white form. Other micrococci were found, small yellow forms which were non-pathogenic and from their cultural characteristics and behavior were believed to be *M. luteus* and *M. versicolor*.

Five rod forms were obtained but these were found to be of only two different forms, one a long slender curved organism, the other a shorter and broader form. These were found to be non-pathogenic for guinea pigs. It is interesting to note that two stamps were found to be completely sterile.

A summary of the results giving the probable kinds of organisms found is as follows:

Micrococci 53
- White 33
  - small 22 — *M. dissimilis* / *M. decidens*
  - large 11 — *M. candidus* or *candidans*
- Yellow 16
  - small 6 — *M. luteus* / *M. Versicolor*
  - large 10 — *M. citreus* Sternberg / *M. flavus* Flugge

Micrococcus aureus, possibly two growths.
Micrococcus aurantius, one.
Moulds, six.
Bacillus subtilis, four.
Percentages:
Micrococci (non-pathogenic), 81.
Moulds, 8.
B. subtilis, 5.5.
Other bacteria (non-pathogenic), 5.5.

The majority of the stamps showed one or more organisms but in no single instance were they found to be pathogenic in type. This does not exclude the fact, that under favorable conditions certain pathogenic types, which would resist drying to a certain extent, might not be carried on a postage stamp. On the other hand the work proves the stamp to be a carrier of organisms and these could readily be transferred from one individual to another. This would only be of importance where the organism was pathogenic. We have in mind a drug store where one of the members of the druggist's family had advanced tuberculosis. His sputum as well as his feces contained may bacilli, he had a hacking cough and was in the habit of protecting his mouth with his hand while coughing. During busy times he often served customers, and not infrequently dispensed stamps to children who would immediately moisten them with their mouths and paste them to letters. A single exposure in this case might prove negative, but the constant exposure in some cases would undoubtedly end in infection.

We are in debt to Mr. H. McC. Miller for much valuable assistance in the routine work of this paper.

Conclusions.

1. A study of fifty stamps obtained from as many different sources, clean, dirty and indifferent, showed bacteria in every instance except two.

2. With the possible exception of two cases no organism pathogenic in type was encountered.

3. Aside from hygienic reasons it is dangerous to lick postage stamps on the ground that the stamps are bacteria laden and under favorable conditions might easily convey pathogenic types, especially colon, diphtheria and tubercle bacillus.

4. We would therefore advocate a movement to have installed in all places dispensing postage stamps a moistening device of some type. This movement could be started with beneficent results in the post-offices of the United States Government.

Medicolegal Notes.

Incompetent Hypothetical Question—Whether Accident Caused Disease.—In an action for injuries received in a street car collision, claimed to have resulted in a tumor on the breast and traumatic neurasthenia, an expert witness for the plaintiff was asked: "Doctor, referring to the suppositions or hypothetical patient and taking into account the elements of the hypothesis, have you an opinion, as a medical man, and based upon reasonable certainty, as to what was the cause of the neurasthenia and the tumor in the hypothetical patient?" A.—"Yes, sir." Q.—"What is your opinion as to the connection between this disease and the tumor or growth in the breast?" A. "That the tumor resulted from the bruise—the injury to the breast. The neurasthenia resulted from the shock of the accident, and was kept alive by the breast condition." The Illinois Supreme Court held that the questions were improper, as invading the province of the jury and calling for an opinion on an ultimate fact. Where there is a conflict in the evidence, as in this case, as to whether or not the party suing was injured in the manner charged, it is not competent for witnesses, even though testifying as experts, to give their opinions on the very facts the jury is to determine. Whether or not the collision in this case caused traumatic neurasthenia in the plaintiff or caused the tumor in her breast were ultimate facts upon which the jury must make their findings. It is no more proper legally for physicans to settle these questions for the jury by their direct answers than it would be for a motorman of another street-car company to settle the question of negligence by testifying in broad terms that the defendant was guilty of negligence because the motorman failed to cut off the power by use of the canopy switch in time to prevent the collision. The rule in such cases is not different where hypothetical questions are put to the expert witnesses. A physician may be asked whether the facts stated in a hypothetical question are sufficient to cause a certain condition, or he may be asked whether a given condition may be caused by the facts stated in the hypothetical question. But he should not be asked whether or not such facts did cause such condition or malady. In cases where there is no dispute as to the manner and cause of the injury, and no dispute that there was an injury sustained by reason of the acts of which compaint is made the Illinois Supreme Court has held that a physician may then testify that a later malady was or was not caused by the accident or original injury, upon the same principle that he may testify that death resulted from a certain wound. The physicians having stated that the plaintiff's tumor and neurasthenia were caused by the collision, the jury had to award large damages under this evidence. Judgment for the plaintiff was reversed and a new trial granted.—Fellows-Kinbrough v. Chicago City Ry. Co. (Ill.) 111 N. E. 499.

Malpractice—Evidence.—In an action for malpractice in diagnosing and treating the plaintiff's dislocated shoulder as a sprain, the evidence conflicted as to whether the defendant applied the usual tests by inserting the fingers in the armpit and placing the patient's right hand on the opposite shoulder with the elbow pressed against the side or chest. The injury was sustained on February 3, 1912, at which time the plaintiff alleged the shoulder was dislocated. It was held that evidence of physicans that they found on March 25 following that there was a dislocation was admissible when considered in connection with evidence of a sufficient cause of dislocation on Feb. 3, and the evidence of the plaintiff and his wife that the shoulder had suffered no injury between February 3 and March 25. It was held that the evidence of dislocation and of the defendant's failure to properly diagnose the case was sufficient to take the case to the jury.—Hoffman v. Watkins, Washington Supreme Court, 155 Pac. 159.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, July 22, 1916.

IS THE PRESENT ILL-REPUTE OF SPINAL ANESTHESIA DESERVED?

THE sudden vogue attained by spinal anesthesia several years ago is still fresh in our minds, but we search in vain for like popularity to-day. The method, in this country anyway, appears to have fallen into desuetude, in spite of the ardent claims formerly made for it. The reason for this abrupt decline from favor would probably be summed up by the average physician as three in number: Unreliability of action, disagreeable after-effects, and a high mortality. And yet we get reports from anesthetists who have used the intrathecal method in large numbers of cases which deny the first and the last of these reasons and report the second as practically negligible. The suspicion naturally arises then that perhaps some error of technique has been responsible for the lack of success reported hitherto.

Several hundred cases were reported by Dr. C. G. Holman in the *Lancet* for May 6, with no bad results other than severe temporary headache in a few cases, readily relieved by aspirin. Holman believes that novocaine is less toxic than stovaine, being led to that opinion by experiments which he made on rabbits; the maximum dose is 0.075 gm. Apropos of this dosage he comments on the fact that an example of the bad results published was in a case in which 0.15 gm. was given to a patient 68 years old. The position recommended by this writer is lying on the side with the knees drawn up and the back rounded. In the same periodical for June 10, Dr. Page, who not long ago reported a series of prostatectomies under spinal anesthesia, and Dr. Chapple speak a good word for this form of anesthesia in those cases where a more complete muscular relaxation is desired than can be obtained under the ordinary "deep" anesthesia, and where it is essential to minimize shock. Seventy cases of pelvic operations were reported with nine deaths, none of which could be attributed in any degree to the anesthetic. These were for the most part cases in which a general anesthetic was contraindicated—heart and kidney cases, alcoholics, excessively obese persons, etc. Dr. Page's practice was to put the patient in the Trendelenburg position after the injection of the anesthetic, a procedure which is not generally known in this connection. A complete flaccid paralysis of the lower half of the body was obtained, extending sometimes as high as the second rib; this disappeared shortly after the operation. Dr. Chapple, who did the operation in nearly all of these cases, remarks that some of the patients could not have been operated on at all except by this method. These writers also report an occasional headache lasting a short time.

With these favorable reports at hand, it would seem that a recasting of some of the opinions of spinal anesthesia currently held would be necessary. It is quite evident that the method should not be attempted except by one who is thoroughly versed in its technique, as an incorrect position of the patient, a failure to reach the spinal canal, a withdrawal of too much or too little fluid, an injection of too small or too large a dose, may cause either a failure to obtain anesthesia or collapse during the operation.

THE DISTRIBUTION OF TETANUS TOXIN.

IT is the general belief at the present time that tetanus toxin, elaborated at the point of infection and growth of the organism, passes up along the axis cylinders of the motor nerves to the central nervous system where it combines with the cells for which it apparently has a special affinity, and, as a result of this combination, changes take place which produce symptoms.

In the course of his extensive studies upon this disease, Robertson has devoted a certain amount of time to an effort to determine how the toxin is distributed in the body and how it makes its way from the periphery to the brain. He reasons very clearly (*American Journal of Medical Sciences*, clii, 1916, 31) that theoretically it is difficult to understand how tetanus toxin, which admittedly has a high degree of affinity for nerve cells, may travel along an axis cylinder without combining with it. The axis cylinder is merely the process of a cell, and logically the toxin would be expected to combine with it and therefore remain in place. He asks very pertinently if this is "a hitherto unknown affinity to travel?" He points, however, to the demonstration of lymph channels in the substance of nerve trunks, and records several of his own successes in injecting them. It is naturally difficult to trace them, for the usual methods of section and ligature of the nerve would, of course, obliterate the lymph channels, and moreover these spaces are blocked by degenerating myelin material whenever a nerve is cut. Given, therefore, the existence of this lymph stream, it would certainly be the natural path for the passage of any substance in fluid form. Robertson goes carefully into the experimental evidence on hand and shows that none of the results exclude the possibility of transmission in this way. He then cites some experiments of his own which he considers to have weight in the support of his side of the discussion.

The author of this interesting paper makes out a very strong argument. The theory which is now dominant has always been a difficult one to accept upon philosophical grounds, and Robertson's is much more plausible. There are still points which need elucidation, and it is desirable that the lymphatic

system be studied more intensively. Weed and Wegefarth have shown that the spinal fluid drains out, to a very slight extent, through the perineural lymph channels, but were unable to demonstrate any influx of fluid into the cerebrospinal cavity except from above. The existence of lymph channels within the substance of the nerves trunks and of a current in them carrying fluid toward the brain, is a fact of considerable importance if it can be fully demonstrated. It would be interesting to know the destination of this fluid, for it has been the experience of most investigators that very few substances find their way into the cerebrospinal fluid in spite of this apparently easy pathway. Thus this work is of considerable importance not only in its connection with the treatment of a dangerous disease but also because of its relation to the physiology of the nervous system.

A PHILANTHROPIC POSSIBILITY.

Probably we have all indulged in that most agreeable of all phantasies, the picturing of what we would do with boundless wealth. Some of us would erect model hospitals, some pattern medical schools, give scholarships to needy but earnest disciples of Æsculapius, send them abroad to study, etc., etc. Nevertheless it is sometimes very difficult to know just what to do with all of the unearned increment. After the organized charities have been appeased, the poor relatives made comfortable for life, and religious duties recognized, the question arises as to the proper disposition of the remaining thousands destined for charity.

Let us then suggest for the relief of these distressed millionaires a scheme by which they can help to reduce infant mortality at small cost. To explain it fully we must go back some ten years to the time when one Benjamin Broadbent was elected Mayor of the Borough of Huddersfield, England. Having always taken a strong interest in the problem of infant mortality, and having viewed with alarm its prevalence in his community, he offered a birthday gift to every child born within the village of Longwood, in his borough. This took the form of a promissory note for one pound sterling, payable when the child should become one year old. The natural consequence was that parents awoke to the fact that the survival of their babies depended somewhat on the care they received. Their pride and interest were aroused, and they determined to keep their children alive through that first year, not only because of the five dollars, although that was a large sum to many of them, but for the sheer sake of winning. Best of all, Mayor Broadbent's unique scheme attracted so much attention to the subject of infant mortality, especially in his own borough, that it became a kind of headquarters for the study of the subject.

Why, then, does not some philanthropist set in motion a similar scheme in some district in the United States where the mortality of babies is high? There is little doubt but that he would be doing good, and the only drawback to the proposition would seem to be the almost certain result that about 50 per cent. of the fortunate babies would bear their benefactor's name for life.

Twlight Sleep Again.

Little has been heard recently of that form of amnesic analgesia known as twilight sleep. It is only a few months ago when it was a fruitful theme for discussion, not only in medical journals but in the lay press. At first it was heralded, chiefly in magazines, as one of the most beneficent procedures ever introduced and its good features were so lauded out of all proportion that it was difficult to take an unprejudiced view of its distinctive points. However, one is able now to consider the method judicially and to pass upon the drawbacks or merits in a sane manner. In *Surgery, Gynecology and Obstetrics* for June, Dr. Charles B. Reed has a paper on the subject in which he reviews his experiences in the use of the method. He states that from observation of cases treated by himself and others the belief has been reached that the morphine-scopolamine analgesia is entirely harmless to both mother and child when properly administered. He regards the treatment as successful in his hands, since 29 per cent of his cases were practically, and 56 per cent entirely, free from pain, or 85 per cent in all. The strength is conserved and the convalescent period shortened. Whether or not the woman gets up earlier is a question of uterine involution rather than one of days or strength or treatment. The main thing is that she feels better much sooner. It is Reed's opinion that primary pain, weakness, hemorrhage, prolapsed cord, and a lack of correlation between the size of the pelvis and the child make conditions that are unfavorable for twilight sleep. He does not believe that twilight sleep can be produced in every case, but it does no harm, he says, when properly used and he is convinced it will act happily in about 85 per cent of the cases selected with due regard to contraindications. He regards it as a valuable and permanent addition to the resources of the obstetrician, and says that much of the antagonism to it arises from an inability or an unwillingness to bestow upon a woman in labor the unremitting attention and the higher technical proficiency which these cases demand. The above is interesting testimony in favor of a mode of overcoming some of the unpleasant features, notably pain, of parturition, and is not altogether in harmony with the experience of many other observers.

Spontaneous Chronic Nephropathy of the Dog.

Although chronic nephritis in the dog is quite a common disease, and the fact has been recognized by many investigators, nevertheless it has apparently been overlooked to a certain extent and no really adequate study of the subject has been undertaken. The matter is very important, for the dog is an easily obtainable animal which has been used largely for experimentation and the question of proper controls is an essential one. MacNider has undertaken an investigation of the subject and reports his findings in a recent paper (*Jour. Med. Research*, 1916, xxxiv, 177). Out of a total of two hundred and thirty-seven dogs, forty-two had constantly or intermittently an albuminous urine with various types of casts, and at autopsy showed unquestionable evidence of kidney injury which was farly diffuse in its distribution. Eighteen other animals showed localized areas of kidney injury but were excluded from this series. Of the forty-two animals studied, the changes in eighteen were confined very largely to the glomeruli. In the remainder the changes were of the same type but in a more advanced stage. In several there was sclerosis of

the renal arteries. No acute inflammatory changes were observed. There was apparently very little effect upon the tubular epithelium. When these animals were made acutely nephropathic by uranium it was found that the action of the drug was practically the same as upon the normal kidney while the regenerated epithelium which was formed in the course of healing of a uranium nephritis was more resistant to the action of this drug than was normal epithelium. The work is very interesting and the article will bear careful study. Careful controls are even more essential in animal experimentation than in many other varieties of research and in this special instance the controls are apparently rather difficult to obtain.

Visceral Inversion.

So-called heterotaxia has now been placed on record at least 170 times. Many cases are autopsy finds, while of the clinical material not much has been radiographed. Simple dextrocardia is extremely rare and has been encountered as a familial affection. Much the greater part of the material is made up of complete heterotaxia. Electrocardiograms have been obtained in both forms, naturally accompanied by skiagrams. A. de Castro of Rio de Janeiro with two colleagues has been able to place on record three cases of complete heteroataxia within a very brief period. This would of course suggest that the condition cannot be so very rare (*Archives des maladies du cœur, etc.*, May, 1916). All three subjects had pulmonary tuberculosis. The heart's action was normal (in simple dextrocardia, on the contrary, the heart's action shows modification). In none of the patients was there evidence of morphological anomaly of any sort. All of them were right handed. The spleen could be recognized on the right by physical exploration. In one of the patients the heart, stomach, liver, and spleen were transposed, but not the intestine.

News of the Week.

The Poliomyelitis Epidemic.—There has been a progressive increase in the number of new cases in this city during the few days preceding the present writing, but it is hoped, nevertheless, that the height of the epidemic has been reached. The total number of cases reported up to July 20 is 2,327, the deaths being 455. Dr. C. E. Banks of the United States Public Health Service has been ordered here from Milwaukee to take charge of the work for prevention of the spread of the disease outside of the city. The Rockefeller Foundation has donated $50,000 to aid in the work of discovering and keeping under observation suspected carriers of the disease. Dr. Alvah H. Doty, former quarantine officer of the port of New York, has been appointed administration officer in charge of this work and he has under him a considerable staff of physicians and nurses. The laboratory investigations are under the supervision of Drs. Lavinder and Frost of the U. S. Public Health Service. The use of adrenalin, as recommended by Dr. Meltzer at the special meeting of the Academy of Medicine on July 13, a report of which is presented on page 167 in this issue, has been tried this week with apparent success in a number of cases at the Throat, Nose and Lung Hospital. The remedy was given in 2 c.c. doses every six hours, and was followed by marked improvement in the paralysis as well as in the general condition.

Cuban Quarantine Against the United States.—The Cuban sanitary authorities have adopted quarantine restrictions against United States children on account of the epidemic of infantile paralysis. In the future children arriving from American ports who have an abnormal temperature will be isolated until the trouble is diagnosed, while children in normal health will be kept under surveillance until the danger of developing infantile paralysis has passed.

Poliomyelitis Clinics.—The Department of Health, through the cooperation of various hospitals which are treating a large number of cases of poliomyelitis, has arranged a series of clinical lectures to physicians. These clinics are to be conducted during the week commencing Monday, July 24, at the following hospitals: *Willard Parker Hospital*—Dr. Philip Van Ingen and associates, 4-5 P. M., Monday, Tuesday, Wednesday, Thursday, and Friday. *Kingston Avenue Hospital*—Dr. Louis Ager and associates, 4-5 P. M., Monday, Tuesday, Wednesday, Thursday, and Friday. *Mt. Sinai Hospital*—Dr. Herman Schwarz, 4-5 P. M., Monday, Tuesday, Wednesday, Thursday, and Friday. *Bellevue Hospital*—Dr. J. S. Ferguson, 4-5 P. M., Tuesday, Thursday, and Saturday. *Babies' Hospital*—Dr. Charles Gilmore Kerley, 4.30-5.30 P. M. Tuesday and Thursday. *Swinburne Island*—Dr. Frank Clark, 4-5 P. M., Thursday and Friday.

New York State Commission for Boy Training.—At the recent session of the Legislature of this State a bill was passed providing for physical training of not less than twenty minutes each day by all pupils eight years of age and over in the public and private schools in New York State. The program to be followed is to be determined by a commission composed of the Major General commanding the National Guard (Gen. John F. O'Ryan), a member appointed by the Board of Regents of the University of the State of New York, and one appointed by the Governor. The choice of the Regents fell upon Dr. John H. Finley, Commissioner of Education, and the Governor has appointed Dr. George J. Fisher chairman of the Committee on Awards and Scout Requirements of the Boy Scouts of America.

Prize for the Best Artificial Hand.—The Royal Surgical Society of London, according to *The Sun*, has received a gift of a large sum of money to be offered as a prize to the inventor of the best artificial hand. Competitors will have to exhibit persons who have worn the hands for at least six months.

The American Field Ambulance in France, which now has 150 cars in service, has been made an independent unit and separated from the ambulance organization at Neuilly. A. Piatt Andrew will continue as chief inspector and will be assisted by Stephen Gallatin of New York. Of the cars now in service 125 are on the Verdun front. New cars are being fitted out, and young men are coming from the United States to drive them, so that by the end of August 200 cars will be in service, or five times as many as a year ago. The Field Ambulance will have a suburban villa, where the drivers can rest when on furlough.

Death of the Kaiser's Laryngologist.—It is reported from Amsterdam that Dr. Friedrich W. K. von Ilberg, to whose care was intrusted the management of the chronic throat affection from which the German Emperor suffers, died in Berlin on July 9.

American Hospital Unit in Bohemia.—The

American hospital unit, consisting of four surgeons and four nurses from the American Physicians' Relief Association, has been assigned to Pardowitz, Bohemia, where one of the largest and most up-to-date hospitals in the empire, with a capacity of 10,000 patients, is located. The surgeons are Drs. Martin, Moore, Corby, and Mincke.

Another Red Cross Hospital Ship Torpedoed.—The National Headquarters of the American Red Cross in Washington announces that they have just received the following cablegram from the Central Committee of the Russian Red Cross in Petrograd: "On July 8 about 9.00 o'clock in the morning the hospital ship *V"Peryod* of the Russian Red Cross having all the external marks required by the Hague Convention was torpedoed and sunk about thirty-two leagues from Batum, near the village of Vitse (on the Black Sea) by an enemy submarine. There were eight deaths and seven wounded among the crew and sanitary personnel of the ship. All hostile governments had been notified of the equipment of the *V"Peryod* as a hospital ship. All possibility of a mistake is excluded. We protest with most profound indignation against this new crime."

American Physicians Wanted in London Military Hospitals.—Sir William Osler has sent word to a number of American surgeons that there are vacancies for 120 young American medical graduates in the military hospitals of London and its immediate neighborhood. The term of service is six months. There will be a small salary and passage will be paid both ways. Applications will be received by Dr. Richard Cabot and Dr. Henry A. Christian of Boston; Dr. W. S. Thayer of Baltimore; Dr. Dean Lewis of Chicago, and Dr. Karl M. Vogel, 437 West Fifty-ninth Street, New York.

Another Base Hospital Unit for the Mexican Border.—The American Red Cross Headquarters announce that a base hospital unit at the German Hospital in New York is being organized under the American Red Cross. Its director is Dr. Frederick Kammerer, who has just withdrawn from active service with the German army and brings to his new task the very valuable knowledge gained at the German front in the European war zone.

Camps for Medical Men at Plattsburg.—Major General Leonard Wood, commanding the Eastern Department of the Army, has announced that two training camps for medical men will be held in connection with the regular Plattsburg Military Training Camp this month. The first camp began on Wednesday and the second will begin on July 24. The course of instruction will emphasize camp sanitation and military hygiene. The camps will be commanded by medical officers of the regular army. Psysicians desiring to attend one or both of these camps should communicate with the Military Training Camps Association, 31 Nassau Street, where enlistment blanks will be furnished on application.

Goggles for Troops in Texas.—Mr. Oliver Iselin has sent a check to the Red Cross to pay for goggles for use by the New York National Guard on duty on the Mexican border to protect them from the alkali dust and glare of the sun.

Dr. Cecil D. Gaston has been elected by the Jefferson County Medical Society health officer of the city of Birmingham, Ala. Dr. Gaston has served as city physician for several months. He is a graduate of Jefferson Medical College, Philadelphia.

Dr. Franklin C. McLean, assistant resident physician in the hospital of the Rockefeller Institute, New York, has accepted an appointment by the trustees of the Union Medical College, Pekin, to the professorship of Internal Medicine. The appointment carries with it the headship of the Union Medical School. This is one of the institutions of the China Medical Board of the Rockefeller Foundation.

Mr. Hardolph Wasteneys, associate in the Department of Experimental Biology in the Rockefeller Institute, New York, has accepted an appointment as associate professor of pharmacology in the University of California.

A Symposium on Acidosis.—The June number of *American Medicine,* recently issued, is devoted largely to papers dealing with acidosis in its various aspects, the contributors being some of the best known clinicians and laboratory workers in this country and Great Britain. Among them are P. J. Cammidge, Eric Pritchard, Frederick Langmead, Herbert Williamson, and Edward Gillespie of London, England; Robert T. Morris, Heinrich Stern, Robert Coleman Kemp, Anthony Bassler, A. C. Burnham, William P. Cunningham, George Dow Scott, Louis Fischer, Samuel Floersheim, and John W. Wainwright of New York; George W. Crile of Cleveland, Alfred C. Croftan and Bayard Holmes of Chicago, J. H. Kellogg of Battle Creek, Stephen H. Blodgett of Boston, and W. S. Gordon of Richmond, Va. It is unusual for a single issue of a journal to contain so many notable contributions, and the editor, Dr. H. Edwin Lewis, is to be congratulated upon having produced such an interesting and instructive contribution to the literature of this very live subject.

Kentucky Valley Medical Association.—At the annual meeting of this association, held at Richmond, Ky., June 29 and 30, the following officers were elected: *President,* Dr. Clarence H. Vought of Richmond; *Viee-President,* Dr. Wilson Bach of Jackson; *Secretary-Treasurer,* Dr. J. H. Evans of Beattyville.

The Connecticut State Board of Health, at a recent meeting in Hartford, re-elected its present officers as follows: *President,* Dr. Edward K. Root, Hartford; *Secretary-Treasurer,* Dr. John Torrington Black, New London; *Sanitary Engineer,* J. Frederick Jackson, New Haven; *State Baeteriologist,* Prof. H. W. Conn, Middletown.

The American Association of Immunologists.—At the recent meeting of this association held in Washington, D. C., May 11 and 12 the following officers were elected: *President,* Dr. Richard Weil, New York; *Viee-President,* Dr. John A. Kolmer, Philadelphia, Pa.; *Treasurer,* Dr. Willard J. Stone, Toledo, Ohio; *Secrtary,* Dr. Martin J. Synnott, 34 South Fullerton Avenue, Montclair, N. J.; *Council* (1918), Dr. William H. Park, New York; (1921), Dr. Arthur F. Coca, New York.

The Status of the Officers of the American Medical Association.—Quo warranto proceedings were filed recently by Illinois State's Attorney Horne seeking to declare the charter of the American Medical Association forfeited in consequence of the holding of elections elsewhere than in the State of Illinois and of denying to the fellows of the Association the right to vote for officers.

Obituary Notes.—Dr. FRANCIS SORREL, formerly of Savannah, Ga., died at his home in Washington, D. C., on June 30, at the age of 89 years. He was born in Savannah and was graduated from the Uni-

versity of Pennsylvania in the class of 1848. He was in the medical corps of the U. S. Navy from 1849 to 1856, when he retired from the service and began practice in Savannah. During the Civil War he served as surgeon with the Georgia troops, and in 1865 was appointed medical director of the General Hospital in Richmond, Va. At the end of the war he returned to Savannah and lived there until two years ago, when he went to Washington.

Dr. THOMAS A. ASHBY of Baltimore, Md., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1873, a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, the Baltimore City Medical Society, and the American Gynecological Society, and a fellow of the American College of Surgeons, died at his home, after a lingering illness, on June 26, aged 67 years. Dr. Ashby was the founder of the *Maryland Medical Journal*, and its editor from 1877 to 1892, and had been professor of gynecology in the University of Maryland since 1897.

Dr. ARCHIBALD M. GLASS of Booneville, Ky., a graduate of the University of Louisville, Medical Department, in 1885, and a member of the American Medical Association, the Kentucky State Medical Association, and the Owsley County Medical Society, of which he was secretary for some years, died at his home after a long illness, on June 21, aged 53 years.

Dr. JAMES T. ROAN of Wayness, Ga., died at Jones, near Savannah, on June 30, at the age of 64 years. He was a graduate of the Southern Medical College, Atlanta, in the class of 1882. He had been in ill health for several years.

Obituary.

ELIE METCHNIKOFF, M.D.

PARIS, FRANCE.

PROFESSOR ELIAS METCHNIKOFF, the last of the pioneers in bacteriological science, died of heart disease on Saturday in the Pasteur Institute, Paris, at the age of 72 years. He had been ill for several months, and his death had been expected momentarily. He was born in Russia May 16, 1844, and began his scientific career as a naturalist. It was while studying cellular embryology in the young of marine organisms that he discovered the phagocytic action of the leucocytes. From this followed his theory of inflammation that the hyperemia and pus formation were due to the rush of the leucocytes to the injured part in their effort to destroy the invading microorganisms. His theory of immunity was also based upon this discovery, the antibodies being products of the attacking leucocytes. He came from a short-lived family, and this fact turned his attention to the subject of longevity, from which followed his theory of the intestinal origin of arterial and other degenerations which shorten life and of the action of the lactic-acid bacilli in destroying the noxious intestinal flora.

He entered the Pasteur Institute in 1888, and in 1895 was appointed its director. The Nobel prize in medicine was awarded him in 1908. It is impossible in a short notice to recount all that Metchnikoff has done for science, for he was working productively in this field for forty-five years, and will rank with Pasteur, Lister, Ehrlich, Behring, and Koch as one of the giants in the practical application of bacteriology to the saving of human life.

Correspondence.

THE TREATMENT OF INFANTILE PARALYSIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the discussion following the papers on infantile paralysis read at the special meeting of the Academy of Medicine on July 13, I made some remarks which were reproduced in the daily press. This brought results which compel me to ask you for some space in your journal. In the first place I am receiving many letters, telegrams, and telephone messages asking for exact information as to how to use adrenalin, etc., and would therefore request you to publish an exact reproduction of my remarks which I purposely read from notes. [See under the report of the meeting of the Academy of Medicine, pages 171 and 172.]

Regarding the two apparatuses mentioned, I expect to publish soon a detailed description of both of them and their working. However, I wish to add that I would gladly demonstrate the action of these apparatuses at the Rockefeller Institute if there should be a number of physicians who would signify their desire to witness such experiments; a definite appointment could then be arranged.

As I have said, the metropolitan press took notice of my statement regarding the use of adrenalin in infantile paralysis. This was resented by the Health Department. "The medical importance of this is not so great as the space in the newspapers would indicate." " . . . his (Dr. Meltzer's) suggestion was purely theoretical." "It is unfortunate that the newspapers have seized on this one small detail." While I am confident that Dr. Emerson, who is an old friend of mine, did not intend to offer an affront to me personally, or to suppress the use of adrenalin in the treatment of infantile paralysis, the undertone of the various statements emanating from him as well as from Dr. Ager could not fail to discredit the value of my suggestions and to imply that I have been guilty of some impropriety. Permit me to deal here with both points in question. In the first place, as to the propriety of my actions. I received a call at my house from two competent physicians from the Kingston Avenue Hospital who wished to learn my views of the treatment of poliomyelitis. I spoke to them at length and promised to bring out the two respiratory apparatuses to the hospital and to demonstrate their use. Next morning I called up Dr. Emerson to find out whether my going there would meet with his approval and asking him at the same time to exert his influence that my activities there should not be ventilated in the public press. I then learned that there would be a meeting of the Academy of Medicine which would deal with infantile paralysis. I asked the president to put me upon the list of those who would discuss the papers. At the meeting I found that anything I wished to say had to be within five minutes or less. As the last participant in the discussion of that meeting I had to speak very briefly, but I spoke as a medical man, on a medical subject, to a medical audience. I was certainly within my rights. I could not be held responsible for the fact that the newspapers thought that what I said was worth a wide circulation. I gave no interviews.

Now, as to the merits of the treatment. The first requirement of a new treatment is that it should do no harm. On the basis of my extensive experi-

ence I was, and am, sure that a cautious intraspinal injection of adrenalin does no harm. As to the good it may do, I have given in my brief statement full reasons for the justification of my expectations. Will adrenalin accomplish a real cure? Anyone who is trained in experimental and clinical criticism can readily see that this question can not be answered for some time to come. On the one hand, it is quite certain that in many cases it will be of no value on account of the frequent occurrence of a steady ascending progress of the chief inflammatory focus to the origin of the phrenic nerves and to the respiratory and the vasomotor centers. The failure of adrenalin to help in some cases does therefore in no way speak against its possible usefulness in some other cases. On the other hand, the recovery of some cases does not speak definitely for the usefulness of adrenalin, since 75 per cent. of the patients recover without this treatment. This criticism is applicable to any kind of useful remedy in a disease in which the mortality is comparatively low. However, there is one form of evidence which is of actual value, and that is when an improvement is observed which has to be ascribed to the remedy. That kind of evidence we have unmistakably seen in the experimental poliomyelitis of monkeys, and I may say now that similar evidence has already been obtained in the treatment of human beings. One competent physician wrote to me July 12 the following: "So far have made observations on three cases, on the effect of intraspinal injection of adrenalin. In one case, in particular, the results certainly were good and resembled those obtained by Clark experimentally." Dr. J. C. Regan, resident physician of the Kingston Avenue Hospital, stated to me expressly that he is sure that the intraspinal injection of adrenalin and the administration of oxygen under pressure exert a good effect. In one case, complicated with pneumonia, recovery took place under this treatment. The immediate effect of the oxygen administration upon the cyanosis was unmistakable, and he wished me to let them keep both apparatuses for the administration of oxygen for some time until they could obtain their own. Under these circumstances I am of the opinion that the treatment of poliomyelitis by the measures I suggested is not only permissible but it would be nearly bordering on criminal neglect not to use them. This last statement is perhaps exaggerated, but at any rate, it was my perfect right and duty to bring forward my therapeutic suggestions.

I would like to take issue with several statements of Dr. Emerson; *i.e.* if he was correctly quoted. He stated that the treatment of the sick children is not one of the duties of the administrative part of the Health Department. It seems to me that this position is entirely untenable. If the Health Department has a right to compel people to give up the sick children to its care, it is a positive duty of that department to look out for the proper treatment of these children and to try any method of treatment which promises to do some good. Furthermore, the holding out of hopes of a cure for the sick babies would make the task of the Board of Health in taking the children away from their homes a good deal easier. The department therefore should not discourage such hopes. Finally, if all the children, sick with infantile paralysis are to be treated exclusively in the hospitals under the jurisdiction of the Health Department it is the duty of these hospitals to study new methods of treatment, if any are offered, and are sound; otherwise there would be no therapeutic progress possible for the disease of infantile paralysis. Dr. Emerson is further quoted as saying that adrenalin is not a specific, and therefore does not come within the province of the Board of Health, and he defines a specific as that which offers a cure in every instance. It seems to me that both statements are unsupportable. The antidiphtheritic, antitetanic, and antimeningitic sera surely do not cure in every case. They are, nevertheless, unquestionably specific methods of treatment. On the other hand, it is undoubtedly the duty of the hospitals under the jurisdiction of the Board of Health to apply any reliable method of treatment to the patients entrusted to their care, whether the methods of treatment are specific or not.

The views ascribed to Dr. Emerson, who is probably the best informed medical man who in recent years has presided over the Health Department, are so obviously wrong that I am convinced that he was incorrectly quoted. I discuss these points here merely to impress upon those in power that it is their duty to treat the patients entrusted to them by any available method, specific or non-specific; to study diligently new methods of treatment which are certain not to do any harm and offer some prospect for doing some good, and to manifest to the public rather a hopeful attitude toward the success of any form of treatment.

S. J. Meltzer, M.D.

New York.

A SUGGESTION IN POLIOMYELITIS.

To the Editor of the Medical Record:

Sir:—As the remedy for the prevention or cure of poliomyelitis must be found in the use of a serum, can there be a valid objection to the use of high-grade antidiphtheritic serum as a curative agent during the initial stage of this affection, and is there a valid objection to the use of high-grade antidiphtheritic serum as a preventive agent for adults and children living in close relations with the one afflicted? This serum prevents the onset of paralysis in diphtheria. It modifies the course of scarlet fever.

Furthermore, to prevent the spread of this disease thorough disinfection of each and every house in which it occurs should be enforced, preferably with chlorine gas, as was done in the cholera epidemic of the last century. This disinfection should be undertaken immediately after removal of the patient and when the house is completely empty.

The above serum is as near a cure as we have, and disinfection should prevent the spread of the disease. The term infantile paralysis should not be used, unless there be paralysis, the proper term for this disease being poliomyelitis.

Justin Herold, M.D.

2595 Grand Avenue, Bronx.

THE RIGID OR THE ELASTIC TOURNIQUET?

To the Editor of the Medical Record:

Sir:—These remarks are inspired by an editorial in the Medical Record, July 1, 1916. If the reader will refer to that, brevity is possible here, for that editorial contains timely and practical lessons on tourniquets and on points concerning them that are often misinterpreted or ignored.

Some years ago, at an editor's request, the present writer wrote upon the text "Hemorrhage and a

Wire." At present he cannot recall where it was published. At any rate, the late Dr. Dawbarn shortly before his death came across that article which happened to be printed a few pages removed from something of his own, and of which he was in search. He telephoned at once in about the following words: "Why on earth did you not put that in the RECORD or somewhere where it could be seen. Why! Everybody is fussing and mussing with elastic tourniquets. I have wasted years in experimentation and you here, in this article, make clear that we have only been taking steps to make gangrene and slough; and you show that the force for evil is the follow-through and bruise of elasticity, but what is required is the non-cumulative and set pressure of rigidity." He came to my office, and partially disrobed, and at his request I shut up various arteries. This aroused both his commendation and enthusiasm. He planned to do great things with "Stewart's Wire Tourniquet." He experimented on dogs, horses, and people, and was quite provoked at me because the matter was so absurdly simple in my opinion. His comment was: "That is just it, you think it is of small value because a man may carry the *makin's* of it in his pocket, or like a wrist watch; but to me, therein lies its great value."

The ordinary bloodless method is a series of bruisings, from the firm application of the rubber bandage to the strangulation by the encircling rubber tubing. Pressure from a rigid source will not result in the same amount of damage as that from an elastic one, a rigid ligature will not cut out as rapidly or as completely as will an elastic one; because the rigid loop surrounds a mass of *living* plastic matter which it does not kill by contractility and by an ever-shrinking circumference.

One great handicap to any tourniquet is the dawdling habit which often possesses its manipulator, for slow application insures well-filled veins, therefore an aftercoming operation is very bloody indeed. Speed is a valuable factor in obtaining the best results from a tourniquet.

The manipulation of the wire tourniquet may be varied to suit almost any circumstances. Suppose an arm and an emergency amputation were in question; then elevation of the limb for three minutes, omission of bandages, non-disturbance of germs, mud, etc., and leaving out the usual stripping process will empty the veins, will slow down the arterial current and will do no damage. Gravitation will traumatize but it takes years to spread a vein. While the arm is held in its elevated position a dozen turns of a three-inch gauze bandage (twelve yards long) should be made around and around and exactly superimposed.

To stop the bleeding from a main artery at its branches, put the hard roll of such a bandage upon the gauze turns which it has furnished, press it down directly upon the artery and wire it firmly into place. To influence main, collateral and anastomotic circulation, cut off the roll and make a sort of wire collar over the bandage. Ordinary covered or insulated electric lighting wire is good for such a purpose, but a pair of handles is indispensable for obtaining sufficient traction and its resultant constriction.

The principle involved is that of wiring a garden hose, the tool for that purpose might be employed, but it is too powerful and in undiscerning hands could become almost like a Jarvis snare in effect. I use the handles of a Gigli saw, but Dr. Dawbarn used a couple that he fashioned out of a broomstick, and I am informed that in his research work on surgery of the arteries he could take either one of the two old horses on his farm and open and sew up almost any artery that he chose. Certainly any that would come under the control of a tourniquet. He told me that he never had any slough or gangrene; and jokingly gave as the reason—"The horses are hired for $5 a year, for experimental purposes during my vacation, at the end of which they are returned to their owner. If I should kill them or harm them materially then I am to buy them, or it, at full value."

Three tight encircling wires should be placed, and this is a minimum. Whether spaced an inch apart and holding a roll of bandage against an arterial trunk, or whether a whole limb is to be made bloodless, or whether a perfect collar of wires spaced a quarter of an inch apart, are questions to be settled by the surgeon's judgment. It is important that they be placed upon an empty, elevated, blood-drained by gravity limb, that the distal turn should be applied both first and speedily, and that the skin of the limb should be properly protected by folds or turns of bandage or by a thick folded towel.

Upon such a protection make a loop of wire and give it the first turn of a reef knot. Pull this as tight as you deem necessary, give a couple of twists to your hands and your constrictor is firmly placed. A collar may be made by fastening the first turn, carrying the wire round and round, bandage-fashion, and twisting the ends together securely at the finish. Separate wires spaced (1_2 inch) apart are best, and may be released by severing with wire cutter, with bandage scissors or by twisting with pliers. Wire is too cheap to call for the exercise of any economy, it takes up but little room in pocket or satchel, is not perishable as rubber is, and may be made to serve different purposes, such as cording the extremities or wiring splints. It is hardly fair to patient or method to try any manipulation for the first time in an operating room. And there have been men who could not tighten the wires at all on a first attempt. But a quarter or a half hour spent with one's own leg or thigh as clinical material will smooth out any difficulty for those who are not accustomed to handling wire.

When using pieces of wood or any make-shift handles, the wire must be carefully fastened in order to produce an efficient pull. The Gigli handles may be used as cleats are, and a few turns of the wire about them suffices.

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OUR LONDON LETTER.

(From Our Regular Correspondent.)

ALEXANDRA DAY—ROSE FESTIVAL—VICTORIA CROSS FOR CONSPICUOUS BRAVERY; SINTON, SINGH—SICK AND WOUNDED ABROAD—METROPOLITAN HOSPITAL—SIR JAMES GOODHART'S DEATH.

LONDON, June 24, 1916.

WEDNESDAY last was "Alexandra Day," and happily the weather permitted the festival to be successful. It is also called "Rose Day" and is celebrated by almost everyone wearing a little artificial rose on coat or dress front. When London takes up some such movement it is usually done with enthusiasm. This year 15,000 "rose girls" took up their positions at the corners of streets and other likely places as sellers of the flower, and you could buy at any price from a penny to a pound or as much more as you were disposed to contribute. Thirty millions of the little emblems were ordered to meet the demand

in London and other cities. The chief depot in the city was the Mansion House, where the Lady Mayoress superintended 200 vendors. No little amount of trouble is required to command success by enlisting sellers, examining their qualifications and arranging the part to be undertaken by each. But there is always a supply of ardent workers ready to carry out any branch of the service. The money raised goes partly to the hospitals in which Queen Alexandra is particularly interested and partly to homes for cripples. Two of the latter are practically supported by these institutions in which the little cripples are occupied all the year round in making the flowers. They delight in the work. Some who have lost a hand or their lower limbs can do this work and are wheeled or carried into the factory, as may be necessary, and rejoice to meet others engaged in the same way. The oversea dominions join in the celebration. Queen Alexandra takes great interest in the occasion and this time drove round London in an open carriage into which showers of flowers were continually thrown by the loyal crowds.

The King has been pleased to award the Victoria Cross to Capt. John Alexander Sinton, M. B., I. M. G., for "most conspicuous bravery and devotion to duty." Although shot through both arms and through the side, he refused to go to the hospital and remained as long as daylight lasted, attending to his duties under heavy fire. In three previous actions Captain Sinton displayed the utmost bravery.

His Majesty also conferred the Cross on Sepoy Chatta Singh, Ninth Bhopol Infantry, in the Indian Army, for his most conspicuous bravery and devotion to duty in leaving cover to assist his commanding officer, who was lying wounded and helpless in the open, where Singh bound up the officer's wound and then dug a cover for him with his entrenching tool, being exposed all the time to very heavy rifle fire. He remained until nightfall—five hours—beside the wounded officer, shielding him with his own body on the exposed side; then, under cover of darkness, he went back for assistance and brought the officer into safety.

Owing to foreign requirements the relatives of sick and wounded officers cannot visit France except under conditions which the Army Council feels compelled to impose. A telegram granting permission to visit an officer in a dangerous state can be obtained from the War Office when no military or medical objection is present.

At Cambridge the Senate has been discussing the question of throwing open the 1st and 2d M. B. examinations to women. The usual procedure of publishing a report and recommendations and discussing them before taking a vote has not been followed; a vigorous protest signed by the heads of several colleges has been issued. There has been no discussion of the recommendations. The Senate is asked to vote without information, without debate on this controversial question which involves complex problems with serious issues. It seems an undesirable time to bring forward such proposals, for many members of the Senate are away on national service. It is objected by some that instead of invitation to discuss the matter, they have been presented with recommendations without any reports to justify them, but simply told that they have been approved by the General Board of Studies and of the Local Examinations Syndicate. But the Senate has no power of delegating its authority to these bodies. A more natural procedure would be for the special Board for Medicine to present a report for discussion in the Senate, and for any proposals or amendments to be further considered by the Council.

At the annual meeting of the Metropolitan Hospital it was reported that the in-patient accommodation had been increased to three times its size in order to meet the demands for wounded and sick sailors and soldiers. Of the 300 beds, 260 are for military patients. This includes the Howard de Walden wards, which are provided at a cost of £2000 by Lord and Lady Howard de Walden. The year had been a trying one financially, and closed with a deficit of some £3000.

Sir James F. Goodhart died on the 28th ult., aged 70. He was consulting physician to Guy's Hospital, in connection with which one will remember his life's service. He was on the committee of King Edward VII Sanatorium, a Fellow of the Royal College of Physicians, of the Royal Society of Medicine and other societies. In 1898 he filled the presidency of the Harveian Society. His "Common Neuroses" was perhaps his most successful work, but his "Diseases of Children" was equally popular. He was created a baronet in 1911 and is succeeded in title by his son Ernest, honorable secretary to Princess Mary's Sailors and Soldiers' Fund.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 6, 1916.

1. Leonardo Da Vinci's Scientific Research. Arnold C. Klebs.
2. The Menace of Syphilis of To-day to the Family of To-morrow. J. Harper Blaisdell.
3. Vaginal Hysterectomy for Procidentia. P. E. Truesdale.
4. The General Practitioner's "Apologia pro Vita Sua." Andrew F. Downing.
5. Anesthesia. Edward L. Young, Jr.
6. The Treatment of Paresis by Intraventricular Injections of Diarsenolized Serum. Philip Coombs Knapp.

2. The Menace of Syphilis of To-day to the Family of To-morrow.—J. Harper Blaisdell has tabulated 30 families according to their medical and social histories as they appeared for treatment at the Skin Department of the Boston Dispensary. Of the husbands in this series less than 10 per cent. escaped the infection. Four died with syphilis a contributing factor. Two suffered with insanity. Twelve out of a possible 25 are not taking any treatment. Of the wives 28 out of 30 were infected, and the remaining two probably had the disease. The women were usually the first members of the family groups to come to the clinic and the number under treatment is relatively large when compared with the number of men. There were 132 definite pregnancies in these 30 families. These resulted in only 23 healthy children, the large majority of whom were born before infection entered the family. Of the 53 living children syphilis claims at least 24, or 45 per cent. In the cases of the 79 deaths syphilis may be credited as the probable cause in at least 59 or 74 per cent. The writer also tabulates the age and marital status at the time of entrance to the clinic of 500 consecutive cases of adult syphilis. Of these 500 cases 236 were single men. Two hundred and twelve had early or secondary syphilis and 172 contracted the disease before their thirtieth year. There were only 35 single women who came for treatment during the same period. Yet the 236 men probably represent as many women who are active foci. The bringing under medical supervision of the relatively large number of single women, now apparently under no control, would go a long way toward removing active foci of infection and minimizing the danger to their future husbands and children. A study of the series of single men and women who were syphilitic shows that syphilis is usually acquired by the unmarried of both sexes in early adult life. In closing the essayist states

that the menace of syphilis in the home is one of the greatest problems of preventive medicine and that the early syphilis of to-day can well be depended upon to furnish the family syphilis of to-morrow.

4. The General Practitioner's "Apologia pro Vita Sua."—Andrew F. Downing writes of the lack of unity among the members of the medical profession and of the excess of organization which threatens to become pathological. Division into specialties and subdivision into the branches of the specialties have resulted in a chaotic mass of antagonistic smaller bodies that seem to have nothing in common but contempt for the man in the ranks. The general practitioner rightfully feels that any successful and honest attempt to uplift the rank and file must be accompanied and even preceded by a similar movement to rid the field of specialism of its many mushroom growths. The solution of the problem does not consist in giving to the public the untruthful impression that the general practitioner represents only mediocrity or inefficiency and that the magic word "specialist" always connotes education, training, experience, competency, skill, culture, and intellectuality. The essayist believes that if group medicine is to be what it now pretends to be—better medical service and not medical panhandling—it is an important instrument for the welfare of the people and its success will be linked in a large part with the efficient supervision maintained over it by wise and impartial medical leaders. The general man's idea of efficient group medicine is consultation with—what now seems to be considered an old-fashioned institution—the learned internist. For him it is the original, most serviceable, true and tried method of seeking light in dark places. The good internist is worth a dozen groups and more. The misfortune is that there is not enough of him. Never was he so much needed as he is to-day to deliver some of our specialists and surgeons of pride and covetousness and envy and to encourage the general practitioner to stifle his bitterness and keep "his heart still pregnant with celestial fire." What the general man then demands is that surgeon and specialist be held up to a high standard of efficiency, a standard at least half as high as they would demand of him.

6. The Treatment of Paresis by Intraventricular Injections of Diarsenolized Serum.—Philip Coombs Knapp says that a fairly large experience with the treatment of syphilitic affections of the central nervous system by intraspinal injections of salvarsanized serum by the Swift-Ellis method and its modifications has shown him that in no other way can he so constantly obtain good results. This opinion is reached from the study of about 500 injections on over a hundred patients. His experience, like that of most observers, has led him to accept the hypothesis that the action of salvarsan and its substitutes, neosalvarsan and diarsenol, is most pronounced when it is exerted most directly upon the spirochætes. He has seen tabetics, who could stand only by the support of two nurses when treatment was first begun, who after a few injections would walk several miles with an approximately normal gait. He has seen patients completely paraplegic, with total loss of control over the bladder, leave the hospital walking normally, with complete control over the bladder, and with normal sensibility and reflexes, after three injections. Such brilliant results, however, he had not seen in cerebral cases. He considers the operative procedure fairly safe and feels encouraged to continue with this method.

New York Medical Journal.

July 8, 1916

1. Exophthalmic Goitre. W. H. B. Aikins.
2. Vaginal Hysterectomy. Joseph C. Taylor.
3. Radium. Sinclair Tousey.
4. Syphilitic Aortic Disease. G. W. McCaskey.
5. Transmissible Diseases in War. P. W. Huntington.
6. Syncope Immediately After the Administration of Diarsenol. Sylvan H. Likes and Herbert Schoenrich.
7. Chronic Interstitial Nephritis. Francis E. Park.
8. A Trustworthy Nonpoisonous Antiseptic. William M. Gregory.

1. Exophthalmic Goitre.—W. H. B. Aikins reports five cases which serve as examples of the benefit to be derived from the use of radium rays in exophthalmic goitre. He states that his clinical experience shows that, when applied over the thyroid, the more penetrating radium rays diminish the vascularity and reduce the secretion of the gland. It possesses two definite advantages as compared with the *x*-rays; these are, the possibility of giving definite doses, and the fact that it can be applied without noise or excitement, while the patient remains in bed. In view of the fact that injury to the nervous system is an important factor in the etiology of exophthalmic goitre, and as a rule symptoms referable to it predominate in the clinical picture, it follows that one of the essential objects in treatment is to endeavor to relieve these nervous symptoms and that therefore psycotherapy plays an important rôle and consequently physicians who have not had much experience in treating neurotic and neurasthenic people should refrain from undertaking the medical treatment of cases of this kind.

2. Vaginal Hysterectomy.—Joseph C. Taylor says that vaginal hysterectomy is efficient in intraligamentous and retroperitoneal growth, for small fibroids situated near the endometrium in women who have passed the menopause, in complete prolapse after the menopause, in cancer of the cervix where the disease is so far advanced that a Wertheim is likely to result in a cure and is deemed desirable for the relief of pain and the nauseous discharges, and in cancer of the fundus which can be treated equally as well by the vaginal as by the abdominal method. The writer describes his technique of performing hysterectomy based on the technic of division of the uterus into two parts and clamping progressively from above downward. This operation has the advantage that there is never any fear of vaginal hernia owing to the fact that the base of the broad ligament becomes agglutinated to the vault of the vagina and serves as traction to keep the vagina of normal length. The writer has measured the vaginæ of many women before this operation and two years after has found the length to be the same. Painful scars in the vault of the vagina are out of the question inasmuch as the main nerve supply of these parts is cut off during the excision of the cervix. The method described serves in all ordinary cases, but in cases of multiple fibroids the technic has to be modified, and also in cases of complete prolapse. In a series of over 300 vaginal hysterectomies the writer has had but three deaths and none of these could be traced to the operation itself.

6. Syncope Immediately after the Administration of Diarsenol.—Sylvan H. Likes and Herbert Schoenrich state that they have had occasion during the last three months to administer numerous intravenous injections of a preparation made in Canada which the manufacturers claim is identical with the German salvarsan and to which they have given the name diarsenol. They find that the powder seems to dissolve less readily than salvarsan, requires a greater degree of heat for its solution, and gives off a rather strong, garlicky, disagreeable odor. The precipitate which forms after the addition of the alkali is darker, which is also at times the case with the solution when ready for administration. The therapeutic efficacy of the drug does not differ materially from that of salvarsan. On the whole the reaction did not seem to differ very materially from that of salvarsan, although it was observed in a greater percent-

age of cases, and when present came on earlier, was more severe in character, and in three cases it was alarming. In these cases, after the administration of 0.6 diarsenol, the patients went into profound syncope, with profuse sweating and extreme pallor; the wrist pulse was not palpable and in two of the cases there was nausea and vomiting. The writers are of the opinion that these reactions were due to some variation in the form of the drug.

8. **A Trustworthy Nonpoisonous Antiseptic.**—William M. Gregory thinks that the failure of modern antiseptic treatment to meet the exigencies of military surgery in Europe makes it worth while to remind the entire medical profession that they have in calendula a drug that will kill all pus germs. General knowledge of the power of calendula as a germicide and its general use in hospitals and in surgery, would prevent thousands of cases of suppuration and infection every year. This remedy has stood the test of years and is absolutely sure death to all pus germs, but it must be the right calendula. There is much on the market that is almost worthless. The reliable fluid extract is so concentrated that it is almost of the consistence of syrup. In erysipelas, calendula, lead acetate, and a saturated solution of boric acid will be found affective. In leucorrhea, non-alcoholic calendula, non-alcoholic hydrastis, and glycerin are exceedingly efficient. Burns dressed with calendula and saturated solution of boric acid will remain perfectly clean and sterile till healing is complete.

The Journal of the American Medical Association.

July 8, 1916.

1. Standards for Determining the Suitability of Patients for Admission to a Free Dispensary. Borden S. Veeder.
2. A Critical Analysis of Outpatient Work from the Point of View of Efficiency. Lovell Langstroth.
3. Immunity Conferred by the Transfer of Immune and of Mixed Immune and Sensitized Serums. Henry Sewall, W. C. Mitchell and Cuthbert Powell.
4. Simple Tic Mechanism. C. P. Oberndorf.
5. The Fatigue of Accommodation as Registered by the Ergograph. Lucien Howe.
6. A Primary Intradural Tumor of the Optic Nerve: Removal with Preservation of the Ball. E. C. Ellett.
7. Condyloma Acuminatum of the Anal Region in the Male. A. Ravogli.
8. The Desirability of Using Miotics as Adjuvants to Mydriatics. Harold Gifford.
9. Angina Epiglottidea Anterior. Report of a Case Caused by the Bacillus Influenzæ. Sam N. Key.

1. Standards for Determining the Suitability of Patients for Admission to a Free Dispensary.—Borden S. Veeder, as a member of a committee appointed to investigate and establish standards for the admission of patients to the new Dispensary of the Washington University in St. Louis, has communicated with a large number of clinics in this country to obtain their standards of admission. This inquiry has shown that a definite standard of financial suitability for admission to free dispensaries has not been based on a study of economic principles involved. There are two more or less distinct purposes for which dispensaries have been established, namely, for purposes of medical education and as a means of furnishing free treatment to the indigent poor. Although it is natural to consider whether the same standard of admission is suitable for each type of dispensary, no such difference has been used in working out the standard prescribed in this paper. A basic income has been worked out for various types of families and individuals below which patients should receive free medical services, and a classified scale of family, consisting of father, mother at home and three children under fifteen years of age, the annual income of which is less than $800 a year, is considered as suitable for free medical treatment. Men or women living independently but with family aid to fall back on are included in the family group. Men, living independently, at labor in which there is steady employment, are entitled to free treatment with a weekly wage rate below $9.50 per week. Women under similar conditions are entitled to free treatment with a weekly wage rate below $8.75 a week. Men living independently, at work in an industry in which there is much unemployment, are entitled to free treatment with a weekly wage below $11, and women under similar conditions if the weekly wage rate is below $10. The writer finds that the problem of dispensary abuse is in reality not so big as it is generally considered. Investigation shows that the actual percentage of abuse, where an effort is made to eliminate it, is small, being at the Washington University Dispensary but 2 per cent. of the patients treated. The various means so far suggested to eliminate this 2 per cent. are impractical.

2. A Critical Analysis of Outpatient Work from the Point of View of Efficiency.—Lovell Langstroth has made a statistical study of 348 records from the Dispensary of the University of California Medical School in the hope that a consideration of the end results of the various examinations and diagnostic procedures might make for greater efficiency in the outpatient department. An examination of the figures makes it obvious that the number of cases is too small to determine the value of the different laboratory procedures. Among the facts brought out are that 38 per cent. of the patients failed to return after diagnosis; 11 per cent. of the patients did not return a sufficient number of times to justify making a diagnosis; in 7 per cent. of the cases it was impossible to make a definite diagnosis; 75 per cent. of the patients sent to the hospital for further examination or treatment had a correct admission diagnosis. Only 38 per cent. of the patients in this series were benefited by their visits to the clinics. Eighty-three per cent. of the patients did not return to the clinics after three months. This study emphasizes the need for the same careful attention to detail and effectiveness in dispensary work that is given to hosiptal work, which it appears is rarely given. The figures show that this work, when considered from the standpoint of end results, is disappointing.

3. Immunity Conferred by the Transfer of Immune and of Mixed Immune and Sensitized Serums.—Henry Sewall, W. C. Mitchell and Cuthbert Powell. (See MEDICAL RECORD, June 17, 1916, page 1111.)

4. Simple Tic Mechanism.—C. P. Oberndorf reports three cases of habit spasm which serve to show that the tic is essentially a defense reaction elaborated by the censor against a primarily autopleasurable act. It constitutes when regarded as an entity, a compromise, just as most other neurotic symptoms are compromises, to retain and at the same time abandon an act which originally yielded satisfaction but which has become intolerable because it cannot be brought to harmonize with the individual's idea of adult or adolescent propriety. The mechanism in the tics reported are all very simple, and all disappeared, not because of their analysis, but because more vexing problems harassing the patients were solved and the necessity for such supplementary compromise defense reactions no longer existed. The cases thus illustrate the theory that these tics originally represented purposes, that the purpose had been suppressed, and how the apparently senseless movement, when resumed, constituted a simple defense compromise which afforded relief to the patient.

7. Condyloma Acuminatum of the Anal Region in the Male.—A. Ravogli comments on the rarity of the occurrence of condyloma acuminatum in the anal region of the male and reports two cases which have come under his observation in his hospital service. In both of these cases it can be said that the condyloma has had its origin on the skin and mucous membrane injured

by syphilis and that the constant presence of normal and abnormal secretions and lack of cleanliness have caused the proliferating acanthosis. The syphilitic base is only accidental, however, and not necessary for the production of the condyloma. On a mucous membrane or on the delicate skin of the genitals, excoriated from the irritating secretion of the gonorrhea, or an excoriated surface left so by the presence of chancroids, papillary hpertrophy may develop with the formation of condylomatous growths. In the cases in which the acanthosis has a syphilitic base, the growths are produced on a base hard and infiltrated, and in this case very likely the presence of the spirochete is capable of causing vegetation. When the syphilitic infiltration has been removed through local antisyphilitic treatment, the proliferations also gradually disappear. In the case of cyndylomata, on the contrary, no application stops the growth of the tumors and the treatment rests entirely on the destruction and removal of the papillary growths. The writer uses the sharp dermal curette to scrape the growth from its roots, and then touches the bleeding wound with ferric chloride. In the two cases reported the whole mass was removed with most satisfactory results.

9. Angina Epiglottidea Anterior. Report of a Case Caused by the Bacillus Influenzæ.—Sam N. Key says that in spite of the conflicting evidence on the question of whether angina epiglottidea anterior is a separate pathological process, or only a part of a general involvement of the adjacent structures, it is an undeniable fact that a curious inflammation of the epiglottis in which there is remarkably little involvement of the rest of the throat does occur. In the case reported the ulceration and edema of the anterior surface of the epiglottis was caused by the *Bacillus influenzæ*. It occurred during an epidemic of grip in the patient's community. In his case all the evidence of active inflammation was confined to the epiglottis, the process seemingly being primarily in the epiglottis. It is suggested that the *B. influenzæ* may, under certain conditions, have a selective activity for the epiglottis and that it is possible that this may be of more frequent occurrence than has been supposed.

The Lancet.

June 17, 1916.

1. Memorandum of the Treatment of Infected Wounds by Physiological Methods. Almroth E. Wright.
2. A Contribution to the Etiology of Shell Shock. Harold Wiltshire.
3. Failure of the Right Side of the Heart as a Result of Extensive Pulmonary Disease. F. J. Poynton.
4. The Effect of Ferrivine and Intramine on Syphilis. L. W. Harrison and C. H. Mills.
5. A Case of Erb-Duchenne Paralysis Due to a Bullet Wound of the Fifth Cervical Nerve. Spinal Accessory Anastomosis; Recovery. George L. Preston.
6. The Diagnosis of Dextrosuria and Pseudo-Lævulosuria. P. J. Cammidge.

2. A Contribution to the Etiology of Shell Shock.—Harold Wiltshire states that the functional nervous affections of modern warfare are essentially the same as the functional nervous affections of civil life, and in consequence should be of great value in helping to elucidate problems connected with the etiology of the functional nervous diseases in general. He points out that at the present time the etiology of shell shock is buried in confusion owing to three main difficulties, namely, bad terminology, dubious clinical histories, and rapid changes in clinical condition. In view of this confusion he discusses the possible etiological factors under the following headings: 1. Wounds. 2. Possible physical causes. 3. Possible chemical causes. 4. Possible psychic causes. 5. Causes of relapse. His practical experience with this class of cases leads to the following conclusions: 1. The wounded are practically immune from shell shock, presumably because a wound neutralizes the action of the psychic causes of shell shock. 2. Exposure and hardship do not predispose to shell shock in troops who are well fed. 3. While it is theoretically possible that physical concussion resulting from a shell explosion might cause shell shock, it is certain that this must be regarded as an extremely rare and unusual cause. 4. Chemical intoxication by gases generated in shell explosions cannot be more than a very exceptional cause of shell shock. 5. Gradual psychic exhaustion from continued fear is an important disposing cause of shell shock, particularly in men of neuropathic predisposition. In such subjects it may suffice to cause shell shock *per se*. 6. In the vast majority of cases of shell shock the exciting cause is some special psychic shock. Horrible sights are the most frequent and potent factor in the production of this shock. Losses and the fright of being buried are also important in this respect. Sounds are comparatively unimportant. 7. A consideration of the causes and frequency of relapses favors an original cause of psychic nature. 8. Any psychic shock or strain may cause a functional neurosis, provided it be of sufficient intensity relative to the nerve resistance of the individual. Such shock or strain need not have any connection with "sex complexes."

3. Failure of the Right Side of the Heart as a Result of Extensive Pulmonary Disease.—F. J. Poynton cites two cases, one of chronic pulmonary tuberculosis and a second of extensive pulmonary sclerosis and bronchiolectases, in which the pulmonary condition had fallen into the background and a series of symptoms, apparently cardiac, had become predominant. Dyspnea had increased; a very striking lividity of the whole integument, and notably of the face and extremities, had become permanent; dropsy and ascites had attained a high grade, and the liver in both cases was greatly enlarged. Venous engorgement was conspicuous, but the pulses—a point of importance—though strikingly rapid (120 to 140 per minute) were not arrhythmic; and the quantity of urine passed was considerable. These, together with the tricuspid systolic mumur, were the features which attracted attention and made it clear that some very definite change had taken place in the course of these illnesses. Radiographic examination showed that the enlargement of the heart was symmetrical owing to the disproportionate size of the right side. The outline is not so circular, as in failure the result of mitral disease and the transverse measurement is not so great. The left border of the outline is not so circular as in mitral disease with failure of compensation, but makes an obtuse angle, the apex of which is formed by the junction of the upper limb constituted by the left ventricle with the lower formed by the right ventricle. The writer thinks these facts should be borne in mind in connection with the progress in thoracic surgery in recent years, especially the possibility in performing artificial pneumothorax that, in putting out of action a considerable portion of functioning lung which disturbs the balance of pulmonary circulation and throws considerable strain on the right ventricle, the reserve power in weakly subjects may be rudely shaken and secondary heart failure encouraged.

4. The Effect of Ferrivine and Intramine on Syphilis.—L. W. Harrison and C. H. Mills have tested the action of ferrivine and intramine in three cases of syphilis and have found that these agents have entirely failed to cause the *S. pallida* to disappear from the lesions of three well marked cases of secondary syphilis. After the failure of ferrivine to cause the diappearance of *Spirochæta pallida* from a mucous patch a single dose of salvarsan effected this in 18 hours. Clinically they

were unable to detect any influence of either or both of these compounds on syphilitic lesions, although each of them was of the variety which heals in a week or ten days under salvarsan treatment. These investigators also find that intramine and ferrivine are extremely unpleasant in their effects. They have no specific effect on early syphilis.

6. **The Diagnosis of Dextrosuria and Pseudo-Lævulosuria.**—P. J. Cammidge emphasizes the clinical importance of distinguishing between these two conditions. He finds Benedict's test for sugar in the urine more sensitive and reliable than the test with Fehling's solution. With 0.3 per cent or over, of dextrose it gives a characteristic reaction on boiling, but with smaller quantities the precipitate forms only on cooling. A similar delayed reaction is characteristic of pseudo-lævulose (iso-glucuronic acid), which does not reduce alkaline copper solutions as readily as dextrose. The formation of a precipitate as the solution cools is suggestive, therefore, of pseudo-lævulose or a small quantity of dextrose. To differentiate the two, Borchardt's modification of Seliwanow's test is employed. A mixture of 4 cc. of the urine and 1 cc. of Seliwanow's reagent (resorcin, 0.5 gm.; hydrochloric acid, sp. gr. 1.195, 30 c.c.; distilled water 30 c.c.) is heated to boiling in a water bath for a few minutes. If pseudo-lævulose or true lævulose is present the solution assumes a purple-red color, but dextrose alone gives no color change. To differentiate pseudo-lævulose from true lævulose the solution is cooled, made alkaline with solid sodium carbonate, and extracted with 2 or 3 c.c. of ethyl acetate. If true lævulose is present the ethyl acetate extract is red or pink, but if the positive result was due to pseudo-lævulose the watery solution retains the pigment, and the extract is yellow or brown. The diagnosis may be confirmed by preparing the para-bromphenylosazone and taking its melting-point. The osazone of pseudo-lævulose melts at 256° C., that of true lævulose at 197° C., and the osazone of dextrose at 220° C., while the hydrazone of glycuronic acid melts at 236° C.

British Medical Journal.

June 17, 1916.

1. The Fasting Treatment of Diabetes. E. I. Spriggs.
2. A Simple System of Skeleton Splinting. C. Max Page.
3. A "Cage" Splint for Fractures of the Humerus. E. M. Cowell.
4. The Inhibitory Action of Saliva on Growth of the Meningococcus. M. H. Gordon.
5. The Behavior of Hypochlorites on Intravenous Injection and Their Action on Blood Serum. H. D. Dakin.

1. **The Fasting Treatment of Diabetes.**—E. I. Spriggs relates his experience with the fasting treatment of diabetes which he used before he became acquanted with Dr. Allen's work. He reports five typical cases and outlines his procedure which consists in a two days' fast, allowing nothing but a cup of weak tea with 10 cm. of 20 per cent. cream at breakfast and tea-time. After the first two days 150 cm. of clear meat broth is added at lunch and dinner time. If acidosis is present after two days of fasting, alcohol may be allowed, 0.12 gram per kilogram of body weight being given in the form of whiskey four times a day. In the cases reported no alcohol was used. When the urine has been sugar-free for twenty-four hours, 7.5 grams of carbohydrate is added in the form of vegetables which contain low percentage of carbohydrate. On the second day of feeding 30 cc. of cream is allowed with each cup of tea, and three eggs are added. On the third day a feeding, and on each alternate days subsequently, 5 grams of carbohydrate is added. Vegetables containing higher and higher percentages of carbohydrate are used, and finally porridge, oatcake, macaroni, bread, and fruit. The addition of carbohydrate is continued until sugar appears or the tolerance reaches 3 grams of carbohydrate per kilogram. At the same time 15 grams of protein in the form of meat and fish are added daily up to one gram per kilogram, or, in certain cases, more. When the protein has reached the desired amount, fat is added until the patient stops losing weight or is getting 40 calories per kilogram. If sugar at any time recurs in the urine the patient is again fasted until the urine is sugar-free for twenty-four hours. The diet is then resumed at the point where it was left off, but on only one-half the amount of carbohydrate is given until the urine has been sugar-free for two weeks. In summing up his observations the writer says that fasting up to several days is well borne by cases of mild and severe diabetes of ages ranging from 24 to 79 years. The urine was made free from sugar, the blood sugar was reduced, and acidosis greatly diminished. In most cases the food could be increased gradually without glycosuria. The rapid abolition of sugar had an excellent effect on the patients. It shortened tedious treatment, and enabled more time to be given to finding out what food should be taken and in what quantity. For the majority of diabetic patients Dr. Allen's treatment offers great advantages. There is evidence enough that such patients, though not cured, may be freed from the signs and symptoms of their complaint.

2. **A Simple System of Skeleton Splinting.**—C. Max Page calls attention to the value of skeleton splinting in the treatment of gunshot fractures and describes a system which he finds superior to the aluminum stapled strips which he described some time ago. He has found that the aluminum strips are not always sufficiently rigid for prolonged treatment and that, furthermore, the supply of aluminum for surgical purposes is limited. He finds annealed steel the most satisfactory material available. The stock material consists of five foot lengths of annealed mild steel ½ inch by ⅛ inch. The strips are drilled throughout their length at one inch intervals with holes of 1/6-inch diameter. Split steel rivets are required to couple the various lengths after they have been bent to form the splint required. The writer describes in detail the tools required, the method of cutting, bending and coupling the strips, and gives the measurements and details of constructing some of the more commonly used splints. Modifications in size and designs will often be necessary, but can readily be carried out. The splints can always be reinforced if exceptional rigidity is required by the addition of arches or by riveting extra lengths on the main frame.

4. **The Inhibitory Action of Saliva on Growth of the Meningococcus.**—M. H. Gordon describes experiments which have shown that normal saliva and saliva from meningococcus carriers inhibits the growth of the meningococcus upon solid artificial culture medium (nasgar). The nasal mucosa from normal persons has no such inhibitory effect on the growth of meningococcus. A quantitative experiment showed that fresh saliva does not lose this inhibitory influence when diluted a hundred-fold. This antimeningococcal action of saliva is due to its living bacteria. A young broth culture from saliva is at least as efficacious as fresh saliva in antimeningococcal action. This effect is due to the living and multiplying bodies of bacteria in the broth. When they have been separated off by a Berkefeld filter, or killed by heat, the broth has lost its meningococcal power. This inhibitory action of saliva appears to be due chiefly to mixed salivary streptoccoci. Pure cultures of predominant streptococci, when tested individually, were found to exert comparatively slight inhibitory influence on the growth of meningococcus. These observations demonstrate the practical importance of avoiding contamination with saliva when swabbing the nasopharynx of suspected carriers.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Special Meeting, Held July 13, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THIS meeting was held in Aeolian Hall as the Academy of Medicine could not accommodate the large number in attendance. The meeting was called to discuss the subject of Poliomyelitis.

Infantile Paralysis: What We Know About the Transmission of the Disease.—Dr. SIMON FLEXNER presented this communication. He said that infantile paralysis was caused by the invasion of the central nervous system by a minute, filterable microorganism which had now been secured in artificial culture and as such was distinctly visible under the higher powers of the microscope. The virus of infantile paralysis existed constantly in the central nervous organs and upon the mucous membrane of the nose and throat and of the intestines in persons suffering from the disease; it occurred less frequently in other internal organs and had not been detected in the circulating blood of patients. The difficulties attending the artificial cultivation and identification of the microorganism of infantile paralysis were such as to make futile the employment of ordinary bacteriological tests for its detection. Nevertheless the virus could be detected by inoculation tests upon monkeys. The virus had an apparently identical distribution irrespective of the types or severity of cases of infantile paralysis. The virus was known to leave the infected human body in the secretions of the nose, throat, and intestines, and also escaped from contaminated healthy persons in the secretions of the nose and throat. The virus entered the body, as a rule, if not exclusively, by way of the mucous membrane of the nose and throat. It multiplied in these localities and then penetrated to the brain and spinal cord by way of the lymphatic channels which connected the upper nasal membrane with the interior of the skull. As the virus was thrown off from the body mingled with the secretions, it withstood for a long time even the highest summer temperatures, complete drying, and even the action of weak chemicals, such as glycerin and carbolic acid. Hence mere drying of the secretion was no protection; on the contrary as the dried secretions might be converted into dust, which was breathed into the nose and throat, they became a potential source of infection. The survival of the virus in the secretions was favored by weak daylight and darkness and hindered by bright daylight and sunshine. It was readily destroyed by exposure to sunlight. The blood-sucking insects had been suspected of conveying the disease. Certain experiments did indicate that the biting stable fly could both withdraw the virus from the blood of the infected and reconvey it to the blood of healthy monkeys. More recent studies had failed to confirm these earlier ones. Domestic flies experimentally contaminated with the virus remained infective for forty-eight hours or longer. While our present knowledge excluded insects from being active agents in the dissemination of infantile paralysis, they nevertheless fall under suspicion as being mechanical carriers of the virus of that disease. The animals that had especially come under suspicion as possibly distributing the germ of infantile paralysis were poultry, pigs, dogs, and cats. Experiments had, however, excluded these animals from being carriers of the virus of infantile paralysis. Studies carried out in various countries in which infantile paralysis had been epidemic all indicated that, in extending from place to place, the route taken was that of ordinary travel. In other words the evidence derived from this class of studies confirmed the evidence obtained from other sources in connecting the distributing agency intimately with human beings and their activities. The virus of infantile paralysis was destroyed more quickly and completely in the interior of the body than, in some instances, in the mucous membrane of the nose and throat. It had been found in monkeys that the virus might disappear from the brain and spinal cord within a few days to three weeks after the appearance of the paralysis, while at the same time it was present on the mucous membranes mentioned. The longest period after inoculation in which the virus had been detected in the mucous membrane of the nose and throat of monkeys was six months. In an undoubted case of the human disease the virus was detected in the mucous membrane of the throat five months after its acute onset. This was conclusive evidence of the occurrence of occasional chronic human carriers of the virus of infantile paralysis. A study of the virulence of the virus in various epidemics showed that it was subject to great fluctuations of intensity. Not all children and relatively few adults were susceptible to infantile paralysis. Young children were more susceptible, generally speaking, than older ones. The light or abortive cases indicated a greater susceptibility to the disease than had generally been recognized. The period of incubation might be as short as two days or as long as two weeks or more; the usual period, however, did not exceed about eight days. Probably the period at which the danger of communication was greatest was during the very early and acute stage of the disease. (This statement was made tentatively.) Cases of infantile paralysis that had been kept under supervision for a period of six weeks from the onset of the symptoms might be regarded as practically free of danger. One attack of infantile paralysis conferred immunity. Protection had been afforded monkeys against inoculation with effective quantities of the virus of infantile paralysis by previously subjecting them to inoculation with sub-effective quantities of the virus. This method, however, had not been successful in all instances. Passive immunity had been conferred on monkeys, but it was somewhat uncertain and its brief duration rendered it useless for purposes of protective immunization. However, a measure of success had been achieved by the experimental serum treatment of inoculated monkeys. For this purpose blood serum from recovered or protected monkeys or human beings had been injected into the membranes about the spinal cord, and the virus was inoculated into the brain. The injection of the serum must be repeated several times in order to be effective. The results from this treatment were said to be promising. Unfortunately no other animal than the monkey seemed capable of yielding an immune serum, and the monkey was not a practicable animal from which to obtain supplies. Hexamethylenamin was the only drug which had shown any useful degree of activity. Experiments on monkeys had shown this drug to be effective only very early in the course of the disease, and only in parts of the animal treated. From our present knowledge certain practical deductions might be drawn. Since the chief mode of conveyance of the virus was through human beings, either those ill with the disease or healthy carriers, and since the domestic fly might be grossly contaminated with the virus and might deposit it on the nose or mouth of a healthy person, or upon food or eating utensils, our efforts must be directed to the control of these sources of infection. Protection to the public could best be secured through the discovery and isolation of those ill of the diesease, and through the sanitary control of those who had associated with the sick and whose business called them away from home. Parents should consent to the removal of children ill with the disease to a hospital both in the interest of the sick child and in the interest of other children. This removal must include not only frankly paralyzed cases but also other forms of the disease. In concluding, Dr. Flexner said it was too early to calculate the death rate in the present epidemic; it might prove to be considerably lower than it now appeared to be. Of those who survived, a part made complete recoveries and this number was greater than was usually supposed. The knowledge regarding infantile paralysis was now far greater than in 1908 and the forces in the city which were dealing with the epidemic were better organized than ever before. The outlook, therefore, should not be regarded as discouraging.

The Clinical Types of the Disease.—Dr. HENRY KOPLIK read this paper. He said that poliomyelitis was primarily an epidemic disease and as a sporadic condition it had attracted very little notice. All the epidemics which had thus far been recorded resembled each other very closely. An attempt to connect this disease with the occurrence of cerebrospinal meningitis had developed into a belief that poliomyelitis was an entity, clinically occurring in epidemics in the late spring to late autumn and following the regular sporadic occurrence of the disease in limited numbers in the months following the winter and reaching into the late spring up to the time of the epidemic outbreaks. Epidemics of this disease had been known to skip a year and to always crop up again in the place of the original occurrence which should give the thoughtful hint as to the possible cause of its epidemiology. In all the epidemics thus far recorded, the symptomatology and clinical types had been much the same. Though most of the scientific knowl-

edge of the clinical types of poliomyelitis was borrowed from Swedish and Norwegian observers, Medin and Wickman, the first inkling of the epidemic nature of the disease was voiced by Colmer, an American physician, who in 1841 observed some form of paralysis in a child and obtained the history that in the locality in which the patient lived several similar cases had occurred and most of them had recovered. Following him, Caverly in 1894 described the epidemic in Vermont; Taylor and Chapin later on observed the epidemic nature of the disease. Aside from these observers, much of the clinical knowledge at present was due to Medin who described the clinical types of acute epidemic poliomyelitis in 1884 before the International Congress, much to the astonishment of most pediatricians who still retained the simple picture of poliomyelitis anterior as retained in older text books—as a simple infantile paralysis. In all, 42 epidemics had been observed in American and the Continent and this alone should establish the tendency of poliomyelitis to occur in epidemic form at certain seasons and remain sporadic until the time arrived for a new outbreak. This disease selected the young as its victims. Out of 886 cases in the epidemic of 1907, 571 were below 3 years of age, 771 below 5 years, and 3 were under 6 months of age. In the present epidemic the youngest case Dr. Koplik had seen was four and a half months old and absolutely breast-fed. The most susceptible period was from 1 to 3 years of age. There were four principle types which could be clinically described and proven by laboratory methods: (1) the abortive; (2) the bulbospinal; (3) the cerebral and meningeal, and (4) the bulbopontine types. Wickman had described a neuritic type. These types could all be understood when poliomyelitis was regarded from the standpoint of an acute, infectious disease, involving certain parts of the general nervous structures, causing certain definitely marked pictures and there stopping, or going on at one stroke to involve the whole cerebrospinal axis and in this way causing a debacle of the whole substratum of the nervous economy.

2. *The Abortive Type.*—It was through the abortive type of the disease that these cases were spread to others. This type was that which did not go on to paralysis, recovered, and did not leave the host injured so as to leave no doubt as to its distinct identity. A child of 5 years of age was attacked with a headache, slight malaise, and an attack of vomiting lasting five days, intense pain in both lower extremities radiating to the soles of the feet and worse at night, slight pain in the nape of the neck, lassitude, cerebellar gait on walking, increased reflexes in the lower extremities, rectal temperature above 100.5 deg. Fahr. In ten days the pains had disappeared, the child was well and wanted to go out and play. The abortive cases presented prodromata such as headache, weakness, diminished reflexes and pains in the nape of the neck, with or without vomiting and fever, and still did not present paralysis and recovered.

2. *The Bulbospinal Type.*—This was the most common type and gave the disease its name. The patient would have an attack of vomiting and slight fever and within twenty-four hours the mother would observe that the child could not move one or the other extremity. These forms might have no fever, but it was possible in giving the history the mother might have overlooked the symptoms of fever, malaise, and such indisposition as peevishness, which might have preceded by a few days the paralysis. In other cases the paralysis appeared gradually. Pain might continue to be quite severe, especially when the extremities were moved. The paraylsis might spread and involve not only the remaining lower extremity, but the upper extremities, the muscles of the back, the respiratory muscles of the thorax, and possibly the muscles of the abdomen. As a rule, in the purely spinal cases, the paralysis appeared and did not spread in the great number of cases. In others, it might spread from the extremities and involve the whole trunk, even to causing bulbar paralysis of the respiratory centers. But after the tenth day, paralysis was not apt to spread to the bulbar medulla, though cases had been known to die after the fifteenth day.

3. *The Cerebral and Meningeal Types.*—Both the meningitis and cerebral types should be combined because of the cerebral symptoms which gave rise to a picture closely simulating meningitis. The meningitic form of poliomyelitis ran its course with cerebral symptoms. A child of three was taken with vomiting for forty-eight hours, followed by rigidity of the neck with pain on flexion of the head, Brudzinski's sign and reflex, Kernig's sign, sopor, and Macewen's symptom which might be slightly marked; also diminished reflexes. Some patients migh improve after a day or two, the fever might abate and they might even be about and then have a recrudescence of fever, sopor, rigidity, delirium, irritability, extreme hyperesthesia, and pain in the nape of the neck. In some cases the only palsy might be ocular; in others a slight facial palsy might be present which might be combined with a weakness in one or other extremity. After a week the patient became brighter. There was still, however, marked ataxia and Romberg's sign. As convalscence was established, the ataxia was the last symptom to disappear. The hydrocephalus and abnormal mental state might remain for some time after the temperature was normal. On recovery, there was a slight strabismus, ataxia, or optic neuritis. In one group of cases he had seen unilateral ophthalmoplegia with hemorrhages into the retina. In lumbar puncture lay the differentiation of this form of poliomyelitis from cerebrospinal meningitis.

4. *The Bulbopontine Type.*—The bulbar or pontine form of the disease deserved notice as a distinct form. An infant, breast-fed, thirteen months of age, was attacked with fever and vomiting. The fever continued into the afternoon of the following day, when the mother noticed a flatness on the right side of the face. The temperature continued at 102.4°, the infant was bright, laughed, and played in the crib, but there was a tired look about the face and eyes. The knee reflexes were increased; otherwise there was no paralysis that could be demonstrated. In another case, ten days before the patient, aged twenty-one months, was seen, he was taken with high fever and vomiting and there were some green movements. The fever continued, in a less degree, to the ninth day when the mother noticed that the right side of the face was flat; there were tremulous movements of the head and arms and the patient was restless. There was constant jactitation of the head and insomnia; there was rigidity of the neck, but no palsies of the extremities; on the contrary, the patient exhibited great strength in both the upper and lower limbs. In other cases, the outcome was not so favorable; there was an involvement of the nuclei which controlled deglutition and respiration. In these cases the patient might be lost by paralysis of the respiratory centers. The neuritic type included those cases in which pains in the extremities became a leading feature of the clinical picture. Some of these cases developed paralysis; others did not. They were referred to under the head of abortive cases. The symptoms given justify a lumbar puncture in order to establish the character of the fluid which in poliomyelitis showed a lymphocytic cytology and an increase of globulin. The examination of the blood was very uncertain. As to prognosis, the low mortality of 10 per cent. applied to children below eleven years of age, and 27 per cent. among older children and adults. Twenty per cent. of all cases completely recovered and the younger the child the better the prognosis.

Abortive and Nonparalytic Cases, Their Importance and Their Recognition. — Dr. GEORGE DRAPER discussed this phase of the subject. He took exception to the term "abortive." He said this term had been used when attention was centered on the paralysis as the chief symptoms of poliomyelitis. As our knowledge had grown it had became increasingly evident that in acute anterior poliomyelitis we were dealing with a general infection that presented a great variety of manifestations. The cases that escaped paralysis were just as important from the standpoint of the spread of the infection as the paralyzed cases. In fact they were infinitely more dangerous. These cases that were called "abortive" should be called "atypical," if those that developed paralysis were considered as typical. There was no possible way at the present time of determining the number of cases that were not paralyzed. Such figures as had been collected varied greatly and undoubtedly the number of cases that were not paralyzed varied greatly in different epidemics. There were certain indications, however, that led to the belief that the number of these cases was considerable. Investigation had shown that frequently where there had been one case of poliomyelitis in a family another child had shown mild symptoms, as fever, general malaise, and vomiting. Pathological studies had shown that there might be not only lesions in the spinal cord, but that the entire lymphatic apparatus and the viscera might be involved. Palpably enlarged lymph nodes might be

observed. This furnished further evidence that poliomyelitis was a general infectious disease. Cases of infantile paralysis fell into the following groups: (1) Gastrointestinal. (2) Respiratory. (3) Febrile. (4) Meningismic. (5) Paralytic. In the first three types there might be slight transient paralysis. In the type showing paralysis one might find any or all the prodromal symptoms seen in the other types. The intensity of the symptoms was no guide to the prognosis. In fatal cases more extensive lesions of the cord had sometimes been found than were indicated by the symptoms. That there should have been this general degeneration of the cord without clinical manifestations suggested that in the milder cases there might be cord lesions that gave no clinical evidence of their existence. In times of epidemic every one was alive to the symptoms of poliomyelitis, but it was not enough for a physician to say that a given case was or was not one of infantile paralysis. In suspicious cases lumbar puncture should be done, and the spinal fluid examined. There was usually an increase in the lymphocytes and a very large percentage of polymorphonuclears, which changed within twelve hours to mononuclears, and in three or four days there was a leucocytosis. The albumin and globulin content of the fluid were increased but less so than in tuberculosis meningitis. Reduction with Fehling's solution was good. The diagnosis was based on the finding of gastrointestinal respiratory and febrile symptoms. Gastrointestinal symptoms were of course present in many conditions and infections. The respiratory symptoms might resemble those of influenza, such as lung signs and pains in the bones and joints. Where the above-mentioned symptoms were found a search should be made for transient weakness and mild degrees of paralysis and for local muscle tenderness. One point of value in the diagnosis was the anterior spinal flexion sign. Before paralysis set in this sign was definitely present. It could be elicited by having the child place his hands under his thighs and then flexing the trunk forward, doubling the child up. There was no longer any question but that these atypical cases of poliomyelitis existed. They must be recognized and herein lay the problem. In learning to recognize them a double advantage would result. The cases as moving sources of contagion would be controlled and those that were destined to be paralyzed would be recognized in the preparalytic stage and could be treated early when a remedy was discovered, and thus possibly saved from oncoming paralysis.

The Present Epidemic: The Types Which It Presents. Dr. Louis C. Ager spoke more particularly of his personal experience at the Kingston Avenue Hospital. He stated that it would be generally understood that the amount of clinical work that they had had to accomplish during the epidemic had left no time in which to write a paper or to digest the large amount of clinical data that had accumulated. This data would be put in shape for presentation at some future time. When it was recalled that from June 20 to July 12 they had cared for 320 patients with poliomyelitis in the Kingston Avenue Hospital, the fact would be appreciated that the resident staff were brought face to face with a large number of serious problems. He wanted the people of New York to get some idea of what they had accomplished. On July 3 there were eighty-nine patients admitted to the hospital, and on that day the ambulance surgeons had only three hours sleep and no meals. A most striking feature in connection with this work was the great degree of comfort experienced by the patients after they were brought to the hospital from homes unsuited to the care of children sick with an infectious disease. The best feature in the scheme of hospitalization of these cases was the beneficial effect on the children themselves. Dr. Draper had spoken of the large number of abortive cases, and in this class of cases they have had more proof of the infectivity of poliomyelitis than had been evident before the present epidemic began. In this connection such examples as the following might be cited: On July 2 a child was taken ill with convulsions, vomiting, and fever, but recovered. On July 3 another child in the same family was stricken with the acute fulminating type of the disease and died within forty-eight hours. On July 4 an older member of the family developed the disease. At least eight instances had come under their observation at the Kingston Avenue Hospital in which there had been two or more cases in the same family. That there are practically no cases of poliomyelitis among colored people is borne out by our experience at the Kingston Avenue Hospital. Investigations having for their object the detection of a racial susceptibility had not revealed any racial predisposition to the disease. With reference to the affection of the liver and spleen, they had found no material enlargement in these organs except in some fulminating cases. In a series of sixty-seven cases they found only two with enlarged livers. The age incidence was practically the same in the present epidemic as in the epidemic of 1907. The epidemics in this country seem to show a lower age incidence than those abroad. In one group of eighty-seven cases, forty-six occurred between the ages of 2 and 5 years; twenty-two between the ages of 1 and 2 years; eight between the ages of 6 and 12 years; three between 1 and 6 months. They had two adult cases in this group, one in a woman of 28 years of age and one in a pregnant woman of 21 years. They had found as usual that the lower extremities were most frequently paralyzed. In a group of sixty-four cases examined, the lower extremities were involved in thirty-nine instances; the upper in seven; there was facial paralysis in five cases, and in thirteen the only definite symptom was marked paralysis of the muscles of the back. There were two typical ataxic cases. A few special types had been seen. There was one peculiar and unusual case in a boy of 11 years. He was a well-nourished, well-developed child. When brought to the hospital his only symptom was markedly labored breathing. He asked for a drink of milk and it was noticed that there was a slight blur to his speech. When he tried to drink he was unable to do so because of pharyngeal paralysis. His diaphragm was completely paralyzed. He was able to use his arms and hands, could stand up in his crib, and his back showed no evidence of paralysis. He gradually became weaker and died five hours after entering the hospital. Another case of the fulminating type showed a general paralysis; practically all the skeletal muscles were affected and there was marked respiratory paralysis. In neither of these cases was the heart affected. They had tried artificial respiration with Dr. Meltzer's apparatus, and in some instances had succeeded in bringing back the color after death had apparently occurred. They still hoped that in some cases something might be accomplished by this method. They had also observed a meningitic type of the disease. They had had one older boy who was wildly delirious. He had complete paralysis of one leg and one arm, and was totally blind. There was an alternation in his condition from deep meningeal coma to active maniacal delirium. During the epidemic they had received six calls to see croup cases for the purpose of intubating and when they had reached the patients found respiratory paralysis and poliomyelitis. It was sometimes extraordinary to see the rapid improvement that took place in some cases. Some bottle-fed babies who were unable to take their milk at first were now able to hold the bottle and feed themselves. In closing, Dr. Ager emphasized the fact that their experience had absolutely convinced them that the only place in which to take care of children with poliomyelitis was in a hospital, unless the conditions of the hospital could be reproduced in the home.

Laboratory Aids in the Diagnosis of Poliomyelitis.—Dr. Josephine B. Neal said that it was well known that sporadic cases of poliomyelitis were frequently seen when no epidemic existed. Because of this fact, during the past six years it had been the lot of the Miningitis Division of the Department of Health to study, both clinically and by means of laboratory methods, many cases of this disease before the present epidemic occurred. Most of the cases seen by them, both before and during this epidemic, had been atypical, and they had, therefore, been compelled, when endeavoring to make a diagnosis, to consider their laboratory findings with more than ordinary care. As with most such procedures, the answers which the laboratory returned to their questionings furnished them with evidence that was corroborative *only*, and by no means absolutely diagnostic. Perhaps one of the most interesting experiments employed in the study of poliomyelitis had been the inoculation of monkeys by means of washings from the respiratory and alimentary mucous membrane. This was first successfully performed by Kling, Petterson, and Wernstedt in 1911. It had since been repeated several times. Dr. DuBois, Dr. Zingher, and Dr. Neal obtained washings from the nose and throat from an abortive case two weeks after the incidence of the disease. With these washings they produced typical poliomyelitis in monkeys. In sections of the brain from one of these monkeys a few globoid bodies similar to those described by Flexner and Noguchi were found.

Another laboratory method of some diagnostic value was the so-called neutralization test. In this, serum from the suspected case, in the stage of recovery, was mixed with an old fatal dose of an active virus. These were incubated, and later injected intracerebrally into the monkeys. Failure of the disease to develop indicated that the virus had been neutralized. This test, however, did not furnish conclusive evidence of poliomyelitis, for sera from noses known to have been free from a recent attack of the disease had sometimes successfully neutralized the virus. It was, however, quite obvious that laboratory methods requiring the use of monkeys were both too complicated and too expensive for ordinary diagnostic use. A study of the blood picture was exhaustively made by Peabody, Draper, and Dochez of the Rockefeller Institute. It was shown that there existed a varying increase in leucocytes and a polymorphonucleosis. This was characteristic of so many other diseases that it was of little value in diagnosis. The procedure which they found to be their most reliable and valuable aid in the recognition of poliomyelitis was the examination of the spinal fluid. In the first twenty-four to forty-eight hours after its onset, poliomyelitis must be differentiated from the early stages of epidemic meningitis or mild purulent meningitis, and also from a meningism accompanying pneumonia or other infection. The clinical picture presented by these diseases were quite similar, and it was in the distinguishing between them that the examination of the spinal fluid afforded them the most valuable information. In the early stages of poliomyelitis, the spinal fluid was clear, or rarely it might be slightly cloudy. It often showed a good fibrin web formation. There was a slight to moderate increase of albumin and globulin, and also of the cellular elements. The reduction of Fehling was prompt. Those poliomyelitis fluids which were cloudy presented a polymorphonucleosis which might run as high as 90 per cent., but which they usually found to be about 60 per cent. As a rule, however, 80 per cent. or more of the cells were mononuclears. In examining such fluids, they had frequently observed the presence of large mononuclear cells, which they believed to be, in a measure, characteristic of poliomyelitis. They were now studying these by means of the various differential stains, in the hope that their research in this direction might develop something of positive diagnostic significance. Two rare types of spinal fluids sometimes occurred in poliomyelitis when hemorrhagic process had been more than usually extensive. The first of these was of the true hemorrhagic character, the red blood cells being evenly diffused throughout the field. When collected in successive tubes, the specimens were all hemogeneous, showing no change in the intensity of the hemorrhage. This served to differentiate it from bloody fluids obtained by the accidental puncture of a vein. The second of these rarer fluids illustrated the so-called syndrome of Froin. It had the characteristic yellow color, and coagulated spontaneously. The spinal fluid from early cases of purulent meningitis showed a varying degree of cloudiness, except in very rare instances when it might be clear. A greater increase in albumin and globulin was usually found here than occurred in poliomyelitis with a poorer reduction of Fehlings. The cells in these fluids of purulent meningitis were 90 per cent. or more polymorphonuclears, and the etiological organism was found except in the mildest cases. In certain mild cases of meningitis, probably of epidemic variety, the meningococci might never be positively demonstrated in the fluid. In purulent meningitis due to other organisms, these practically always appeared later. In one instance, she had seen a clear fluid from an early case of epidemic miningitis. This was of about eighteen hours' standing. Although the cellular reaction was so slight, the meningococcus was demonstrated to be present in the fluid by smear and culture. The fluid in meningism was increased in amount but practically normal in character. When seen a week or more after the onset, cases of poliomyelitis, especially if presenting cerebral symptoms, must be differentiated from tuberculous meningitis. The spinal fluid in both these conditions was clear, and increased in amount. The albumin and globulin content of both was also increased; but usually in poliomyelitis the increase of both these last-named elements was not so great as occurred in tuberculous miningitis. The reduction of Fehling's solution was usually better, and Dr. Neal said that many tuberculous fluids gave a good reduction of Fehlings though the contrary had been stated. The cellular element was also usually less in poliomyelitis. In both conditions, at this stage, there was ordinarily a mononucleosis, although in some acute cases of tuberculous meningitis there was a polymorphonucleosis. If, however, as might occassionally happen, the increase of albumin and globulin was greater than usual, and the reduction of Fehling's solution was not so prompt, then the determination of the disease must wait upon the results of animal inoculation if it had been impossible to demonstrate tubercle bacilli in fluids. In brief, then, a spinal fluid increased in amount, and showing a slight to moderate increase in albumin and globulin, a good reduction of Fehlings, and a varying cellular increase, mostly mononuclear, made the diagnosis reasonably certain in fairly early cases of suspected poliomyelitis. A slightly cloudy fluid occurring very early in the disease must be differentiated from a similar fluid in an early purulent meningitis. Fluids from the cerebral or encephalitic type of poliomyelitis sometimes might be differentiated from fluids of tuberculous miningitis only by animal inoculation.

The Importance of the Present Epidemic.—Dr. HAVEN EMERSON said that the Health Department was not able at the present time to present statistics in a complete form. The records showed the date on which the cases were reported, and not the date of onset. For instance, in May only five cases were reported; since May, fifteen additional cases had been reported that had their onset in May. In June, the incidence of the disease rose rapidly. The increase in the number of cases was observed about June 20, and rose rapidly until July 11, when the highest point was reached. Since that time there appeared to have been a recession, but it could not be said, as yet, that it was permanent. Dr. Emerson presented the statistics for diphtheria, scarlet fever, measles, and diarrheal diseases during the past six years, and the first six months of the present year, for New York City, and contrasted them with the number of cases and deaths reported from poliomyelitis. They showed that both the morbidity and mortality rates of poliomyelitis were low in comparison with the abovementioned diseases. During the first six months of 1916 there were 884 deaths from diarrhea and 57 from poliomyelitis. The community looked with complacency on the former while it was panic stricken in the presence of the latter. The psychological state of the lay public was interesting at this time. The panic that had resulted from reports with reference to infantile paralysis was probably due to the fact that this was the first epidemic of this disease in which it was reportable in New York City. It was also the first time that there had been a concerted effort at hospitalization of the disease. The present method was frankly an experiment. At the onset the Health Department was confronted with two alternatives. The one was to attempt quietly the medical control of the cases; the other was the method of publicity. They had decided in favor of the latter as offering the better prospect of real control of the disease. This method also offered the opportunity of giving the city a lesson in cleanliness and the control of infection. This was the first epidemic of poliomyelitis in this city that had been studied while it was in progress. The epidemic of 1907 was not studied until in November, when the Neurological and Pediatric Sections of the New York Academy of Medicine appointed a committee to investigate that epidemic. In that epidemic there were probably 2,500 cases. The average mortality, as estimated in foreign epidemics, had varied from 7 to 10 per cent. During the epidemic of 1907 the mortality was 5 per cent. During the present epidemic about 2,600 cases have been reported. Investigation showed about 1,600 of these to be true poliomyelitis. The mortality thus far in this epidemic was estimated to be 18.7 per cent. The most important factors in dealing with infantile paralysis were early diagnosis and the institution of methods by which they were able to prevent the spread of the virus among the healthy, and putting all cases under neurological and orthopedic observation. This might save the individual and the public from the future burden that permanent crippling implied. Infantile paralysis was essentially a disease of early childhood. At least 99 per cent. of the children affected had been born since the last epidemic. Of the cases of true poliomyelitis reported it was estimated that 917 have been under five years of age, and that 99 per cent. have been under ten years. About 403 cases have shown paralysis. In 50 per cent. of the cases the paralysis made its appearance in the course of a few days after the onset of the disease. The longest period after the onset at which paralysis made its appearance was sixteen days.

In from 5 to 8 per cent of the cases, secondary or subsequent cases have occurred in the same family. When one gets a second or third case in the course of three or four days after the onset of the first one it is safe to classify it as a secondary case. These facts were important, since the public had not previously been impressed by the infectious nature of the disease. The person suspected of being a carrier of infantile paralysis presented a difficult problem, since they could not prove definitely that a person was a carrier, as could be done in diphtheria or typhoid fever. This epidemic has also presented the opportunity for concerted action on the part of hospitals. This would probably result in some definite plan for dealing with such emergencies in the future that would greatly benefit the public and would favor scientific study of the disease. The experience in this epidemic had shown the necessity of having a staff suited to meet the needs of cases of infantile paralysis. Dr. Emerson said he would like to urge that hospitals that were likely to have cases of infantile paralysis organize a staff consisting of a laboratory diagnostician, an orthopedist, a neurologist, and a pediatrician. There would be a great field for social-service work for many years to come among these patients. There was another point of importance in connection with this epidemic, and that was that it had shown the extent to which medical men would sacrifice themselves and their financial interests to the public welfare. Many instances had come to his knowledge where physicians who had been taking care of these cases of infantile paralysis had, for the time being, lost their practices, and were actually suffering in consequence, their patients being afraid to come to their offices. Other physicians should do all in their power to discourage this attitude on the part of the patients and to see that such physicians did not suffer because of their willingness to sacrifice themselves. Finally, it should be remembered that no health department, however efficient, could control an epidemic and secure proper police enforcement of its regulations without the support of the medical profession. There must be early diagnosis and a willingness to report cases, and it was to be hoped that as a result of this meeting many undetected cases would be promptly reported to the Department of Health.

Dr. William H. Park said that Dr. Flexner and Dr. Noguchi had added so much to their knowledge of infantile paralysis that there was little for him to add. He would like, however, to emphasize one or two points along the same lines that Dr. Flexner had spoken. At the present time they knew that the sick person was the source of most of the contagion, and that the persons in attendance to the sick person, or the carrier, spread the disease. There was no known carrier, as a fly or insect, but the fly or filth that had been contaminated by the sick person or the carrier might spread the infection. If an insect was found to convey the contagion, it would probably be in a subordinate degree. If we could detect the carrier of poliomyelitis as we can the carrier of diphtheria or pneumonia or typhoid fever, we would not act much differently than we were doing. We possessed the knowledge necessary for the detection of diphtheria and pneumonia carriers, and yet we had done but little to control these diseases by control of the carriers. From what had been done in other lines it was possible that more might be done in the treatment of poliomyelitis by vaccines and serums, but at the present time Dr. Park said he had no new knowledge to offer. They had just begun to study and work along this line, and possibly six months from now they might be able to announce some new discoveries.

Dr. Walter B. James said that two questions had been asked. Some one asked whether it was safe to admit and treat cases of infantile paralysis in a general hospital. A doctor from an infected district asked what the modern treatment for poliomyelitis was.

Dr. Haven Emerson said that it was considered perfectly proper to treat these cases in a general hospital. Experience had shown that in hospitals where sanitary precautions were strictly carried out, infection did not take place. The doctors, nurses, and attendants in the hospitals did not contract the disease.

Dr. Henry Koplik said it was very difficult to speak about the treatment of a disease the cause of which was still under investigation. The treatment of the disease could at this time be only symptomatic. The patient should be isolated and kept absolutely quiet. This was most important. Any one in attendance on the patient should wear a gown and cleanse his hands after leaving the patient. Together with absolute quiet, the patient should have plenty of fresh air and an easily assimilable diet. The bowels should be attended to. Dr. Koplik said he had no particular remedies except those supposed to have an effect on the general nervous system. Liberal doses of urotropin had been employed, but the utility of this drug had not as yet been definitely established. Lumbar puncture offered certain advantages. In the first place, the mere mechanical removal of a certain amount of toxic spinal fluid might be of some benefit. In the second place, it gave an opportunity to make a diagnosis; and in the third place, it relieved pressure. This was of benefit because the fact that we got the Macewen sign showed the presence of pressure. If paralysis started in the patient's limbs, they should be kept absolutely quiet, and in some instances a cast might be applied to prevent contracture of the muscles. When the case was removed it could sometimes be seen that it had been instrumental in diminishing contracture. This contracture might return later when the patient should be referred to the orthopedist. Chloral and bromides might be administered for symptoms referable to the nervous system. Opium should not be used unless absolutely necessary. Charcot had recommended the intramuscular injection of strychnine as soon as the pain and fever had stopped. One-fortieth of a grain might be given daily for thirty days, different groups of muscles being selected for the successive injections. Many cases, however, had regained their power without the injections, and many did not, so that it was very difficult to give an accurate judgment as to their value. Warm baths sometimes proved a great blessing, if they could be given without moving the patient too much. Massage sometimes seemed to aggravate the condition; in other instances it seemed to relieve the pain. Iodide of potassium in large doses seemed to relieve the pain to a grater extent than any other remedy. In a few cases its effect was almost miraculous. There should not be too much activity in the treatment of these cases. No attempt should be made to increase the tonicity of the muscles until the active stage of the disease was passed.

Dr. Leon Louria said there was nothing to be said that had not been laid before them. He wished, however, to emphasize what had been said with reference to the cases that did not show paralysis. The epidemic could only be stopped by a recognition of the cases that did not lead to paralysis. In a few instances he had noticed a very interesting occurrence. A child would be taken ill with indefinite febrile manifestations, sore throat, and general malaise; he would be treated by the usual remedies for such conditions, and would apparently recover. In the course of three or four days the symptoms would recur, and one would also get definite symptoms of poliomyelitis and definite paralysis. If the disease was recognized early, and the child placed in bed and given the rest that the nervous system required, and the nervous system was not exposed to additional trauma, the virus would not exert as great an effect. The same treatment should be applied to the abortive form of the disease as was given the paralytic form and in this way the development of paralysis might be prevented. In two instances which had come under his observation the disease appeared to be of the abortive type and two weeks later the symptoms became more severe and a definite paralysis with permanent deformity resulted. Scientists were agreed that infantile paralysis was carried from the sick to the healthy child. It was possible for a healthy person to travel into an infected district, to be contaminated with the virus of infantile paralysis and then to implant it in another locality. Children who were slightly ill and whose illness was not properly interpreted were a prolific source of this disease and if they were assembled this evening that they might be prepared to assist the health authorities in their endeavor to control this disease, medical men should be called upon to make an early diagnosis and not to take lightly those ailments that might be abortive types of poliomyelitis.

Dr. Samuel J. Meltzer said that the several papers presented failed to cover one essential phase and that was the treatment of the disease. The reason for it was to be found, perhaps, in the discouraging fact that there was, at present, practically no treatment for poliomyelitis. He wished to bring forward three promising therapeutic measures based essentially upon personal work. Since he had only five minutes at his disposal, his remarks must of necessity be dogmatic and very brief. His practical suggestions had to be introduced by the following considerations. Any inflammatory focus

was surrounded at the periphery by zones of hyperemia, exudation, and edema. Thirteen years ago, in experimenting upon rabbits' ears, he found that an injection of adrenalin reduced the entire inflammatory swelling to a very small focus in the center, consisting mainly of paralyzed blood-vessels (passive hyperemia). The peripheral zones of edema and active hyperemia disappeared completely for some time. Several years ago Dr. Auer and he found further that an intraspinal injection of adrenalin into monkeys produced a long-lasting effect upon the blood pressure, longer than by any other method of administration; more than one hour might pass before the blood pressure returned to normal. On the basis of these observations and on the further plausible assumption that the early stages of the paralytic effects in peliomyelitis were not caused by the chief inflammatory focus but by the peripheral zones of active hyperemia, exudation, and edema, he induced Dr. Clark, then working under Dr. Flexner at the Rockefeller Institute, to make the following experiments. Monkeys dying from experimental poliomyelitis received intraspinal injections of adrenalin. The beneficial effect was most striking. Animals which were paralyzed and moribund at the time of the injection were seen several hours later eating bananas which they held themselves. The paralytic conditions were strikingly improved and the life of the animal was prolonged in some cases for several days. The animals finally died; but in this series of Dr. Clark's experiments, all had received *reliably fatal* doses of the virus. It was important to bear in mind that the mortality in human infantile paralysis was generally not more than 25 per cent. and was usually due to respiratory paralysis. It was probable that often the respiratory paralysis was not produced by the chief inflammatory focus, but by the preceding extensive peripheral zones of exudation and edema, which were surely capable of interfering with the vitality of the nerve centers controlling respiration. If the exudation and edema could be removed for some time, the lives of a few or of many of the cases might be saved, for it frequently happened that the ascending progress of the actual inflammation came to a standstill. On the basis of these facts and considerations he recommended the injection of adrenalin intraspinally in every case of infantile paralysis, the injections to be repeated in from four to six hours. The procedure might save life, and in surviving cases it might reduce the extent of the final lesion. There was no danger in this procedure. Monkeys stood well as large a dose as 2 c.c. in a single injection. However, in human infantile paralysis the injections should be begun with a dose of 0.5 c.c. of adrenalin, until more was learned about the effects. There were two other suggestions he wished to make. One was to administer artificial respiration by means of his apparatus for pharyngeal insufflation as soon as the patient showed a degree of unconsciousness and respiratory insufficiency. It was an easy and reliable procedure. The second suggestion was to administer oxygen under pressure in a respiratory rhythm by an apparatus which he had recently devised and used on human beings in several instances. It abolished rapidly cyanosis and might save life. It might even act specifically on the virus of poliomyelitis.

MEDICAL SOCIETY OF THE STATE OF NEW JERSEY.

One Hundred and Fiftieth Annual Meeting, Held in Asbury Park, June 20, 21, and 22, 1916.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page 125.*)

Wednesday, June 21—Second Day.

Reception of Delegates and Guests from Other States with Responses by Presidents of State Societies and Delegates from Other States.—Dr. W. W. PALMER of Boston, President of the Medical Society of the State of Massachusetts, said he was not prepared to make a formal address, but would present the greetings and congratulations of the Medical Society of the State of Massachusetts, which was fifteen years younger than the Medical Society of the State of New Jersey, having been organized in 1781. The charter of the Massachusetts Society bore the names of Samuel Adams and John Hancock. There were records showing that Dr. Chrystopher Elmer of the New Jersey Society had written to Dr. John Warren of the Massachusetts Society asking him for a copy of the act of incorporation of the Massachusetts Society. While the Medical Society of the State of New Jersey had been organized longer than that of Massachusetts, the latter was the first to have been incorporated by an act of Legislature. The records of the Massachusetts Medical Society had been collected and published by Dr. Henry I. Bowditch and made very interesting reading. In closing, Dr. Palmer said that not only was the Medical Society of the State of New Jersey ancient and honorable, but it had many honorable members who had been in the practise of medicine for more than fifty years. He had just met such a man who told him that he had practised medicine for fifty years and that without a vacation; the society should appoint a conservation committee who should see that he and others of his kind were compelled to take a vacation.

Dr. H. B. EARLE of Greenville, South Carolina, said he accepted the invitation to be present not only in order to congratulate the members of the Medical Society of the State of New Jersey on the attainment of so venerable an age, but to see how the oldest medical society in the United States conducted its affairs. The Medical Society of the State of South Carolina was one of the youngest in the country, having been in existence only six or eight years, but they were doing good work. While South Carolina had not had a State medical society it had produced some famous medical men, Marion Sims, Chisholm, and Thomas. In their society they had been having fifty or sixty papers and holding their meetings until late at night. He thought the custom of the New Jersey Society of having fewer papers, having them of a high character, and placing emphasis on the social side was worthy of emulation.

Dr. EDWARD Y. DAVIDSON of Washington, D. C., President of the Medical Society of the District of Columbia, after expressing his appreciation of the depth and wholesomeness of the hospitality that the guests had received at the hands of the society, said that the history of the Medical Society of the State of New Jersey overlapped that of the United States; it antedated by ten years the birth of this republic and had given great men who had contributed to the making of the history of this republic as well as having been an important factor in American Medicine. The society was born of hardy parentage bred on ruggedness in a critical period and it was to be expected that their offspring would carry out the high mission which they had undertaken for the advancement of medicine. They were to be congratulated not only for their seniority, but for their high achievements in medicine.

Dr. J. R. BROWN of Tacoma spoke for the Medical Society of the State of Washington. He said that the Medical Society of the State of Washington was one of the youngest State societies, but was proud to boast of its youth. They would hold their twenty-seventh annual meeting next month. There were at the present time 1,500 physicians in the State of Washington and 900 were members of the State society. They were organized on practically the same lines as the New Jersey State society. Some of the work they were doing might be of interest. Washington was a manufacturing State and there were many accidents, and they had come to the conclusion that it was advisable to have an accident insurance. Formerly the doctors had many damage suits as the results of fractures and other injuries; now the employees received compensation and there few damage suits. The doctors had combined for protection and had a medical defense fund against malpractice suits. There had been more than 100 suits and in none had a judgment been secured against a physician. This had been a means of unifying the medical profession so that they now stood practically as one man. Every three years the physicians of Washington, Idaho, and Oregon met together and had formed a great Northwestern Medical Empire which was doing much for the uplift of the medical profession. They had only one first-class medical college for 4,000,000 population and they did not want any more.

Dr. GEORGE I. MCKELWAY of Dover spoke for the Medical Society of the State of Delaware. He said the Delaware society was incorporated in 1789, and he believed it was the third oldest medical society in the United States. He said he had lived in Delaware but a short time; most of his early associations were connected with New Jersey. His grandfather had settled in Trenton where he lived until he was ninety years of age and practiced almost up to the time of his death so that the early conditions of the practice of medicine in this State were particularly interesting to him.

The Morbidity of Childhood and the Mortality of the Second and Following Decades.—Dr. THOMAS N. GRAY of East Orange presented this paper, in which he stated that the success attending the efforts to conserve infant life gave warrant for the exploitation of another line of child welfare work, namely, that of giving the child a chance to grow into robust adult life and to live the allotted years of man. His object in presenting this subject was the prevention of those deaths which occurred in later years due to those diseases of childhood which were preventable through the prophylaxis of non-communicable diseases made possible by proper equipment for diagnosis, thorough foreknowledge and thoroughness of examination and thorough control of epidemics and immunization against communicable diseases. Another reason for the conservation of child life had come to them and that was the vital need for preparedness. The essayist discussed the cause of later year deaths from organic heart disease, chronic nephritis and pulmonary tuberculosis and sought in the diseases of childhood a possible relationship with these, especially with reference to rheumatism, diphtheria, scarlet fever, measles and whooping cough. He said that no figures were extant, showing the percentage of deaths at ages from ten to forty years of age from organic heart disease and nephritis traceable to first decade rheumatism, diphtheria or scarlet fever, but it was known that scarlatinal rheumatism was the cause of many cases of endocarditis and damaged heart valves, that in a child a typical polyarthritic manifestation of rheumatic infection was a common occurrence, that the cardiac complications of rheumatic infection were not only more common in the child than in the adult, but as a rule were more severe. There was a definite connection between heart lesions and "growing pains," attacks of tonsillitis and a history of a fever lasting a week or ten days. His experience which had covered the lives of patients from birth to the fourth decade had demonstrated such a connection many times. It was his belief that a large percentage of deaths in later years from the disease mentioned were due to the preventable diseases of childhood. Many opportunities of forestalling damage to the heart valves were lost through the failure to make an early diagnosis of rheumatism and to follow it by treatment with the salicylates. In diphtheria many physicians waited for the report from the laboratory before giving antitoxin, and too many discarded their suspicions as to the presence of diphtheria on the receipt of a negative report. Until the time came when research workers would place at their command the means for immunization against all infections, and even after it we must look to our health boards to prevent epidemics of scarlet fever, diphtheria, measels, and whooping cough as effectively as they now controlled smallpox. Dr. Gray said he had asked a health officer the following question: "Would not the same isolation, strict quarantine, with immunization in diphtheria and pertussis, limit and control these diseases?" He had also asked whether the health boards did not have the same control over other communicable diseases that they had over smallpox and why, if they had such control, they did not exercise it? The health officer replied: "Because public opinion would not sustain us and it would bring about a furious storm of protest." In discussing the control of tuberculosis, the essayist said that this disease could be controlled only by the removal of open cases to sanatoria and by placing infected children in preventoria. To do this would require an adequate sanatorium and preventorium in every county. There was only one reason for inadequate county sanatoria in this State with its ample enabling act for their establishment, and that was the failure on the part of freeholders to appropriate enough money. This failure was due partly to lack of appreciation of the need and partly to the deterring fear of a raise in the tax rate. Sanatoria without preventoria would lead to an endless chain of expenditure with no hope of controlling the disease. In discussing the problem of bovine tuberculosis the essayist said that the fact that the tuberculous cow remained in the herd was not the fault of health boards, but was due to the injustice of the law which allowed the dairyman but a nominal price for his slaughtered cow and took from him the value residing in hide, hoof, fat, and meat if it was salable.

Dr. JOHNSON of the New Jersey State Board of Health said that the question was often asked why so much attention was paid to infants and so little to the young adult. Dr. Gray had pointed out the need of more thorough examination and diagnosis in the diseases of children and had urged that more care be taken in the reporting of communicable diseases. Dr. Louis I. Dublin had recently published a study of 1,153 cases of scarlet fever in reference to their sequelæ. In this series there were ninety deaths, and eleven of these showed distinct kidney involvement. He found that either the impairments of the kidneys which were so common in scarlet fever were severe enough to cause immediate death, or that in the survivors the injurious effect was not sufficiently great to kill within the next five years. He said that it was quite possible that ultimately there might be an increase in the expected number of deaths from kidney lesions, although such a consequence might not manifest itself until ten or more years had elapsed after the initial incidence of the scarlet fever. Although the sequelæ of scarlet fever were apparently not an appreciable factor in the mortality of the survivors, it should not be overlooked that the disease itself still constituted an important factor in child mortality. Dr. Johnson said she would like someone to express an opinion as to whether there was any relation between nephritis and cold baths, whether it was possible that the intense chilling resulting from cold baths might result in nephritis. She did not believe they could effectively control communicable diseases until they had well trained, full time health officers and good nurses to assist these health officers. It was important that parochial schools as well as public schools should be inspected. The truant officers should also cooperate in reporting communicable diseases. Teachers sometimes kept children in school when they ought not to be there. In Princeton the Board of Health notified the school nurses of every case of communicable disease and the nurses notified the Board of Health of any case they encountered, and in this way a closer watch could be kept over cases of communicable disease. Accurate records as to the prevalence of tuberculosis could not be obtained, but it was estimated that for every fatal case there were eight or twelve living cases. On such a basis it would seem that the hospitals were accommodating only about 3 per cent. of the cases. With such figures it ought not to be necessary to point the moral. The speaker also emphasized the importance of pasteurization of milk as a preventive of bovine tuberculosis and said that all communicable diseases should be as rigidly quarantined as smallpox now was, and then they might be as effectively controlled.

Dr. HENRY H. DAVIS of Camden said they wanted local health boards to do better work, but they did not want the tax rate raised. If there was an epidemic of smallpox they had no trouble in getting an appropriation to control it, yet among all the communicable diseases there was none so easy to stamp out. The great problem in the control of communicable diseases was how to get the money.

Dr. GORDON K. DICKINSON of Jersey City said the dollar was the great thing. When people looked at the dollar and saw the dollar sign on one side and "In God we trust" on the other they decided to trust to God to take care of the contagious disease. It seemed to him that the only thing to do was for the profession to get together and organize, to send out a man of personal magnetism who was interested in this subject to stir up the profession and get them to organize a campaign of education, and then when they asked for an appropriation from the State or a municipality for the control of communicable diseases they would get it.

Dr. ALFRED F. HESS of New York said that Dr. Gray had brought up one of the most important public health problems of the day. It was recognized that most of the ills of adult life were contracted during infancy and childhood. That tuberculosis was the most important of these ills was recognized by everybody since von Behring brought out the facts with reference to the large number of infections with tuberculosis in childhood. Dr. Hess said he happened to be in charge of the first preventorium for infants in the United States. This preventorium was located at Farmingdale, about ten miles inland from Asbury Park. The institution accommodated about 180 to 200 children of tuberculous parents. Their experiment of taking the infants of tuberculous mothers before they became infected might also be of interest. They had been told that it would be impossible to get these babies, as the mothers would not give them up. They had thus far taken twenty-five babies who gave negative von Pirquet reactions; that was, they were taken before they became infected. They took some of these babies from mothers who were in tuberculosis sanatoria. They had

established the fact that the mothers were willing to give the children up. Another problem was with reference to returning the child. That bothered them some at first. In about one-half the cases the mothers had died after a year or so and the children were then returned to a safe home. In some instances the mothers were cured and it was safe to send the babies home. In other instances they kept the children, and these were a problem. Dr. Hess said it seemed to him that this was an important way to attack the tuberculosis problem. Most of the speakers had referred to the financial side of the problem. He had just attended a meeting at Long Branch, a city whose financial budget amounted to $250,000 a year, and last year they gave $25,000 to health work. This year they had a new government and it was decided to cut down the appropriation for health work to $15,000. Finally a compromise was made and $19,000 was decided upon. They did not think a visiting nurse very important, while in reality she was the keystone of public health work because she found out and brought to the doctor's attention the various needs of the individual. If the doctors wanted to organize and do some work, Long Branch was an interesting example which they might take as a starting point.

Dr. JULIUS LEVY of Newark expressed the opinion that they could not affect the problem of tuberculosis in New York to any great extent by a preventorium that took care of twenty-five children. This was only an experiment. He believed real prevention would come not through preventoria, but through bettering living conditions. The effort to control tuberculosis by sanatorium treatment would only present the problem of the continued increase of accommodations in institutions. It was said that nearly everyone contracted a little tuberculosis and everyone is exposed to the disease to some degree, and the problem was to minimize the danger of this exposure. The infant should be left with the tuberculous mother if it could be nursed and at the same time protected from infection. Breast-fed babies were much less liable to contract infection and possessed a higher resistance than bottle-fed babies. This was shown by the fact that there were fewer cases of measles among breast-fed babies, and when they did contract the disease they had it in a milder form. The medical profession should be taught that nursing was possible in 99 per cent. of the cases and that it increased resistance. Some children had a myocardial degeneration due to the fact that they did not get enough rest during an infectious disease. Such a child might not be definitely ill but merely under par. The child might not seem sick enough to put to bed, yet a week's rest in bed was what was needed. This was frequently the case when a child had an infectious disease in a mild form. No matter how mild the infectious disease might be the child should be kept in bed for a week.

Dr. ALEXANDER MARCY of Riverton said that public health work was something entirely different from the practice of medicine. If men to do efficient public health work were wanted they must be trained to that work. In the State of New Jersey every health organization must have a licensed health officer and the State Health Board provided for these examinations by an act of Legislature. Many of the men taking these examinations who had practised medicine knew less about public health work, judging from the results of the examinations, than those who had never studied medicine. They had the cart before the horse; the first thing to be done was to find some way of training men to become sanitary officers. A man who wished to do public health work should go to some institution and take a course and graduate as he did from medical college. The need was for trained sanitarians, trained health officers and trained medical inspectors. As to the medical profession becoming a unit; if that condition could be realized it would be impossible for any body politic to stand before a united profession. They now went before the Legislature with half a dozen men from different parts of the State and nearly every individual had an idea of his own; there was no consensus of opinion and the politicians say, "Great Heavens! there come the doctors and they have not the slightest idea what they want."

Dr. LINN EMERSON of Orange expressed the opinion that what was needed most was sanatoria for advanced and incurable cases of tuberculosis. All sanatoria were conducted on the idea that the percentage of cures was the one thing to be considered, and if an individual was in the advanced stage and could not be cured he was sent home, and the result was that he infected everybody in the family. All the money spent on preventoria was as good as wasted so long as communicable cases were turned loose, and it was a surprise to him that people interested in tuberculosis did not realize this fact when they went about endeavoring to improve conditions.

Dr. HERMAN GROSS of Metuchen called attention to the working conditions in factories which were responsible for a great deal of tuberculosis. He told of one factory where the women went to work early and worked late, working ten and twelve hours daily, and then going home and doing their house work and said that within three years after they began this work 50 per cent. of them came down with tuberculosis. When the inspectors came around the employees were told to tell them that they worked only fifty-five hours a week, which was the limit the law set for women factory workers. Something should be done to limit the working hours and control conditions in the factories. In this factory only ten minutes was allowed at noon. Abroad employees were given an hour at noon.

Dr. B. D. EVANS of Morris Plains said that if anything was to be done of a practical character it would have to begin with a campaign of education; every large project, whether in medicine or law or municipal government or national government, in the sciences, the arts, or the crafts, was brought about by educational work. In a case of measles the doctor too often told the family that the diseases did not amount to anything; that the child should be protected and it was nothing serious. The general public had come to look upon measles as of no more consequence than a slight attack of indigestion. Children should be told of the dangers of measles in the public schools as they were now told of the dangers of alcohol, tobacco, smallpox, and tuberculosis. If the people were made to understand the gravity of the sequelæ of the communicable diseases a public sentiment would be created, and when there was a request from State or local health boards for funds they would be forthcoming. It was right that this society should be behind such a campaign of education.

Dr. THOMAS N. GRAY of East Orange said he agreed with Dr. Levy that the underlying problem was that of economics, but they must deal with present conditions, and if they could not do anything to remedy the economic conditions they must have sanatoria, they must have better isolation and better protection on the part of the boards of health. Tuberculosis was not contracted in the open air but was essentially a home disease. They should have a sanatorium in every county with accommodations for every open case of tuberculosis, but he wished to emphasize what he had said, that sanatoria without preventoria would never stop the spread of tuberculosis.

Reception of Delegates.—Dr. MARTIN I. TINKER of Ithaca, President of the Medical Society of the State of New York, spoke for that organization. He said that in listening to the discussion he had come to the conclusion that the state societies did not differ essentially from one another. He had hoped to learn something of the organization and methods of the New Jersey State Society. The New York Society did not have all that was good in organization; they had much to learn from other societies. Progress in medicine was not the work of a few brilliant men; progress did not come from a community where the average intelligence was low but where the average standards were high.

Pennsylvania Delegation.—Dr. CHANDLER then welcomed the twenty-five delegates from Pennsylvania.

Dr. JOHN MCLEAN of Philadelphia, President of the Philadelphia County Medical Society, said he believed the Philadelphia County Medical Society was the largest county medical society in this country. They had done their part in influencing education. They were not obstructionists but constructionists and when they went before a governing body they knew what they wanted and they went with definite recommendations.

Dr. E. A. CRUEGER of Philadelphia said the problems confronting health officers were complex and perplexing. It was very hard to make families recognize that the rights of the individual ceased where the rights of society began. Mention had been made of the relationship of legislative bodies to health departments. He thought a great deal could be done by diplomatic procedure and here the first step was the education of public sentiment. He told of some of the difficulties that Philadelphia had encountered in getting proper hospital accommodations for tuberculous patients and for the insane and the struggle they had encountered in get-

ting a new municipal hospital so that they wanted to sympathize with the New Jersey Society in its trials and to share in its triumphs.

Dr. WILLIAM DUFFIELD ROBINSON of Philadelphia told of the intensive health work they were doing in Philadelphia. They took one block at a time and made a study of every individual in that block and kept records. They had proved that the intensive method of doing public health work was the most effective. They had physicians, visiting nurses, social workers and all the newer methods and they were getting better results in this way.

Address of the Third Vice-President.—Organotherapy. Dr. THOMAS W. HARVEY of Orange, N. J., delivered this address. He stated that many tissues of the body had internal secretions, that was, they elaborated during the process of metabolism, either in response to stimuli from the central nervous system or excitant agents from the secretions of their tissues, a substance which they poured into the blood stream and which had important functions in the body. Certain internal secretions were essential to the maintenance of life, notably that of the suprarenal capsules and the pituitary body. These regulated the amount of blood supply, determined growth, inaugurated chemical changes in the body necessary to nutrition, stimulated phagocytosis, antagonized infections, and antidoted toxins that resulted from errors in the chemistry of life. Extracts of internal organs did not represent the entire effect of the internal secretions that were elaborated in these glands. The ductless glands were all interdependent. When there was a deficiency in some ductile gland it was often impossible to determine which one and often the same symptom complex found threatening life was traceable to deviation from the normal of quite dissimilar organs. The essayist had seen cases of status lymphaticus in which recovery took place from very serious attacks and the subsequent history indicated the involvement of other organs than the thymus; one patient was found to have Addison's disease, and another Graves' disease. There seemed to be no success attendant upon the use of adrenalin in Addison's disease associated with lesions of the suprarenal capsule. From the use of the secretions of the ovary much could be expected in the amelioration of disturbances of the nervous system consequent upon the establishment of the menopause whether natural or artificial. It was well in the present state of our knowledge to accept the terms "hyper" and "hypo" as expressing different forms of disease caused by disturbance of function of these glands without committing oneself to the theory that there must be an excess or a deficiency. Thymus extract was useful in many cases of exophthalmic goiter, particularly those occurring about the period of puberty. The writer discussed the relationship of the pituitary gland to abnormalities of growth and development and called attention to the usefulness of this agent in obstetrical practice and after laparotomies. In pneumonia pituitary extract might be used as adrenalin had been to sustain the heart and circulation during the crisis. It was also useful in shock, surgical or emotional. Thyroid extract had a number of indications. It was useful in obesity, though injudiciously administered it might be productive of harm. In arteriosclerosis it lowered blood pressure.

Oration in Medicine — The Classification, Prognosis, and Treatment of the Nephritides.—Professor MARTIN H. FISCHER of Cincinnati presented this communication which was illustrated by graphic charts and brought out several new ideas in reference to nephritis. He stated that the effect of water and sodium chloride in nephritis could only be determined with authority on the basis of the cause of the clinical entity called nephritis. It might be said that nephritis was an edema of the kidney and this brought up the problem as to the cause of the edema of the kidney, which might and did affect other organs and tissues as well as the kidney. The question might be asked: "Why do the cells and tissues of the body hold any water at all?" "Why does the body hold so constant an amount of water from month to month and from year to year?" Even the osmotic theory lacked a good many facts to support it. One must get at the laws that governed the absorption and excretion of water by simple colloids, and of these the protein colloids were the most important. They had found that the more acid that was added to a protein colloid in the presence of water the greater the degree of swelling, and that if this acid was neutralized one got a shrinking of the protein colloid. If to the protein colloid swollen by acid solution any salt was added there resulted a reduction of the swollen fibers. Sodium chloride had less activity in this respect than other salts, such as sodium nitrate, sodium acetate, etc.; the most powerful salts were sodium tartrate, sodium citrate, and sodium sulphate. Magnesium sulphate was very much more powerful than the same concentration of sodium or potassium. The action that this agent had in extracting water from the bowel was well known but the explanation had been lacking. If an ox's eye was placed to soak in an acid solution an experimental glaucoma was produced; the eye would become swollen to the point of rupture. If one then added sodium citrate to the solution the eye would shrink. Glaucoma was entirely an edema of the eyeball. Tissues suffered changes accordingly as they held more or less water and the amount of water sucked up was determined by the cells themselves and not by something outside. If one applied these facts to nephritis which was an edema of the kidney the general conclusion would be reached that nephritis was also a composite of a number of chemical changes occurring in the whole or in parts of the kidney; they were all due to a common cause, namely, the abnormal accumulation of acids or other substances that acted like acids, urea, etc. This having been proven one ought to be able to do something for the nephritic patient. The evidence of the accumulation of acids in nephritis was well established and when there was a sufficient acid concentration albumin, casts, and blood appeared in the urine. If water was ingested it was retained and one got edema and thus one saw developed parenchymatous nephritis. It was well known that muscular contractions during violent exercise produced lactic acid and when violent exercise was continued the acids accumulated faster than the blood could oxidize them and one would find albuminuria with casts. In some instances in young healthy athletes as much as several grams of albumin to the liter had been found after violent and prolonged physical exercise. The same thing might be observed in warm-blooded animals after exposure to cold. In considering nephritis one should not concentrate his attention on the kidney but should look outside for the principle that should guide him in the treatment of nephritis. The cause of the abnormal production of acid must be sought. One might have a patient with pneumonia and convulsions due to the large amount of acid produced in which one could not neutralize the acid for hours after the convulsions. Again about 50 per cent. of the eclampsias occurred, not during, but after delivery, this being due not only to the accumulation of acids before delivery but to the additional accumulation due to the muscular contractions and strain during labor. In such cases one had an acidosis and the indications were for the administration of alkalies and also for the administration of salts in more than physiological concentration. A third rule was to give sugar; a high concentration of sugar also dehydrated. A fourth rule was to give water but this was not an unmixed blessing; there should be enough alkali and salt to neutralize the effect of the water. The idea had been prevalent that to administer salt to a nephritic was to kill him; this was incorrect, and sodium sulphate possessed advantages over sodium chloride. Dr. Fischer objected to the elaborate classification of nephritides in vogue and stated that so little was known of the physiology of the kidneys that there was no warrant for such classification. The kidney was all parenchyma and therefore there could be only one kind of nephritis and that was parenchymatous nephritis. There might be two varieties of parenchymatous nephritis, general and "spotty." That was the entire kidney might be involved or the process might go on in small foci of infection. In the latter condition after the acute attack the prognosis was good in nephritis due to infection, anesthesia, etc. The prognosis on the other hand was much less favorable if the condition of the kidney was dependent upon arteriosclerosis, the reason being that one was dealing with necrosis of an irremovable and irremediable type. When a patient with parenchymatous nephritis developed general edema the idea was that the edema was due to a cessation of kidney function. This was wrong, for the operative removal of a kidney did not produce edema. Edema was not due to loss of kidney function but to something that produced the disease, to a general toxemia affecting all the tissue cells, including the cells of the kidney. The symptoms that had been attributed to the kidney were signs and symptoms of edema of the brain, an intoxication by the same poison that had affected the kidney. The headache of so-called uremia told us that the brain was swollen to the danger point. It was not true that high blood pressure was a conse-

quence of kidney disease; high blood pressure was dependent upon the cardiovascular system and was a compensatory mechanism.

The following questions were asked: "In the use of organic acids of fresh fruits do the acids oxidize to carbonates? In glaucoma should one use the citrates to control the edema? What effect had the intravenous injection of colloidal sulphur? What is the diet in the condition known clinically as chronic interstitial nephritis? What would be your treatment for so-called uremia? Has the Karell treatment any advantages? Is a blood pressure of 140 normal in a man of sixty years? If we use dextrose does it prevent the oxidization of the tissues of the body? What do you mean by a clinical uremia? Does a child make a complete recovery from the nephritis of scarlet fever? Is there any permanent damage from the violent exercise indulged in by athletes?"

Dr. FISCHER, in closing the discussion, said that organic acids were of two types; one type was readily oxidizable and fruits containing this type led to a decrease of water. This was true of most fruits and vegetables, with the exception of strawberries, cranberries, and grapes. On the whole, fruits and vegetables made for alkalinity and not for acidification. In twenty-two cases of nephritis investigated, nine were due to an underlying arteriosclerosis and as a rule the prognosis of these cases was bad. He could not answer the question with reference to the effect of colloidal sulphur. This was a suspension and did not come in the group studied. As to the diet in so-called chronic interstitial nephritis he said he supposed the one who asked that question meant the condition associated with cardiac hypertrophy and vasomotor disturbance. They did not confine these patients to an extremely limited diet but gave them rest and decent food, not merely slop foods. He allowed the patient to eat vegetables which yielded about 25 per cent. alkali, a certain amount of meat was permitted, and enough alkali was administered to keep the urine neutral. As to the treatment of uremia, he did not call the condition uremia; he called it edema of the brain due to a toxin or to a cardiovascular condition. All edemas did not have the same mechanism and one must get at the mechanism in each case. The question was asked as to the advantages of the Karell treatment. This treatment was based on the reduction of sodium chloride and restriction of the intake of fluid, 500 c.c. of milk being allowed daily. The loss of fluid through the lungs and skin was so much more than through the kidneys that he did not think the restriction of fluid made a great deal of difference in the amount of fluid retained in the body, while the restriction of fluids favored the accumulation of toxins. The edema was not due to lack of secretion on the part of the kidneys. He gave alkali and salt to cause dehydration and allowed water, but the effect of the water was controlled by the alkali and salt. A blood pressure of 140 mm. was high. When in any man past the age of forty years the blood pressure went above 130 it was time for him to look after himself. Dextrose did two things. Many of these patients were sugar starved and where there was sugar starvation one got acid intoxication. Dextrose dehydrated as did the salts but in a different way. It was quite impossible to analyze the clinical case that had been referred to, but dyspnea meant increased hydrogen ion concentration and probably edema of the brain; whether this was secondary to an aortic lesion in the case cited could not be stated. When one had acidosis, dyspnea, and clinical edema, the case was not a uremic but a cardiovascular one. In scarlet fever the toxin that caused the kidney lesion was not carried over; there were no traces of such an occurrence, but there might be a lowered resistance and one might get a reinfection of the kidney and a new attack of nephritis with a new organism. As to the danger from violent exercise, football and rowing matches put too great a strain on the process of oxidation. If such work was done regularly it could be carried on all right. The Chinese coolies all had clinically hypertrophied hearts and went through life comfortably with them, but it was different where the strain was temporary; after the strain was over the individual lapsed into a less active life, took on flesh, and degeneration followed.

Election of Officers. — The following officers were elected to serve during the ensuing year: *President*, Dr. Philip Marvel of Atlantic City; *First Vice-President*, William G. Shauffler of Lakewood; *Second Vice-President*, Dr. Thomas W. Harvey of Orange; *Third Vice-President*, Dr. Gordon K. Dickinson of Jersey City; *Recording Secretary*, Dr. George N. Gray of East Orange; *Corresponding Secretary*, Dr. Harry A. Stout of Wenonah; *Treasurer*, Dr. Archibald Mercer of Newark. *Delegates to the American Medical Association*, Drs. William S. Lalor of Trenton and Luther M. Halsey of Williamstown.

The Banquet.—The banquet given on the evening of June 21 was the most largely attended of any in the history of the society. At that time letters of congratulation and felicitation were read from President Woodrow Wilson and from the presidents of many of the State societies who were unable to be present. The treasurer of the society, Dr. Archibald Mercer of Newark, was presented with a loving cup as a testimonial of appreciation of his services to the society during the twenty-five years he had been treasurer.

Thursday, June 22—Third Day

After the completion of the work of the House of Delegates and the inauguration of the incoming President, Dr. Philip Marvel, the morning was given over to the Centennial Exercises of the Essex, Middlesex, Monmouth, Morris, and Somerset Component Societies.

Dr. ALEXANDER MARCY, SR., of Riverton, who had attended the Centennial of the Medical Society of the State of New Jersey and had attained the ripe age of 87 years, was introduced to the members of the Society and congratulated them on the progress they had made during the past fifty years. Representatives from each of the above societies reviewed the early history of his society and gave such reminiscences as he could find of the organizers of these societies. The Essex was the oldest county society in this country, having been organized June 4, 1816. Its charter members were Peter I. Stryker, Ferdinand Schenck, William McKissack, James Elmendorf, William D. McKissack, August R. Taylor, Ephraim Smith, Moses Scott and Henry Schenck. The other counties above mentioned all organized within a very short time after the Essex County Society in response to an act of the State Society requesting such organization. The history of these societies showed that they had been interested in the suppression of quackery, in the elevation of the standard of medical education, in the study of diseases that seemed to be epidemic in their midst, and in elevating the standards of the profession. That they took these societies very seriously was shown by the fines imposed for absence from meetings.

The Disease Carrier on Train and Steamboat.—Wilbur A. Sawyer cites certain reasons for increased disease incidence in travelers. One of these is increased contact with healthy disease-carriers. As these men travel, infection cannot be traced to them. Contact is closer and objects of common use are handled in rapid succession. The abolition of the common cup has doubtless prevented considerable morbidity. Diphtheria has been spread on shipboard by a carrier, or at least numerous carriers were identified during the epidemic, and cerebrospinal meningitis in like manner. In both cases the vessels were overcrowded. These were isolated instances, perhaps, but typhoid carriers are almost ubiquitous. For every 100 cases of typhoid which survive, 7 are reckoned as carriers. On trains the chief danger is in the dining car service, as both cooks and waiters may convey the disease, but on shipboard the carrier is more dangerous—not only cooks and waiters, but stewards, stewardesses and others are a source of danger. This has been realized in lumber steamboats, in which an ordinary passenger acted as carrier. The men drank from the water cask from their cupped hands.—*Journal of Sociological Medicine.*

Prognostic Significance of the Urine in Puerperal Infection.—Schaefer states that after the temperature becomes high in puerperal infection the urine will be found of high specific gravity, dark colored and containing in solution indican and ethereal sulphates. If we can cause the disappearance from the body of all the phenol derivatives, the prognosis should improve. Catharsis and diuresis are indicated, and the density of the urine may be brought down below 1015. A low density, when associated with high temperature, is in itself a good prognostic, and the eliminant treatment will not be required. The obstetrical or rather surgical management, of course, goes ahead as usual, but the author believes that the bacillus coli communis plays a great rôle as a determining cause, and that intestinal hygiene and sanitation must be guaranteed in all puerperal disorders.—*The Medical Fortnightly and Laboratory News.*

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NITROUS OXIDE-OXYGEN, THE MOST DANGEROUS ANESTHETIC.

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WHENEVER any new line of treatment is proposed it is universally recognized as incumbent upon its sponsors to show that it is better than prevailing lines of treatment, its superiority consisting in a larger percentage of cures, a more prompt recovery, or a diminution of morbidity.

This rule most certainly should apply to the introduction of any new anesthetic agent. Chloroform has its advocates, and for certain purposes its advantages, but ether may be accepted as the standard of safety the world over. Every new anesthetic must, therefore, be weighed in the balance with ether.

If the sponsors of the new anesthetic are actuated purely by scientific motives, every unsatisfactory experience, and certainly every death, would be promptly reported, so that the profession at large could judge as to the relative value of the new anesthetic; while if such adverse experiences are not reported, but attempts are even made to cover up and deny their occurrence, then only mercenary motives can be attributed to the advocates. Teter of Cleveland, in a personal letter, reports that he knows of twenty-six nitrous oxide-oxygen fatalities, nine of which have occurred in Cleveland. Dr. A. H. Miller of Providence, R. I., has collected references to eighteen deaths. Rovsing was able to get track of thirteen deaths, several of which had been suppressed. (This author[1] in his chapter on anesthesia gives a death rate of one in 2,000 for chloroform, and one in 50,000 for ether.) Gwathmey (personal communication) knows of from twenty to forty unreported deaths.

Practically all of the anesthetists who have written on nitrous oxide-oxygen state most positively that death occurs *only* from asphyxia, and that if the anesthetist watches the color and pushes the oxygen death cannot occur. If that is the case, it is certainly very important that the anesthetist shall know what are the symptoms that indicate asphyxia. Turning to Gwathmey[2] (p. 134) we find the following statement: "The fourth stage, or stage of overdose, supervenes through some error of technique by which asphyxia becomes the predominant feature of the narcosis. Breathing becomes embarrassed usually through convulsive muscular spasm. The interference with respiration is first marked through hyperpnea (excessive breathing), then by dyspnea (difficult breathing). Violent or convulsive expiratory efforts, sometimes accompanied by general muscular spasms, mark the second stage of asphyxia. Following this there is a stage of exhaustion, in which the muscular spasm is superseded by muscular flaccidity. The pupils become more widely dilated, the lids are widely open, the conjunctivæ are insensitive, the pulse becomes imperceptible, respiration is marked by prolonged sighing inspirations which gradually cease. Paralysis of the respiratory center is complete and death supervenes. Marked cyanosis accompanies this condition of affairs."

In none of the cases detailed in this paper was death the result in any way whatever of asphyxia, but in all of them the death occurred without warning, in the midst of an apparently smooth anesthesia, and with the startling suddenness of an overdose of chloroform.

Gwathmey states, as the natural effect of nitrous oxide-oxygen administration, that the pulse becomes rapid, from 140 to 160 per minute, and in prolonged operations the temperature goes up from ½ to 2 degrees (p. 109).

According (Gwathmey) to the experiments of Buxton, and later of Wood and Cerna, "nitrous oxide-oxygen exerts a direct action upon the heart itself, having little or no direct influence upon the vasomotor centers of the brain cortex" (p. 130). "Buxton . . . found that . . . nitrous oxide produced so great an enlargement (of the bulk of the brain and the cord) as to force out the cerebrospinal fluid" (p. 131).

"The most natural inference, from the study of the reflexes and other effects upon the nervous system, is, according to Kemp, that nitrous oxide acts especially upon the brain cortex" (p. 131).

It is inconceivable to think that any agent capable of producing the constitutional disturbances indicated above should not be pregnant with manifold possibilities of evil; and yet, in a calendar just received from a manufacturer of nitrous oxide-oxygen, we are told that this combination "Does not affect the heart; does not affect the kidneys; does not produce nausea; decreases danger of postoperative pneumonia."

Connell,[3] who writes the article on anesthesia in Johnson's new work on "Operative Therapeusis," says of the nitrous oxide-oxygen anesthesia that "since the extensive introduction of this gas into general surgery, the reported and unreported deaths have probably far exceeded those from ether," and aside from its death rate it is evident from his entire chapter on this subject that he regards its disadvantages as far outweighing its possible advantages.

Luke, anesthetist to St. Luke's Hospital, New York, reports[4] one death out of about 200 administrations of nitrous oxide-oxygen. The patient was dead six minutes after entering the operating room. He also reports another case in which the patient

was resuscitated with great difficulty. Dr. Roy McClure, now of the Johns Hopkins, reports to me two deaths which occurred while he was connected with the New York Hospital. These occurred in the service of Dr. Frank Hartley, and took place while gas was being given as a preliminary to ether. Dr. McClure was resident surgeon at this time, and is entirely familiar with the facts.

From inquiry as to nitrous oxide-oxygen at the Mayo clinic, I find that this anesthetic was used in about 1,400 cases as a preliminary to ether. I can learn of no mortality, but the result was not satisfactory and it was dropped. Miss Henderson, the anesthetist, under date of January 16, 1915, wrote that on the day before Dr. E. J. Burch of Carthage, Mo., reported to her a case which he had lost under nitrous oxide-oxygen. The anesthesia had been a brief one for a rectal examination. The examination was completed and the surgeon left the room, but was called back hurriedly and found the patient dead. She says of the nitrous oxide-oxygen anesthesia: "We have investigated its merits at various times, but the surgeons have not seen fit to make any change from 'drop ether,' which has been used here for many years." A personal communication from Dr. Burch affirms this report.

In conversation recently with two of the best known surgeons of Cleveland, Drs. Bunts and Skeel, I found that no thorough investigation of nitrous oxide-oxygen deaths had ever been made in that city; numerous instances were known, but the details had never been published. Both of these surgeons used ether by preference, but because of the newspaper prominence given nitrous oxide-oxygen they were obliged in some cases to yield to the request of their patients and use that anesthetic.

Gwathmey[2] (p. 109) reports three fatalities out of 2,500 cases. In the first case death occurred suddenly before operation was commenced. In the second it also occurred suddenly, but the operation had begun and the anesthesia up to that point had been normal. In the third case the pulse became very rapid, and at the close of the operation went up very rapidly. Color became cyanotic and could not be cleared up with oxygen, the breathing became weaker and weaker and finally ceased. Because at the autopsy an enlarged thymus was found, with hypertrophy of the lymphatic tissues in general, the pathologist gave status lymphaticus as the cause of death.

Recently (December 5, 1915) Dr. T. G. McCormick, now of Portsmouth, Ohio, formerly of Detroit, told me that they had had either seven or eight deaths at Grace Hospital, Detroit. He was resident physician there during that time, and one of the deaths occurred while he was giving the anesthetic. He could give no particulars of any of the other cases, but his own patient died suddenly and without any warning.

The following is the Columbus death list for nitrous oxide-oxygen:

1. The first death in Columbus from nitrous oxide alone occurred some years ago at the Dental Clinic of the Ohio Medical University. The gas was given for the extraction of teeth, and the patient died suddenly and without any warning. Efforts at resuscitation were made as usual, but were unavailing. My authority is Dr. A. O. Ross, then dean of the dental department.

2. Probably the first death in this city from nitrous oxide-oxygen took place at Mt. Carmel Hospital, the anesthetist being a physician who was considered an expert, and who is among the best known anesthetists of New York City. The patient, according to the anesthetist's statement to me, died suddenly in the midst of a somewhat prolonged abdominal operation.

3. Dr. G. W. Mosby of Columbus reports to me that he had a patient die from nitrous oxide-oxygen, also at Mt. Carmel Hospital, the anesthetic in that case being given by Dr. Jones. The operation was for pelvic infection. The operation, he says, had lasted about forty-five minutes, and was proceeding satisfactorily apparently, when the patient suddenly died. He unhesitatingly attributes the death to the anesthetic.

4. Dr. R. B. Drury reports that last year at the St. Clair Hospital a woman was being put under nitrous oxide-oxygen anesthesia by Dr. Jones, for the removal of a fibroid by the late Dr. Leach, whom Dr. Drury was assisting. Just at the beginning of the incision the woman suddenly expired without the slightest warning.

5. Dr. Drury also reports a death from nitrous oxide-oxygen in a man aged 65, whom he operated upon at Washington Courthouse. A year before the same patient had had a suprapubic prostatectomy under ether by the late Dr. Leach, and went through the operation nicely. Further trouble coming on, Dr. Drury decided to operate through the perineum. Nitrous oxide-oxygen was given by Dr. Rice. In the midst of the operation, which had been going on all right, the patient suddenly expired.

6. Dr. George Williams reports that at the St. Clair Hospital he gave nitrous oxide-oxygen for a hysterectomy for fibroid tumor, about one year ago. The patient went through the operation very satisfactorily, and the surgeon was about to close the incision when the patient suddenly died without any warning whatever; had been doing well up to that moment.

7. Dr. G. L. Saunders tells me that about four years ago, while waiting for a patient of his own to be operated upon at Mt. Carmel, he witnessed an operation on a colored woman, probably 35 years of age, who was suffering from a small fibroid. Nitrous oxide-oxygen was being given, and just as the abdomen was being opened, and before any work on the inside had commenced, the patient suddenly died without any warning. All efforts at resuscitation failed. Dr. Saunders was a stranger in the city, and did not know the anesthetist.

8. Dr. Goodman reports that on March 13, 1913, he opened through the vagina a cul-de-sac abscess. The case was a puerperal one of two weeks' standing. Nitrous oxide-oxygen anesthesia was given by Dr. Rice. The opening of the abscess took but a moment, but the patient suddenly died on the table.

9. Dr. Goodman reports the case of a young woman, mother of a child two years of age, upon whom he operated for the removal of fibroids. The husband, against the wishes of the surgeon, insisted on the use of nitrous oxide-oxygen. A supravaginal hysterectomy was made in the usual way, the operation being exceedingly easy. There were no adhesions, and the operation took about twenty minutes. The patient had taken the anesthetic beautifully, breathing quietly, and with good color. As the last stitch was being inserted the patient ceased to breathe and the heart stopped. Dr. Rice was giving the anesthetic. Dr. Goodman at once opened the abdomen, massaged the heart through the diaphragm, giving deep injections into the heart of adrenalin, besides using oxygen and artificial respiration, dilating the sphincter ani, etc., but the patient was dead.

10. This patient was a woman operated upon by Dr. Howell for abdominal tumor. She had had one kidney removed some time before, and was known to be suffering from nephritis. Nitrous oxide-oxygen was used. After the operation there was bloody urine, then suppression of urine, then death from uremia. (Had this suppression of urine occurred under ether, the death would undoubtedly have been attributed to the ether; by a parity of reasoning it should be attributed to the nitrous oxide-oxygen, though it is possible that the anesthetic had nothing to do with the death.)

11. Dr. J. M. Thomas reports that about two years ago Dr. Howell operated upon a patient of his, 22 years of age, for chronic appendicitis; had suffered from infantile paralysis, and had some functional heart trouble. Dr. Rice gave the anesthetic. The operation was completed, and Dr. Howell had left the room, when suddenly the patient went bad, and apparently died on the table. Dr. Fletcher and several others were present. Artificial respiration was kept up, he says, for justy sixty minutes, when she breathed herself for about ten minutes. The abdomen had been reopened by Dr. Howell, the heart massaged, and adrenalin injected into the heart substance. After breathing for ten minutes respiration stopped and further resuscitation was impossible. He is positive that the death was due to nitrous oxide-oxygen.

12. Mrs. McC., aged 37, had a simple abdominal hysterectomy October 28, 1914. In spite of my own protests and those of her attending physician, she insisted on taking nitrous oxide-oxygen. Dr. Rice administered the anesthetic, which she took beautifully, but just at the completion of the abdominal work, without the slightest warning, the heart's action suddenly ceased and the patient was dead. The heart was at once massaged through the open abdomen, and all the usual measures for resuscitation instituted, but in vain.

13. Mr. B. of Degraff, aged 62, was operated upon February 26, 1914; had been having severe attacks of pain in the region of the gall bladder, and his physicians thought that he had passed gall stones. He had had some bronchorrhea for several years; no kidney trouble. Because of the history and local conditions a gall-bladder operation was advised, and because of the bronchorrhea I advised nitrous oxide-oxygen. There was hypertrophy of the heart, but no valvular lesion could be detected. Pulse regular, and of good volume. The diagnosis was a matter of doubt, but malignancy could not be positively excluded. An incision was made over the gall bladder, which was found distended. At this time the patient was reported by Dr. Rice to be doing badly, and an instant examination showed a pulseless aorta. The heart was at once massaged through the diaphragm, artificial respiration kept up, etc., but all efforts were without avail. Autopsy showed an enlarged heart, but no dilatation.

14. Mr. L., aged 62, was brought to the hospital May 14, 1912, with a diagnosis of peritonitis from appendicitis. His condition when he reached the hospital was bad, as he had got chilled on the train coming up. In the course of an hour this condition improved, so that he had a good color, and a good heart's action. His condition was such as to indicate extensive infection, and I planned to make a quick incision and put in a drain. For this purpose I thought nitrous oxide-oxygen safer than ether. He took it nicely, but just as the incision was made he died suddenly. After death was determined the incision was extended somewhat, and it was then found that there had been a plugging of the superior mesenteric artery, all the intestines supplied by the artery being black and devitalized. Of course, death would have occurred within a few days, so that the anesthetic death was of no special importance. Within a few months of this time, however, I had two similar cases, one in a young woman of about 30, the other in a man of about 60. Ether was given in both cases, the abdomen opened, the condition determined, and the abdomen at once closed. Both survived the exploration by a day or two.

The above list shows that we have had twelve, or more properly perhaps thirteen, deaths from nitrous oxide-oxygen when given for major operations. Careful investigation seems to show that there have been not to exceed twelve or thirteen hundred administrations of this anesthetic for major operations, in Columbus, so that the death rate has been practically 1 per cent.

Without persistent effort on my part, few of the nitrous oxide-oxygen deaths in Columbus would have been unearthed. I have made no canvass of the situation in other cities of the State, but incidentally know of several deaths in Cincinnati, Cleveland, Toledo, and Akron. In one of the Cincinnati cases the anesthetist was a specialist of twenty years' experience, who had spent two weeks at Lakeside to familiarize himself with the details of the nitrous oxide-oxygen anesthesia. He had administered the combination successfully in a number of cases, but in this particular case (nephrotomy for stone) he had objected to the giving of the gas as he preferred ether, but the surgeon insisted and he complied. The anesthesia went off beautifully, the operation had lasted about thirty minutes, and was just about completed when the patient suddenly died. (Personal communication from the anesthetist, Dr. Leroy S. Colter.)

Under date of June 1, 1916, in response to a letter of inquiry following a newspaper announcement, Dr. H. H. Wiggers of Cincinnati writes me that the death of a married woman in his practice "occurred suddenly, without any warning. There was simply a cessation of the heart beat. We cannot account for the death." No details of operation given, but the anesthetist was a specialist, with an experience of about eleven hundred cases of nitrous oxide-oxygen anesthesia.

Gwathmey, concerning whose skill and experience there can be no doubt, under date of November 6, 1915, gives me a personal report of a death which he had had a few days before, and which he expects to report at an early date. This death under nitrous oxide-oxygen, he says, "was absolutely uncalled for, and has changed my ideas of the safety of nitrous oxide-oxygen entirely. . . . I believe if I had given him ether the man would have been alive today."

In commenting on autopsy No. 3394, Dr. Hugh Cabot, of the Massachusetts General Hospital ("Case Reports" received January 16, 1916), says in regard to a death from nitrous oxide-oxygen, that "during the operation the anesthetist remarked that the breathing was slow, but the color of the skin normal. The color of the blood was at no time observed to be unusual. At the point last described the anesthetist observed that the respiration had stopped. Artificial respiration was started and kept up for forty minutes steadily, with the liberal use of oxygen. . . . This was an anesthetic death due to gas and oxygen anesthesia." The anesthetist in this case was Dr. Freeman Allen, chief

of the department of anesthesia, and consulting anethetist to the Massachusetts General Hospital and Children's Hospital.

Ochsner[5] says that he made a careful test with one hundred successive cases of nitrous oxide anesthesia, compared with a similar number of ether anesthesias by the drop method. He says he "found no difference in the course of the anesthesia, nor in the comfort of the patient, but there was a little more bronchial irritation following operation when nitrous oxide-oxygen gas had been used." (Absence of bronchial irritation is one of the strong claims made by those who advise this anesthetic.) The method, he says, he found cumbersome, and, therefore, permanently abandoned it. The only special value that he attributed to it is a "slight advertising value which the method undoubtedly possesses." He then speaks of the addition of oxygen to the nitrous oxide gas, and claims for it the same advertising value as for the other, but "possibly to a somewhat greater degree." He then speaks of some of the disadvantages which it has, and finally concludes as follows: "For some time to come there will be a certain amount of advertising advantage, but as soon as this has been dissipated through the fact that every one will be prepared to administer this form of anesthesia, its drawbacks must become apparent as compared with its advantages."

In Columbus nitrous oxide-oxygen deaths have occurred at the hands of three administrators, all of whom are looked upon by their friends as thoroughly competent specialists. Deaths have occurred to each in frequency just about in proportion to the number of administrations for major operations. Dr. Rice has lost the largest number, but has undoubtedly had more administrations in major work. Dr. Howell, who has made a personal study of nitrous oxide-oxygen anesthesia, and has watched many such administrations at Lakeside, Cleveland, and who has until recently used nitrous oxide-oxygen almost exclusively, tells me that he regards Dr. Rice as the most skillful nitrous oxide-oxygen anesthetist in the State. The anesthetist who had but one death had given this anesthesia in about fifty cases.

We are told by many that while deaths on the table are exceedingly rare from ether, many deaths occur later from pneumonia, which should be charged up to ether. Those who make these statements should certainly read Rovsing[1] (p. 85), who considers this matter briefly but very forcibly: "It is astonishing, moreover, that the misconception that ether has a harmful influence on the pulmonary passages still exists, because in reality the correctness of this view has long since been refuted, both clinically and experimentally. From a clinical point of view it was Mikulicz's report in 1898, which drove the nail home. Mikulicz, on account of the somewhat frequent occurrence of postoperative pneumonia, had deserted ether and taken up chloroform, in the belief that the pneumonia was due to the irritating effect of the ether. To his surprise, however, it appeared that the cases of chloroform narcosis were followed by a still greater percentage of postoperative pneumonia. He, therefore, decided to give up narcosis by inhalation entirely, and thereafter employed local anesthesia in all operations, even the major ones. But, to his yet greater surprise, the result was that the lung complications, far from decreasing, increased to a considerable extent: with 114 laparotomies he had no less than twenty-seven lung complications. Naturally, this experience overthrew the old conception that postoperative cases of pneumonia were 'narcosis pneumonia.' One curious fact should long ago have aroused the surgeon's suspicions; namely, that almost every 'narcosis pneumonia' manifested itself after laparotomy, while it is extremely rare to find pneumonia following operations on the extremities, thorax, and head. To what was this strange occurrence due? Surely, in the main, to two circumstances: (1) That peritoneal infection is conveyed to the lungs partly by way of the lymph vessels and venous blood, and partly by embolism, and (2) that a patient with a laparotomy wound dares not cough or breathe freely, inasmuch as this involves pain in the wound. If, therefore, the patient is already suffering from bronchitis, or if an infection of the lungs sets in, the development of pneumonia is greatly favored by the deficiency in expectoration and lung ventilation.

"It has been proved experimentally with animals —and I myself have substantiated the fact by experiments—that ether does, indeed, occasion increased salivation in the salivary glands of the mouth, but that the air passages—larynx, trachea, and bronchi—are not irritated at all, even when the animals are killed by administering ether through a tracheotomy tube until they are dead. Therefore, the only way in which ether narcosis *per se* can cause pneumonia is by aspiration of accumulated saliva in the throat. This, however, is always due to some technical error in the narcosis, for saliva should not be allowed to accumulate in the throat to any extent. . . . If, therefore, it is proved that the ether fumes do not in any way irritate the main air passages, one should admit that the other assertion must also be wrong. I mean the assertion that ether is contraindicated in patients suffering from lung disease: emphysema, bronchitis, bronchiectasis, abscess of the lung, etc."

I have had ether administered in very many thousands of cases; years ago by use of the old-fashioned cone, then the Allis inhaler, and now for a number of years by some form of the drop method. I have never had a death on the table from its administration. I cannot recall a single death from postoperative pneumonia. I have had two or perhaps three deaths from suppression of the urine. It is possible, perhaps probable, that this suppression was the result of the action of the ether on the kidneys, and yet we all know that deaths from suppression occur in cases in which no anesthetic whatever has been given, and earlier in this paper I have referred to one death in which suppression of the urine followed the administration of nitrous oxide-oxygen.

Nitrous oxide-oxygen has a field of usefulness to which it should be strictly limited. It can be used for very brief operations, as it has been for many years in the extraction of teeth. It is also probably the safest anesthetic to use, as suggested by Ochsner, in cases of acute pulmonary congestion, or of acute nephritis. With these exceptions, which make its field a very limited one, nitrous oxide-oxygen should be looked upon as the most dangerous anesthetic that can be used, even in the hands of the most experienced.

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PELLAGRA—A CRITICAL STUDY.

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Introduction.—The object of the present article is to make a critical survey of the dietary defects responsible for the appearance of pellagra, a mysterious malady which now prevails throughout the Southern states. Such a study is made possible through the information contained in two publications[1,2] recently issued by the United States Public Health Service. Like scurvy and beriberi, attacks of pellagra have generally been regarded with suspicion, because of their insidious, seasonal development, with apparent recovery and persistent recurrence. Fortunately, the data at hand is of such a character that we can bring to bear upon this disorder the modern searchlight of scientific inquiry—which gives promise of arousing widespread interest. This favorable outlook is not dependent upon relief from pellagra alone, nor is it limited to scurvy and beriberi, these disorders being rare in this country. On the contrary, the principles underlying the successful treatment of these diseases by diet alone are universally applicable in all diseases, acute, subacute and chronic, functional and organic, infectious and non-infectious, because in every instance we have to contend with the effects, direct and indirect, immediate and remote, arising from dietary deficiency, evidence, complete and in detail, being supplied in the accompanying tabulations.

Historical References.—In view of the very unsatisfactory results attending the investigations of many learned men, physicians, chemists, and bacteriologists, for the past two hundred years, it would not be profitable to review the long campaign. The recent history of attempts to conquer the malady can be briefly stated. By way of explanation, it should be mentioned that there has always been two sides engaged in the controversy—one party claimed that it resulted from some occult dietary fault, corn meal being blamed, while the other party insisted it must be due to an infection.

Several years ago a commission was organized in London, three experts (physicians) were employed, but in their latest published report they say, "their efforts to discover the essential, pellagra-producing food, or the essential, pellagra-preventing food have not been crowned with success." Substantially the same conclusion faces the Public Health Service, in the attempt to demonstrate the infectious organism, this bacteriological work having been under way now for several years in different places throughout the South. In this connection it should be stated that no claim is set up that the pellagrin is free from bacterial infection—far from it; but there is no specific microorganism by which the disorder may be transferred to man or animals, as is the case with diphtheria, tuberculosis, and other infectious diseases.

Two years ago an entirely new theory was launched, which assumes that this disorder must be due to the "over-milling" of corn, by which process of refinement certain vital elements essential to maintain the activity of the various digestive functions are removed, such, for example, as the polishing of rice.

The United States Public Health Service has recently issued an interesting report on vitamines,[3] showing their efficiency in preventing and curing polyneuritis in pigeons fed on polished rice. In this instance, the vitamine was obtained from brewer's yeast, the source of yeast nuclein, first advocated by Vaughan in 1893. While the evidence in favor of yeast vitamine is decidedly favorable, it remains to be seen whether yeast nuclein will produce equally satisfactory results. Thus, "A pigeon kept on polished rice without the yeast filtrate begins to lose weight usually within the first five days, and dies with the typical paralysis of polyneuritis within about twenty days. If 1 c.c. of the yeast filtrate is given to completely paralyzed pigeons, a relief of the paralysis will occur within an hour, and to all outward appearances the pigeon will be restored to a normal condition within twelve hours." The author also refers to the experimental work of Chamberlin and Vedder (1911), who showed "that the neuritis-preventing substance of extracts of rice polishing is removed by filtering through bone-black."

In this connection it should be added that the polyneuritis and paralysis, as occurring in pigeons from polished rice, are a counterpart of the symptoms witnessed in beriberi. In addition, the writer has frequently traced neuritis to excessive rice eating, but has invariably relieved the condition by reorganizing the dietary together with administration of lime salts.

Another important item relates to the laboratory method of concentrating the yeast filtrate for convenience in administration to humans—by using aluminum silicate to secure adsorption. The daily dose of this latter substance for adults amounts to 5 grams (75 grains), and since Dr. Seidell suggests the employment of vitamines for pellagra, we must bear in mind that both silica and aluminum have been held responsible for this disease.

Preceding the "vitamine" theory several specious theories have been advanced within the past few years, one of which deserves attention, viz., that *silica in the food* eaten and water drunk can produce the disease. The plausibility of this conception seemed at first a deduction fully warranted, when it was shown that guinea-pigs, rabbits, dogs, and monkeys fed upon silica developed the characteristic symptoms recognized as belonging to pellagra. The fallacy of this theory was shown by the writer[4] in a short article in which it was indicated how silica became a factor in experimental work. Thus, pellagra is a disorder characterized by a diminished alkalinity of the blood (acid excess), and as a result of this chemical deviation there follows depletion of the lime salts, magnesium salts taking their place. By or through this substitution there is an excess of magnesium salts in the tissues—then the addition of silica, which has an affinity for magnesium, gives rise to a new combination, magnesium silicate. Like sodium silicate, magnesium silicate shows a tendency to harden when it is cooled, and that accounts for the various "rheumatic" affections which involve principally the smaller joints. The sponsor for silica, Alesendrini, an Italian, had previously written a book to prove that pellagra was an infectious disease, but this he renounced when he took up silica, a marked illustration of the uncertainties attending medical investigations.

Along about this period came another specious theory, namely, that pellagra was caused by *the presence of aluminum* in the food—and that the injurious effects arising therefrom might be counteracted by adding fresh animal meat to the dietary, an amusing and ridiculous suggestion to the confirmed vegetarian. The fallacy of this

theory will be appreciated by recalling the objections offered to silica as the causative factor—the latter has an affinity for magnesium and aluminum has a double affinity for silica. This accounts for the pellagra symptoms produced by either silica or aluminum in laboratory work, when employed experimentally in animals, usually in massive doses, to study the effects, physical and physiological. Such experiments in this instance have no practical bearing upon the case, since neither silica nor aluminum are taken into the system with our daily food or otherwise in such quantities as would or could produce the characteristic symptoms of the disease.

About a year ago, a thoughtful and industrious Italian, Dr. A. Cencelli, published an incisive paper[5] giving an account of his efforts to counteract the injurious effects of silica in the drinking water. Small pieces of lime were placed in the pipes and reservoirs, and the treatment was applied not only to animals in which the disease had been induced, but also to human beings who had been suffering from pellagra for longer or shorter periods of time, and "the results were in the highest degree satisfactory. Persons who had been ill for a long time immediately improved and were cured in a relatively short space of time, without any change having been made in their mode of life, surroundings or diet."

Evidently, Dr. Cencelli had overlooked my contribution[6] published more than six years ago, from which the following extract will show my trend of thought at that time: "In the opinion of the writer, the underlying, causative factor is to be found in magnesium infiltration, a pathological condition in which there is a depletion of the lime content of the nuclear proteid, being the counterpart of that which occurs in plant life when magnesium salts in excess cause destruction and death of the protoplasm, since magnesium acts as an insulator, impeding the uninterrupted transmission of nerve impulses."

At the time this paper was written serious complaints had been lodged against all corn products employed throughout the South, and it was shown beyond question that the letting of contracts to the lowest bidder had deluged that section of the country with deteriorated grain, the principal sufferers being the inmates of asylums. Indeed, in several instances, charges were brought against the managers for negligence on the part of attendants—it was assumed that the hands and feet of the victims had been scalded, the skin eruptions being so marked as a result of the disease.

In this connection another quotation may be permitted, as follows: "A significant factor in this connection relates to the normal acidity of corn meal; that is to say, when corn meal of good quality is submitted to the usual chemical tests it shows a relative acidity varying from 13 to 25 per cent. When corn meal of an inferior quality—due to decomposition from various causes—is tested, the acidity is found notably increased, in some cases running as high as 95 per cent."

The questions relating to magnesium infiltration and acidity will be better understood from the analysis of the dietary studies, and need not be taken up at this point, but one more reference should not be omitted. Fifty years ago, a Frenchman, Roussel,[7] published a book, from which the following extracts are copied: "Without dietetic measures, *all remedies fail.* . . . When drugs and good food are simultaneously employed it is to the latter that the curative action belongs; the former simply exercises an adjuvant action and is without proved efficacy, except against secondary changes or accidental complications."

The Public Health Service Reports.—These reports are skeletal in character, and yet they furnish a substantial basis upon which to erect the superstructure—they merely supply the daily bill of fare or menu without any details as the nutrient values of the various food materials. Upon the assumed theory that pellagra is due to a dietary deficiency, lack of protein with a superabundance of starchy food-stuffs, the experimental work was taken up with the understanding that it should be continued for a period of two years. The results proved so favorable that a report was made at the end of the first year, and it is this data which we have under consideration. There were really three operations, one embracing two orphanages situated near Jackson, Miss., another located in the grounds of the State penitentiary, with eleven volunteers, while the third was confined to two wards of the Georgia State Sanitarium, an asylum for the insane, where 72 insane women (36 white and 36 colored), all pellagrins, were placed under treatment. As a result of care in the diet there was but one case developed in the orphanages, and all who had the disorder at time of beginning made complete recovery. Altogether, there were more than two hundred cases under observation—and a point worth noting in this connection is that the history of the disease in both institutions showed that it had been confined exclusively to children between the ages of six and twelve years. This peculiarity is readily susceptible of explanation—up to six years of age the children were provided with milk three times a day, but none allowed after that age. This will partly anticipate the value of diet, more fully elaborated in the analysis. The "Pellagra Squad" was confined to criminals who volunteered to take the diet which was supposed to produce the disease, on condition that they receive a pardon from the Governor of the State.

Only two of the operations are included in this paper, the dietary of the orphanages not being available for tabulation—and the accompanying tables are self-explanatory. Thus, to produce the disease a liberal supply of starchy food-stuffs were given, no meats being allowed; to prevent and cure the disease a dietary was provided which included a half pound of beef daily, along with legumes and little of the starchy food. Each dietary study is preceded by the data furnished by the Public Health Service, the computations being worked out by the writer—to show as a whole and in detail the nutrient value of the dietary selected—and special attention should be directed to the importance of the mineral constituents, a computation not usually included in dietary studies.

Dietary Studies.—The object of a dietary study is to determine with mathematical accuracy the nutrient value of the various foods eaten from day to day, or month to month. Sufficient evidence has accumulated to enable us to determine the minimum demands of the system for rebuilding materials and for fuel, or heat-producing materials, so that it is comparatively easy to make computations for different persons employed at different tasks—and allowance must also be made for the season of the year, less fuel material being required in hot weather than during winter. The minimum demand is based upon the needed repairs, sixty grams (about two ounces) of protein being required for this alone. Starting with this, the demand for

carbohydrate is estimated at four times the amount, while one-fifth of the whole (about two and one half ounces) should be fat. Food materials taken in excess of the above amount (about twelve and one-half ounces), should be in like proportion to maintain good health. Slight variations may be made from time to time, but when long continued the evidences of debility become well marked and may be readily detected by the skilfull physician.

These nutrient elements, protein, fat and carbohydrates all produce heat, while at the same time serving other purposes; thus, the protein of meat or potato produces the same amount, 4.1 per cent. per gram, but the fat eaten produces more than twice as much, 9.3 per cent. per gram, a gram weighing a little over 15 grains, or one-fourth of a teaspoonful. Meats contain both protein and fat, but no carbohydrate, while legumes (potatoes, etc.), and cereals contain all of the elements—in varying proportions.

The computations to determine the amounts of protein, fat and carbohydrate have been made from Atwater's tables[8] which are generally accepted as authoritative, while the percentages of calcium and magnesium are taken from my book,[9] the data having been compiled from the monograph by Sherman, Mettler, and Sinclair,[10] Department of Chemistry, Columbia University, New York.

The amounts of the various food materials are given in the table, together with the computations, and with the exception of the rates for brown gravy are approximately correct. As there was no heading for brown gravy in Atwater's tables, meat stew was substituted as being nearest in point of protein, fat and carbohydrate and the percentages of calcium and magnesium have been omitted, but this omission will not affect the general results. The probability is that brown gravy would affect the caloric value, since the fat content would be greater, but it would not involve the mineral constituents. In addition it should be mentioned that fried mush is rated as corn bread.

Table I—Dietary Study—Experimental Pellagra (Camp Study).

Food Materials	Weight, Lbs.	Protein, Lbs.	Fat, Lbs.	Carbohydrate, Lbs.	Calories	Calcium Oxide, Grains	Magnesium Oxide, Grains
Biscuits	41 81	3 637	1 087	23 120	54,357	61 460	55 580
Corn bread	24 56	1 940	1 154	11 371	29,628	15 472	226 870
Grits (hominy)	27 06	.595	054	4 816	10,076	17 047	250 033
Rice	24 25	679	024	5 917	12,370	20 370	101 850
Fried mush	33 87	2 675	1 591	15 681	40,856	21 338	312 958
Brown gravy	37 81	1 739	1 625	2 079	13,959		
Sweet potatoes	23 62	708	496	9 944	21,905	41 335	31 414
Cabbage	4 25	068	012	238	622	17 255	6 247
Collards	23 75	1 068	142	1 496	5,368	96 425	34 912
Cane syrup	5 94	142	. .	4 116	7,919	147 609	73 189
Sugar	8 75	. .	. .	8 750	16,275		
Totals	255 67	13 251	6 185	87 528	213,335	438 311	1093 044
Food eaten per man per day	3.32						
Food utilized per man per day	1 338	.172 Grams	080 Grams	1 136 Grams	2,770		
		78	36	515	2,766	5 692	14 195

Calories as computed from Atwater's tables, 2,767.

As a result of the "*Camp Dietary*" no less than six of the inmates developed symptoms pertaining to pellagra. At first, there was intestinal irritation (diarrhea), and this was accompanied by lack of appetite, loss of strength and weight. Later, mild nervous symptoms appeared, but it was not until five months after beginning treatment that the "typical" skin eruptions developed.

The "*Asylum Dietary*" is thus described in the report: "A cup of sweet milk, about 7 ounces, is furnished each patient for breakfast and one of buttermilk for both dinner and supper. About half a pound of fresh beef and two to two and one-half ounces of dried field peas or dried beans enter into the daily ration. Oatmeal has almost entirely replaced grits as the breakfast cereal; syrup has been entirely excluded. Corn products, though greatly reduced, have not been entirely eliminated."

The menu for Tuesday, selected for this study, is as follows:

Breakfast.—Grits, sweet milk, sugar, broiled steak, hot rolls, biscuits, coffee.

Dinner.—Beef stew, potatoes, rice, bread, buttermilk.

Supper.—Baked beans, light bread, coffee, sugar, buttermilk.

As the exact amounts of oatmeal, sugar, bread, potatoes and rice are not given, it was assumed that they had one portion, the weight of each being added in the proper column. Thus, the total amount of food eaten for the day is 51.5 oz., or 3.21 lb., two-fifths of which is milk and buttermilk.

Table II—Dietary Study—Georgia State Sanitarium (Asylum). Selected to Prevent and Cure Pellagra.

Food Materials	Quantity	Weight, Oz.	Protein, Lbs.	Fat, Lbs.	Carbohydrate, Lbs.	Calories	Calcium Oxide, Grains	Magnesium Oxide, Grains
(Breakfast)								
Oatmeal	1 portion	6	0105	0018	0431	107	2 047	6 536
Milk	1 cup	7	0144	0174	0218	140	5 267	.551
Sugar	3 teasp.	1	.	.	.0625	116	.	.
Hamburg steak	1 portion	4	0690	0680	.	418	.023	059
Bread	1 portion	1 5	0082	0014	0481	110	.137	124
Coffee		. .	. .	. .	. .	. .	. .	. .
Totals		19 5	1021 Grams	0886 Grams	.1755 Grams	891	7 474	7 270
Food value, each person			46	40	80	888		
(Dinner)								
Beef stew	1 portion	4	0655	0872	.	490	023	059
Potatoes	1 portion	4	0062	0002	.0522	109	280	700
Rice	1 portion	4	0040	0002	.0610	121	210	1 050
Bread	1 portion	1 5	0082	0014	0482	110	137	124
Buttermilk	1 cup	7	0131	0021	0210	72	5 267	551
Totals		20 5	0970 Grams	0911 Grams	1824 Grams	902	5 917	2 484
Food value, each person			44	41	82	901		
(Supper)								
Baked beans	1 portion	2	0086	0031	.0245	74	1 881	2 205
Light bread	1 portion	1 5	0082	.0014	0482	110	137	124
Coffee		. .	. .	. .	. .	. .	. .	. .
Sugar	3 teasp.	1	. .	. .	.0625	116	. .	. .
Buttermilk	1 cup	7	0031	0021	.0210	72	5 267	551
Totals		11.5	0299 Grams	0066 Grams	1562 Grams	372	7 285	2 880
Food value, each person			13	3	70	367		

Summary.

Breakfast		19 5	46	40	80	888	7 474	7 270
Dinner		20 5	44	41	82	902	5 917	2 484
Supper		11.5	13	3	70	372	7 285	2 880
Totals		51.5	103 Grams	84 Grams	232 Grams	2162	20 676	12 634
Food value, each person (lbs. 3.21)		. . .	103 Lbs.	84 Lbs.	232 Lbs.	2154	20 676	12 634
Food utilized, lbs.		.929	.2290	.1863	.5139	2151	20 676	12 634

Table No. III, "Comparison of Dietary Values," has been added for the purpose of showing the "one-sided" character of the dietary selected instead of a "balanced ration"—it shows at a glance just how the two dietaries could be readjusted to meet the normal demands of the system.

Analysis of the Tabulations.—By comparison and contrast we may arrive at definite conclusions, at least from a mathematical viewpoint, but there are physiological and chemical questions to be brought into consideration. For example, it is easy to make the calculation and find that each dietary carries

about two pounds a day more than is utilized; that the protein content of the "Camp Dietary" is 30 per cent. above the minimum, while the protein content of the "Asylum Dietary" is 70 per cent. above the minimum; that both dietaries were lacking in the fat content of a "balanced ration"; that the "Camp Dietary" had a surplus of carbohydrate of about 200 grams while the "Asylum Dietary" had a deficiency of like amount. Most important, however, is the notable discrepancy in the mineral content—the "Camp Dietary" contains about two and one-half times as much magnesium as lime, while the lime content of the "Asylum Dietary" is one and one-half times the magnesium content. Now comes the question as to which has the greater influence, the discrepancy in the fat and carbohydrate, or the reversal in the proportions of the calcium and magnesium? Vegetarians live a normal life without fat, animal fat, so that question is settled. Hard working men will consume food which produces twice as many heat units (calories), as these men in the camp, who worked four and a half days per week, enjoy life and apparently suffer no bad effects from the increased intake of carbohydrates. Again, the absence of carbohydrate from the dietary is not at all serious, as shown by the freedom of the asylum inmates from recurrences of the disease, several of whom had experienced two or more attacks. Further, there were more than 72 patients under treatment at the beginning of the course, but some of them so far recovered under the treatment that they were permitted to go to their homes. It is doubtful if the excess of protein in the "Asylum Dietary" could have exercised such a marked change, since the "Camp Dietary" contained 30 per cent. above the minimum requirement.

Table III—Comparison of Dietary Values.

	Actual Ration				"Balanced Ration"			
	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories
Camp dietary	78	36	515	2766	78	97	312	2501
Asylum dietary	103	84	232	2154	103	128	412	3301

This leaves for consideration the function of mineral constituents, but that harks back to the protein element in the dietary. It is not an accumulation of fat which gives a man mental ability and physical strength; nor can either be claimed for carbohydrate. Hence, the necessity for interrogating nature.

In the "Asylum Dietary" nearly 16 of the 20 grains of lime were derived from the milk and buttermilk, while the magnesium came chiefly from oatmeal, rice and baked beans—in fact, when a child gets 7 ounces of sweet milk and 6 ounces of oatmeal, the mineral balance is in favor of lime by more than one grain. But a child twelve months of age will take a quart of milk a day and thrive on it—by which he gets about 24 grains of lime daily.

Now, let us examine the "Camp Dietary"—the lime was derived principally from biscuits, sweet potatoes, collards and cane syrup, while the magnesium content came from corn products almost exclusively—with the rice content, it make up nine-tenths of the whole. Had it not been for the cane syrup the "pellagra symptoms" would have appeared much earlier and shown greater severity. Then, if we add to this a decomposed or deteriorated corn preparation with an excessive relative acidity, we have a fairly complete picture of the conditions which precipitated this malady in the first place and kept it alive for two centuries.

In the usual dietary of the ordinary home in this country, Langworthy has calculated that the average intake of calcium ranges from 10.5 to 15 grains daily, the magnesium content being estimated at half this amount—and this apparently accounts for the prevention of the recurrence of the disease in the two wards of the Georgia State Sanitarium.

Deductions from the Evidence.—The general reader must concede that we have a pretty good case, but the evidence is not all in. For example, as soon as the camp subjects began to suffer from intestinal irritation, an examination of the blood would have shown that they were suffering from calcium depletion incident to the acid excess; that the normal alkalinity of the blood was diminished, interfering with its oxygen-carrying capacity; that the heart action was enfeebled as a result of the chemical deviation; and finally, that nerve conduction was impaired—in consequence of the calcium depletion and in the coincident substitution of magnesium. It is precisely on the same principle that a farmer would not permit the use of lime on his land where it contained a large percentage of magnesium, because he knows that such a combination would be fatal to his crops.

The essential factor in the production of pellagra, scurvy and beriberi, and in fact, all chronic diseases, is the mineral deficiency in the protein molecule. The protoplasmic cell is the unity of which the body is made up, just as the bricks are the unit in a solid brick wall, except that these cells are living organisms, possessing all the characteristics and properties of life, nutrition (absorption), excretion, motility, reproduction and response to stimuli, and to this should be added the psychic. These cells are made up of the food taken into the system; they are composed of molecules—of fat, carbohydrate and protein molecules, and the functional activity and physical energies of the protoplasm are dependent upon the proper distribution of the mineral salts, not in the fat and carbohydrate molecules, but in the protein molecules. It is the protein molecule which enables the protoplasm to perform its special or specific functions in muscular tissue, kidney structure, in the liver, the lungs, the brain, the reproductive organs, and finally, maintains correlation with all the organs through the medium of the nervous system. When illness supervenes, there is at once an acidity, or diminished alkalinity of the blood, and lime being a stronger base than the others, this substance combines with the acid and is eliminated. Thus, a person living on crackers and water for three days will lose more lime than the intake—and he will begin to lose it during the first day of the experiment, all of which goes to confirm my contention that calcium depletion is responsible for pellagra.

Bacterial Infection.—This claim is further confirmed by a study of bacterial infection. Under normal conditions it is the protein molecule which enables us to ward off disease, by maintaining an antiseptic condition of the blood; by promoting or favoring the production of bacteriolysins, substances which dissolve the bacteria; by the production of poisons (bactericides), which kill the invading hosts of bacteria; by augmenting and

strengthening the functional activity and physical energies of the phagocytes, which surround and digest the bacteria when found in the blood stream and in the tissues, this peculiar feature of defense being regulated by chemotaxis. In none of the conditions can we depend upon nature when the blood and lymph and tissues are surcharged with magnesium salts, because bacteriologists have shown time and again that when the blood is charged, surcharged, with a considerable percentage of magnesium sulphate (Epsom salts), it loses its bactericidal properties.

On the other hand, the presence of magnesium salts in excess seems to favor the growth and multiplication of bacteria, the constitution of which is substantially the same as the protoplasm, simply because magnesium salts in excess are debilitating —as in the case when they are substituted for the calcium salts in the body tissues, their function is impaired. Normal nucleoproteins are converted into magnesium nucleoproteins and these latter lack the property of imbibition (absorption), and this explains why the wise farmer refuses to put lime salts surcharged with magnesium on the soil; he knows that the tiny rootlets will shrivel up, turn black and die and that his crop will be a failure—and such is substantially the picture we see when the searchlight of scientific inquiry is thrown on the disease known as pellagra.

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THE DRUG HABIT.

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So much has been recently written on this subject, and so many different views of it have been taken by the different writers, that it would seem that we owe an apology for writing the present article.

We are, however, convinced that this subject as herein discussed will be of interest to all who read its contents. As physicians to the City Prison (Tombs), Manhattan, it has been our opportunity to come in contact with and treat approximately twelve thousand cases within the last twelve years. This is a conservative estimate. We have observed and studied people so addicted, and we have instituted a definite treatment, which has proved effective. The drugs most often used are opium and its derivatives and cocaine.

Opium is the concrete milky exudation obtained in Asia Minor from the unripe capsules of *papaver somniferum*, by incision and spontaneous evaporation. It is usually put on the market in subglobular, flattened, irregular cakes, chestnut brown or somewhat darker in color. The mass is plastic, but on keeping a harder external crust is formed. The cakes weigh from 4 ounces to 2 pounds. Opium has a heavy, sweetish odor and a disagreeable bitter taste. At present the use of this drug by addicts is restricted, owing to the increase in price. This fact has resulted in causing opium users to resort to heroin, the latter being more readily procured. Opium smokers may be divided into two classes: (1) Pleasure smokers; (2) Fiends. The pleasure smokers are usually found among the well-to-do and business men, actors and actresses, and the sporting element. They smoke only occasionally and are not confirmed addicts. On the other hand, the fiend is one who practically lives in the opium dens. Such people lose all ambition and simply smoke and sleep.

Pleasure smokers usually are possessed of most elaborate layouts. They have costly jeweled pipes and dens fitted accordingly. The fiend usually craves to smoke in company and is not very particular in choosing his company. Usually men and women smoke together. A mattress is placed on the floor. The man who prepares the opium lies down, the second smoker places his head upon the abdomen of the first; the third will assume a similar position, and so on with the others, forming a circle. The man who prepares the pill then takes the yen hok, which is shaped somewhat like a probe, having one pointed end. He places a small piece of opium on the point of the yen hok and heats it over a tiny flame of a small lamp, used for that particular purpose. The lamp is filled with an oil which will not smoke when burned. This prevents spoiling of the flavor. It requires an expert to cook the pill. When the mass is heated, it softens and is then shied. By this is meant the stringing or pulling of the mass. The shied mass is again rolled on the yen hok and heated. Next, the bowl of the pipe is heated and the warm mass quickly applied around a small opening of said bowl. The smoker quickly draws on the pipe. Only one or two pulls may be taken from a pill. The bowl must be kept warm. When all are smoking, the group resembles a wheel, with the pipes as the spokes.

After smoking, a cake is found in the pipe which is dark brown in color and brittle in consistency. This mass is known as yen shi or opium ashes. It is bitter in taste and has a peculiar sweetish, sickening odor. It is eaten by some addicts and is also used by the Chinese to flavor raw opium. Morphine is derived from opium and heroin is obtained from morphine. Addicts of opium and its derivatives use the drug only for its effect upon the nervous system.

Briefly the action is as follows: Opium stimulates the intellect, imagination, associations, all of pleasurable character. The reality of life in its sterner phases, is viewed and interpreted from an illusive standpoint, creating a subjective and objective reality where cares and sorrows are submerged, a self-contentment, a mental utopia—in other words, the euphoria of the poppy. This is followed by a dreamy state, due to suppression of external

stimuli, resulting in sleep. The subject has fantastic dreams, often of an impossible nature. The sleep is deep and the person is not easily aroused. The pupils are contracted and react very suggishly to light and accommodation. After a person has taken the drug for years, there may not be a contracted, pin-point pupil. The muscles seem to become inactive and do not react to the drug any longer. For this reason, the pupillary condition is not a reliable diagnostic sign in older cases. All other reflexes are first stimulated and then depressed. After the cessation of the action the individual is dull, restless, and unable to concentrate his thoughts. Such individuals lose all ambition. Perversion of the moral sense is a marked symptom. Delusions may occur and some prisoners show marked hallucinatory excitement. The reflexes are exaggerated, due to the removal of the depressant action of the drug upon the spinal cord. The action of morphine and heroin is similar to that of opium, but greater in degree. This is particularly true of heroin. This latter drug is several times as powerful as morphine. The chemical name of heroin is morphine diacetic ester.

Cocaine is a white crystalline powder, inodorous, which has a slight acid reaction and is bitter in taste. When placed on the tongue, it produces a tingling sensation, which is followed by numbness. Cocaine hydrochloride is derived from *Erythroxylon coca*. Its action on the nervous system differs from that of morphine. This drug stimulates all the mental faculties and produces a great increase of bodily power. As in the case of morphine, all external occurrences are ignored. All care and sorrow are forgotten and the person is supremely happy. Cocaine, however, does not stimulate the imagination as much as does morphine, nor is there any tendency to sleep. On the contrary, cocaine causes insomnia. One habitué told us that it was a common occurrence for him to go without sleep for seventy-two hours after taking cocaine. At the end of that time he was practically in a condition of collapse. The stimulating effect of cocaine is followed by physical and mental exhaustion, enfeeblement of the intellect, and headaches. Cocaine acts upon the sympathetic and causes a dilatation of the pupils. Habitués, when in need of the drug frequently complain of a feeling of foreign bodies crawling under the skin. As regards the reflexes, these are increased or exaggerated during the period of stimulation. When the action of the drug ceases, a decrease in reflex activity is noticeable. The pupils react to light.

The pathological changes resulting from these drugs are worthy of mention.

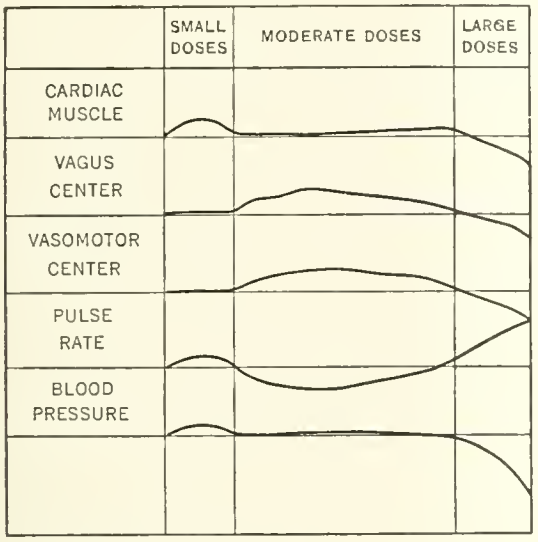
Gastrointestinal system.—As is well known, opium causes a decrease of all secretions excepting the sweat. It may readily be assumed that a continuation of such action for any prolonged period will result in atrophy of the gastrointestinal glands. Opium also decreases peristalsis, thereby causing constipation. Taking both the decrease in secretion and interference with peristalsis into consideration, it is obvious that absorption and assimilation are interfered with and that stagnation occurs. Consequently toxic substances are absorbed, giving rise to headaches, dizziness, and dulled mentality. People addicted to opium and its derivatives usually eat less than normal individuals. Opium appeases hunger. This, of course, is a factor to be remembered when we consider the great loss of weight that occurs in fiends. We have noticed that yen shi chewers lose weight more rapidly than opium smokers. This is also true of morphine and heroin fiends, particularly of individuals addicted to the latter, said drug being several times more powerful than morphine.

Respiratory system.—Narcotic addicts at the present period prefer to administer heroin and cocaine by sniffing. This method of administration leads to definite pathological changes in the nose, often resulting in perforation of the nasal septum at the union of the cartilaginous and bony portion. Upon beginning to sniff either cocaine or heroin, the nose feels clogged up when the effect of the drug wears off. The action of the drug when administerd by sniffing produces a sensation of numbness and coldness. This is due to the shrinking or temporary constriction of the blood-vessels of the nasal mucosa. Therefore, when the action of the drug wears off, there is a dilatation of the blood-vessels and swelling of the mucosa, resulting in clogging the nose. In order to feel relieved, the fiend takes another sniff. Later, there is no swelling after the action of the drug wears off. The mucosa becomes anemic and an ulceration forms at the union of the bony and cartilaginous septum. Continuation of sniffing eventually leads to perforation. We have seen several cases where complete destruction of the cartilaginous septum has occurred, with resultant caving in and deformation of the nose, somewhat resembling the saddle nose of syphilitics. Cocaine will produce a perforation in one year's time. A combination of cocaine and heroin will produce a perforation in less time. Heroin will produce a perforation when used for several years.

It is also noticed, as a rule, that drug fiends suffer from bronchitis. It is safe to say that at least three-quarters of all the drug fiends who have come under our observation and treatment have presented this condition. The explanation thereof is as follows: When morphine or heroin is taken, in physiological, or rather therapeutic, doses, the action is to depress the sensibility of the respiratory tract to reflex stimulation and to diminish the amount of bronchial secretion. The old law that over-stimulation results in depression is true in this instance. When a person takes these drugs continually for a long period, the above-mentioned action ceases. Consequently the drug acts as an irritant to the respiratory system, resulting in bronchitis with abundant expectoration. It is a well-known fact that fiends usually die of either tuberculosis or acute cardiac dilatation. We know that opium and its derivatives in large doses slow the respirations to four and six per minute. It is evident that a continuation of the administration of large doses of the drug can have only one effect, viz., weakening of the lung tissue. The amount of air taken in is diminished. The CO_2 of the blood therefore rises; CO_2 is a poison and results in diminishing the resistance. Taking into consideration the fact that fiends are usually neglectful of all else but the procuring of the drug, in consequence not eating regularly, etc., it is evident that they are more prone to tuberculosis than others.

Circulatory system.—The following diagram taken from Sollman's textbook of Pharmacology is illustrative of the action of the opium group on circulation. The late Prof. John H. Ripley used the official solution of morphine in attacks of diphtheritic paralysis of the heart. This restored the action of the heart to a great extent.

From the following diagram it is easy to see what large doses accomplish. A continuation of the administration of large doses can have only obvious results upon the circulatory system. Large doses result in paralysis of the heart muscle. When a fiend is deprived of the drug and suffers severe withdrawal symptoms (*vide infra*), he may die suddenly from an acute dilatation.



Genitourinary system.—Morphine is eliminated in the urine in the form of morphine-glycuronic acid. We have noted in several cases that there was a suppression of urine. Usually, however, no marked pathological symptoms referable to this tract occur.

Generative symptoms.—The action of the opium group on the system is marked. In males taking the drug the general rule is a loss of sexual desire. An erection may occur, but there is not much sexual inclination. If sexual intercourse is attempted, the act is usually futile, and where emission of semen does occur, it is usually accomplished after several hours' effort. When the drug is withdrawn, the sexual desire often becomes intense. People addicted to the drugs, upon withdrawal of same, have nocturnal emissions, and these are sometimes so frequent as greatly to weaken the individuals. Women are usually more strongly affected than are men. They also suffer from nocturnal emissions. One woman begged for bromides to quiet her, stating that she could not keep her hands from herself. Cocaine habitués are usually sexual perverts, and in them the sexual desire is extreme. In females when taking the drug (opium and its derivatives) habitually there usually occurs a cessation of menstruation. We have known women to give a history of cessation extending over years. The menses usually return when treatment is begun, and are sometimes very profuse and attended with severe abdominal and lumbar pains. What is the effect of addiction upon pregnancy? The following facts have been ascertained from the histories obtained of prisoners coming under our observation. Where both mother and father are addicts and under the influence of the drug, sexual intercourse is without result. Where both are temporarily off the drug and are sexually excited, impregnation may occur. If both return to the drug, one of two things may happen: (*a*) miscarriage; (*b*) birth of a child which may be dead or else if it lives, is of a weakened constitution. The addicted mother should not nurse the child. If she does the child will become addicted through the milk. We have the history of a case where a child, eight months of age gave all the symptoms of drug addiction. It seems that heroin does not decrease the secretion of milk as much as does morphine. So long as the mother took heroin the amount of milk secreted was plentiful, but as soon as morphine was taken the amount secreted diminished rapidly. We have failed to find reference to sexual changes in the literature treating with drug addiction. The effect upon the generative organs we believe to be of evident importance.

Mentality.—Drug fiends as a rule are neurotics. The psychoses noted in addicts are often similar to those seen in alcoholics. In the latter, the characteristic features are delusions of marital infidelity and of persecution. The following cases will illustrate this point:

People vs. C. H. C. H. was a woman and a confirmed addict. While under the influence of opium she killed her husband, whom she accused of marital infidelity. These delusions were also present while she was in the Tombs. She was sent to Matteawan, and is there at the present time. This woman showed marked sexual hyperesthesia and begged for bromides to quiet her passion. After killing her husband she attempted suicide while suffering from the above-mentioned delusions.

People vs. N. C. N. C. was also a confirmed addict. He also had delusions of marital infidelity. While in the Tombs these delusions were inhibited as far as could be ascertained, by talking with the man. However, our attention was called to these delusions by letters written to his wife by him, said letters being referred to us. These showed the trend of his delusions. In fact, all these accusations were written by the prisoner in red ink, whereas the other part of the letter was written in black ink.

Several of our cases showed marked delusions of persecution. One prisoner in particular became very violent and required several hypodermic injections of morphine to quiet him.

Are all drug addicts of lowered mentality? Absolutely not. It is true that opium and its derivatives dull the mentality. However, all addicts are not placed in the same position socially, nor are all addicts fiends (*vide supra*). The addict who has plenty of money and many friends, and in consequence better social surroundings, cannot be compared to the fiend who hangs out in the dens and just lives to smoke. The first mentioned are usually well nourished and take just enough of the drug to satisfy them. The latter are never satisfied. If any mental defectives are to be found they are found in the latter class. Obviously, immediately after awakening from sleep produced by opium, the mentality is clouded, but this soon wears off. Krafft-Ebing, in speaking of the action of poisons on the mentality, says: "Morphine never injures so profoundly the psychic organ as alcohol does, but I have never seen a morphine addict who was psychically intact. Intelligence it is true, is practically spared, character and ethical feeling, the highest mental functions, also mental energy and force always suffer. The fully developed morphinist is an individual weak in character and will, and without energy, who would receive under criminal prosecution, the benefit of the extenuating circumstances, and who in the care of his interests and duties should always be given help."

In a letter written to the Hon. John J. Freschi, then a magistrate (September 19, 1912) on the subject relating to a proposed amendment of the section in the Inebriate bill with reference to the disposition of drug addicts the above-mentioned state-

ment of Krafft-Ebing was included. We must, however, differ from the author when he states that he never has seen an addict that was psychically intact. Our experience teaches us differently. Mental energy and force may suffer in fiends, but to say that this is also true of addicts who smoke for pleasure is contrary to our experience.

In discussing the mentality of addicts we must not forget to mention that these individuals are unbelievable. Former Deputy Commissioner Wright describes a man who was brought to his notice by the warden. The prisoner was accused of trying to procure drugs from outside sources. When questioned he swore he never had used drugs and in fact did not know what heroin and morphine looked like. The man was searched, and in the seams of his trousers was found concealed a deck containing enough heroin to satisfy his craving for several days.

Drug addicts may be dulled mentally in some instances, but when the problem is one of obtaining the drug, these people are the cleverest and most cunning of all people. As is well known, it is almost impossible to smuggle opium or its derivatives into the Tombs. In spite of all precautions, some does get through. Some of the attempts made are as follows: On one occasion two books were sent to an addict; the keeper searching the packages examined the pages from cover to cover and could find no signs of drugs. Deputy Commissioner William J. Wright happened to be in the building and saw the books. He picked one up and noticed a white powder on the desk. He then searched the book but could find nothing. Taking out his pocket knife he ripped up the binding of the books and discovered a package of heroin concealed in each. On another occasion a woman came to visit a drug user. She was searched by the matron, all her clothes being stripped from her. Nothing could be found. And handing the woman her hat, the matron noticed the rubber end of a pen filler on the end of the hat pin, the same having been concealed beneath the plumes. This contrivance, when examined, proved to contain a large dose of morphine.

On still another occasion a woman was arrested, charged with having drugs in her possession. When searched, no drugs were found. She was then turned over to the doctor, who upon vaginal examination discovered a case containing an entire hypodermic outfit, including several tubes of morphine tablets. On many occasions drugs have been found concealed in the vagina. On others we have found condoms full of heroin or morphine concealed in the vagina, and on one occasion a finger cot with morphine in the rectum, with a string attached, protruding from the anus.

Another mode of smuggling the drug is in food. Oranges have been sent to users of the drug which upon examination proved to be loaded with a solution of morphine. The drug had been injected by means of a hypodermic. One addict attempted to send the drug into the prison in a can of condensed milk. We have in our possession two packages of cigarettes, which are loaded with morphine tablets.

Finally, in speaking of the effect upon the mentality, we must not forget to mention the yin yen. By this is meant the periodical craving for the drug. This, of course, is purely a psychic phenomenon, and is most often noticed in individuals when they are "getting off" the drug. At such times they will beg piteously for the drug.

Other changes produced by the opium group.—It has come to our notice and has been demonstrated to other physicians by us that many of the women habituées present a wonderful growth of hair. On one occasion a prominent physician visited the Tombs and while discussing this subject said physician seemed sceptical as to this fact. We took him to the female prison and had two addicts brought out, who let down their hair and dispelled all doubt as to our statements. It is no exaggeration to state that these women each had hair which extended to the calves of the legs. Not alone was their hair long, but thick and oily. We can think of only one explanation of this fact. As is well known, opium and its derivatives decrease all secretions excepting the sweat. The sweat glands are stimulated. Histology of the scalp teaches us that numerous sweat glands are distributed to the scalp and the roots of the hair. Opium and its derivatives by stimulating the glands increase the moisture of the scalp, thus causing a greater growth of hair. It is purely a nutritive process.

Hypodermic fiends at times present frightful skin lesions. The body appears to be covered with a rash, due to the use of the needle. At other times abscesses are noticed, filled with foul pus. Fiends do not sterilize the skin and needle before injection, and in most cases inject the liquid through the clothes. In the Tombs, the fiend manufactures his own hypodermic. The rubber portion of a fountain pen filler is attached to a hypodermic needle. This makes a very serviceable syringe. The fiend passes the syringe to the others on the tier. I have known syphilis to have been transmitted to four individuals by this means.

Drug addicts, when unable to obtain the drug, suffer severely, as in the withdrawal stage. We usually find them lying in bed and yawning very frequently. Lacrymation and running of the nose are invariable signs. Sometimes the individuals cannot stop sneezing. They seem to be itching all over, and are continually rubbing the arms and legs. In some of the severer cases the patients vomit and are affected with diarrhea, which is at times bloody. The body is covered with a clammy perspiration. The pupils are dilated and react sluggishly to accommodation and light. The patient may be unable to void urine. Women often have profuse menstrual discharges and severe abdominal pains. Abdominal pains are also present in the men. The pulse varies between 100 and 140, is of low tension, and sometimes irregular. Insomnia is present in all cases. In both males and females sexual excitement may be intense, and nocturnal emissions may occur. Some patients present delusions and hallucinations. The reflexes are all exaggerated excepting the pupillary.

Cocaine fiends show no withdrawal symptoms. Opium smokers seldom show any withdrawal symptoms excepting the yin yen. The withdrawal symptoms are usually noticed only in morphine and heroin addicts.

In cocaine fiends the following are usually noticed: loss of weight, mental fogging, exhaustion, insomnia, spasmodic contractures of muscles of the extremities and acceleration of pulse. These individuals are usually anemic, have a dry, sallow skin, and a peculiar glistening look in the eyes. The withdrawal symptoms in one who has used both cocaine and heroin are more severe than in one who has used heroin only. The combination of cocaine and heroin is very destructive as regards both the

physical and the mental condition of the individual.

How is the habit acquired? From the histories of the prisoners we have ascertained the following: Very few drug fiends traced their addiction to physicians' prescriptions. In fact it is a rare occurrence for us to obtain such a statement. Those who do give such a history are most often women who have suffered from tubal disease or severe burns and cancer. Among men giving such a history the majority are affected with locomotor-ataxia or cancer. The majority of prisoners, however blame their addiction to friends. Drug addiction has become so prevalent that there is scarcely a poolroom or saloon that may not be termed a drug fiend's "hang out." The profit reaped by dealers in narcotics is so enormous as to warrant certain conspiring individuals to chance arrest. Almost always, the addict is fooled. When he buys a deck "60-grain powder," he is sure to receive three-fourths sugar of milk. Janitors, cabdrivers, and bartenders have become agents, for certain individuals have found that drug selling is a very profitable business. These men are known as go-betweens.

Some people take the drug for insomnia. This is particularly true of nurses and physicians. Such cases have come under our observation and treatment. Others take the drug to ward off sorrow and care, while some are compelled to take the drug because of the severe pains caused by locomotor ataxia, cancer, etc.

It is a noticeable fact that most of the addicts coming under our treatment are young indivduals. It is not uncommon to find boys and girls sixteen and eighteen years of age who give a history of having taken the drug for two years. We have treated one child, who became a confirmed drug fiend through the mother's milk.

Concerning addiction among the different races, we have ascertained the following:

Yellow race: Compared to all other races arrested for various crimes, the Chinese are probably the fewest of criminals. However, those who are arrested are for the most part addicts. The particular drug used is always opium and its ashes, yen shi. We have never seen a Chinese hypodermic fiend or sniffer.

White race: Next to the yellow race in the proportion of prisoners is the white race. These are chiefly Hebrews and Italians. The former compose from 30 to 50 per cent. of the addicts, the latter from 20 to 30 per cent. The remainder are chiefly Irish. The drugs used by the white race are heroin, morphine, opium, and cocaine, in order of frequency. From 80 to 90 per cent. use heroin.

Black race: Prisoners of this race are mainly addicts of heroin, cocaine, and opium smoking, in order of frequency. It is rare to see a colored hypodermic fiend. Down south the negro is addicted mostly to cocaine.

As to the occupation of individuals addicted to drugs, we have ascertained that none of the habitués are engaged in what may be termed laborious work. The occupations given among them are actors, clerks, chauffeurs, artists, and song-writers. Among the females we find solicitors, actresses, nurses, and stenographers.

As regards nationalities, we must state that it is rare to see a foreigner, with the exception of the French, who takes the drug. By foreigners we refer to those individuals who have been in this country but a short while. We have, however, treated several Syrians and Greeks. Most of the addicts are American born, or have been in this country for years.

As regards social standing, it may be stated that addiction exists among all classes. Individuals from Fifth Avenue often mingle with those of the Bowery, and when under the influence of the drug are on the same moral and mental plane as are the fiends of the underworld.

In conclusion we wish to state that we do not desire to discuss any particular form of treatment. We wish to state most emphatically, however, that having taken the physiological action and pathological changes incurred by the drug into consideration, we are compelled to state that we do not sanction any treatment that employs depressant drugs, to gain what is commonly advertised as a cure. The individual may be taken off the drug by any of the advertised methods, but at what cost? The treatment sometimes acts like a torch applied to a barrel of gunpowder. If the patient before being treated, has a slight tuberculous focus, he is sure to have an extensive one following some of the widely advertised treatments. If he has a latent nephritis, this is certain to become a very active disease. If a cardiac condition with compensation exists before treatment, the individual may die during the treatment, and if not, is left with an incompetency following the "cure." Such individuals when dismissed and turned onto the street in their weakened condition, will follow the line of least resistance, *i.e.* they will go to the first place they can reach to get some "dope" to strengthen themselves with. The treatment we have employed consists in rapid reduction, accompanied by supportive treatment. In all our experience we have never had a single death and have never had a patient who did not gain some weight. In fact, we have had patients who gained from 40 to 50 pounds in two months' time, this period including the actual treatment and after-care. We wish to state most emphatically that one cannot cure a drug fiend in two weeks or in two months. All one can hope to accomplish is to take him off the drug. Following the treatment, the patient should be sent to a farm or some institution, outside of the city where he will be away from bad company and from sources where he may obtain the drug. He should stay away for a period of from six months to one year. This is the only method that can lead to permanent and good results.

We advocate that the following facts be ascertained before actual treatment is begun: (1) Physical condition of the individual. (2) Kind of drug used by the individual. (3) Daily amount taken. (4) Social condition.

No physician should be allowed to treat a patient outside of a sanatorium or hospital. The so-called reduction cures given by physicians, allowing the fiend to work and attend to all business, permitting contact with evil associates, are of no value and should be prohibited by law.

The reduction treatment is the oldest and in our opinion the best treatment. The Chinese have employed a reduction treatment for many years. This consists of two bottles containing red coated pills. One bottle contains opium pills and the other are plain pills. The Chinaman is told how many to begin with and gradually reduces the amount until "off the drug." This treatment is not carried out in a sanatorium, and therefore very good results have not resulted. Osler, in speaking of the treatment of drug addicts, states: "Isolation, systematic feeding,

and gradual withdrawal of the drug, are the essential elements. As a rule the patient must be under control in an institution, and should be in bed for the first ten days. It is best in a majority of cases to reduce the morphine gradually. Usually within a week or ten days the opium may be entirely withdrawn. In all cases the pulse should be carefully watched and if feeble, stimulants should be given. It is essential in the treatment of a case to be certain that the patient has no means of obtaining morphine."

In connection with the last statement we refer our readers to the early part of the article. When drug fiends enter the Tombs every bit of clothing is taken from them and thoroughly searched. All mail, clothing, and food are thoroughly searched. Female addicts are in addition given a vaginal examination by the physician.

Forchheimer (Prophylaxis and Treatment of Internal Diseases) states: "In order that the best results be obtained the patient must be confined to bed and have a trustworthy attendant. Where the conditions are proper, the patient may undergo the weaning from morphine at home. This is not a favorable way. For even in hospitals and institutions the patient frequently circumvents all precautions taken to prevent his obtaining morphine. A morphinomaniac has lost his moral sense; he can never be believed, and besides, on account of the suffering attending the withdrawal of the drug, he will try to get morphine at any cost, using all his ingenuity to this end in the most unscrupulous manner. Before he enters the room in which he is to be treated, he should be carefully examined. Closets, bed clothing, indeed every nook and corner; the patient himself must be stripped and all his belongings searched for morphine."

This author also advocates the reduction treatment, the patient being under constant observation.

Among others recommending the reduction treatment are Dieulafoy and Strümpel. Almost every textbook on medicine recommends this method.

Being in the city employ we have frequently been asked for recommendations as to methods advocated for curbing the drug habit. We cite the following and hope that our recommendations will receive the earnest attention of our readers.

It is an evident fact that a State law will never in any way curb the drug habit. The Boylan law is a failure in this respect. People who want the drug simply go to New Jersey or Connecticut and obtain as much of a supply as is desired. At present a State law is being recommended, and we venture to state that it will meet with just as much success as did the Boylan law. The Harrison law has also proved a failure. Unscrupulous physicians have added greatly to their material interests while strictly adhering to this law. The law is full of loopholes. The one dollar tax imposed on physicians practically places us on a level with saloonkeepers. The imposing of such a tax does not act as a deterrent upon drug addiction. If a proper Federal law be enacted we will be doing something to curb the drug evil. We believe the following would be such a law: 1. All narcotic drugs and their derivatives coming into the United States to be placed under the supervision of the United States Public Health Service. 2. The United States Public Health Service is to sell or dispense of these drugs to the State Health Service of each State, record to be kept of same. 3. The State Health Service is to sell or dispense of the drugs to the Board of Health of each city, record being kept of same. 4. The Board of Health to have stations in each district, open day and night, at which places physicians and druggists may obtain the drugs, a record being kept of same. 5. The establishment of dispensaries or receiving stations, where addicts may apply for treatment without fear of arrest and from which place they may be sent to certain designated hospitals to take the treatment. 6. The establishment of farms to which these addicts may be sent after being taken off the drug, and where they can remain for at least six months. 7. To make it a criminal offense for physicians to treat patients outside of a sanatorium or while at large, without constant watching.

The Hon. Katherine B. Davis, also the Hon. Burdette G. Lewis and the Hon. David Kelly have tried their utmost to establish farms for drug fiends, and have been successful in obtaining a farm at Warwick.

What is the percentage of addiction in the Tombs? Undoubtedly our statement will cause surprise in view of the fact that so many hysterical statements have recently been made and published. Those actually giving a history of addiction and requiring treatment comprise 5 per cent. of the inmates. This is a liberal percentage. We do not count those as addicts who are arrested for selling the drug or those who have taken the drug on one or two occasions, but have never made a habit of it. Two years ago our percentage was only approximately 3 per cent., showing that addiction is on the increase.

People have also entertained the belief that all homicides are drug users. We have found the following to be the crimes committed by addicts: In order of frequency these are petit larceny, grand larceny, attempted suicides, exposure of person, forgery.

Pleasure smokers rarely commit crimes which may be traced to drug influence. Fiends commit the crimes above mentioned, and usually the reason given is that the money stolen was to be used to obtain the drug. In regard to Krafft-Ebing's statement (*vide supra*) we wish to state that we partially agree with the statement which says, "The fully developed morphinist is an individual weak in character and will, and without energy, who would receive under criminal prosecution the benefit of the extentuating circumstances and who in the care of his interests and duties should always be given help."

We feel also in discussing its medicolegal relations that the line should be drawn sharply between those addicts who had borne a previous good character and who had become addicts from physical causes *i.e.* insomnia, locomotor ataxia, etc., to aid them at their work, as they say, and where some degree of relationship can be established between the act charged and the drug addiction, not legal insanity as we understand it, but a lesser degree of responsibility, as implied by the mental state induced by the drug. We differ from Krafft-Ebing in the general application of the above to all addicts who commit crime, but would confine it to the class as above described, who are essentially distinct from those who acquire the habit through criminal associations.

In conclusion, we wish to state that the present article is based entirely on our observations and treatment of cases, and we feel that we have demonstrated several facts hitherto unpublished. To recapitulate:

Opium and its derivatives and cocaine lead to the

following: (1) Perforation of the nasal septum. (2) Impairment of the sexual organs and of the power of generation. (3) Impairment of moral sense. (4) Impairment of the mentality. In hypodermic fiends we find multiple lesions of skin and formation of abscesses. Opium addiction is a causative factor of tuberculosis and bronchitis. It affects the cardiac muscle leading to cardiac dilatation. It influences the nutrition of the scalp, causing increased growth of hair.

We take this opportunity to thank Warden John J. Hanley and the keepers of the city prison for their courtesy and aid in obtaining the data above quoted.

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THE PHYSICS OF PERCUSSION AND AUSCULTATION OF THE CHEST.

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Percussion and auscultation are based primarily on the production and interpretation of changes in sound; consequently these two methods of diagnosis are intimately connected with, or governed by, the physical laws applying to sound. And it will not be amiss to define sound briefly and to state some of the simpler laws governing its character, production, conduction, etc.

Sound is the sensation produced through the ear by vibrations, either of a vibrating body itself or the surrounding medium. Sounds may therefore be said to be wave vibrations interpreted by the ear, just as light is wave vibration interpreted by the eye. Sound waves may differ in three ways: (1) the rate of propagation or number of waves per second; (2) the amplitude of each wave; (3) the form, that is whether simple or compound. In other words, sound waves as heard by the ear may differ in pitch, intensity, and quality.

The number of waves per second determines pitch. If the waves are long and few in number the pitch is low, and as the number increases per second the pitch becomes higher and higher, until the sound is very shrill and piercing and finally becomes inaudible. It has been found that to be perceptible as sound the vibrations must be no fewer than 16 to 24 per second, nor more numerous than 30,000 to 40,000 per second.

Intensity or loudness is dependent upon wave magnitude or amplitude, and diminishes with the square of the distance of the sounding body and also as the density of the medium through which it passes decreases.

Quality depends upon wave form, that is whether simple or compound, and distinguishes between the same tone when sounded upon two different musical instruments, such as a piano and a violin. It depends upon the number and intensity of the overtones or harmonics which blend with the fundamental note. These overtones are higher notes of small intensity as compared with the fundamental.

Sound waves are conducted, and may be reflected, refracted, diffracted, and interfered with or broken, giving rise to beats.

Sound waves are not conducted in a vacuum. A medium for conduction must be present. In this medium the waves travel in all directions, with a velocity or facility depending upon its physical nature and temperature. In air the velocity is about 1090 feet per second at 32° F., and increases as the temperature increases. In other cases the velocity varies inversely as the square root of the density. In liquids the velocity is greater than in air (in water 4 times greater). In solids the velocity varies greatly, being small in inelastic substances such as lead and wax, and quite great in substances like wood and steel (2 or 3 miles per second, or about 10 to 15 times as rapid as in air and 3 to 4 times as rapid as in water.)

The laws governing reflection and refraction of sound are the same as those governing light. The echo is a sample of reflection. Owing to the rapidity with which sound travels in air, 1090 to 1125 feet per second, and to the fact that approximately 1 9 to 1 16 of a second must elapse between sounds for them to be appreciated as distinct and separate sounds, the hearer must be at a distance of approximately 60 feet from a reflecting body to appreciate an echo. For this reason echo plays no prominent part in auscultation and percussion.

When a sound wave meets the surface of another medium of greater density it is in part reflected, travelling back from that surface into the first medium with the same velocity with which it approached. When a sound wave travelling through one medium meets a second medium of a different kind the sound waves are communicated to the second medium with a velocity and direction depending upon the density and elasticity of this medium.

Sound may be amplified or increased in intensity by resonance. By this is meant the prolongation of sound by reflection, or the prolongation and increase of sound by sympathetic vibration or other bodies. This sympathetic vibration is in unison with the fundamental tone or one of its harmonics. The pitch and quality of the resulting sound are largely dependent upon the shape and size of the resonant chamber.

Having considered in a general way a few of the laws governing sound, let us now consider the anatomical construction of the chest and see what bearing this has on sound as produced by percussion and as heard upon auscultation.

The chest is a bony and cartilaginous framework covered by muscle tissue, fat, and skin, and enclosing the lungs, heart, and mediastinal tissues and structures. Separating the chest from the abdomen is the movable diaphragm. Between the ribs are interlacing muscles, allowing considerable movement. Covering the ribs according to physical development and nourishment there is a varying amount of muscle tissue and fat. Lining the ribs on the inside is a smooth reflecting surface, the pleura, and enclosing the lungs is another such surface.

The lungs are made up of spongy, elastic tissue, the air cells and bronchial tubes of various calibre and size, the more minute ones not having any cartilage in their walls and the larger, from the fourth division upward, having cartilage (Leaming) and being more rigid. These tubes are set at all angles to one another, and are therefore not arranged according to acoustic principles. Accompanying the bronchi and around the air cells are also many blood-vessels of varying sizes. Connecting the lungs with the mediastinum are the larger bronchi and blood vessels. And the larger bronchi terminate in the trachea, which leaves the mediastinum and ends in the voice-producing larynx. At the base of the chest is the diaphragm, which permits considerable variation in chest or lung volume. Owing to the conical shape of the chest and the presence of only a

little cartilage in the apex, this part is much less movable than the base.

Percussion.—The chest in health is a very good resonator. It is said that the violin was fashioned after it. Certainly the air contents when set in vibration amplify the sound and give it a quality dependent upon the physical state of the lung at the time being. What is the percussion note? It is the resulting sound we hear when striking the outer covering of the chest or the walls of the resonator. This sound is produced by vibrations originating in the chest wall, travelling through it to the resonating chest, reflected backward through the wall and into the surrounding air. It is true that a part of the sound travels only through the air to our ear, but this part necessarily lacks chest resonance. Originating in and travelling through the chest wall, the sound upon percussion must be modified by the physical state of the various tissues comprising the wall. Considering the resonating chest as a constant, that is having a constant volume of air, what external causes affect the note heard on percussion? The thickness of the chest wall, the quantity of fatty tissues and the state of contraction of the muscle tissue and skin. If the chest wall is very thick a hard blow is necessary to cause vibrations to reach the lung with sufficient intensity to be reflected again. So that with ordinary percussion no resonance results. Fatty tissue is a poor conductor of sound because the rate of propagation is slow. Therefore a large proportion of fat will successfully block vibrations unless the force originating them is great. When the muscles and skin are much relaxed, density diminishes and conduction is diminished. The vibrations may not reach the lung. Also, as in the case of a violin string too loosely strung, the vibrations may be too slow to be appreciated. On the other hand, when the muscles and skin are contracted and tight the resulting vibrations are rapid and the note is high pitched, just as the violin note is higher pitched when the string is tight than when it is loose. Some of the percussion note variations caused by the physical state of the muscles covering the chest are used by some men as an aid in diagnosis (Pottenger, etc.).

With the wall of the chest constant, how may internal chest conditions alter the percussion note? By alteration of the volume of air in the lung, by replacing a portion of the air set in vibration by a more solid substance and by interposing non-air-containing substances between the source of vibration and the lung. In other words, by destroying a part of the resonating chambers or by making them inaccessible to vibrations. These conditions may be brought about by ordinary inspiration and expiration, emphysema, atelectasis, infiltration, consolidation, new growth, thickened pleura, effusion, etc. In addition to these, air may be interposed between chest wall and lung. In each condition, according to the amount of air accessible to the vibrations, the resulting note will be low and resonant or high and less resonant, or not resonant at all, since the larger the resonating chamber the lower its fundamental, and it is the fundamental note with its overtones which is consonated.

Cornet states that on the surface of the lung tuberculosis areas cause an impairment of note only after reaching a size of 4 to 6 cm. and a depth of 2 cm.; dullness is produced only when the depth reaches 5 cm.; and that areas lying deeper than 5 cm., in other words having more than 5 cm. of normal lung between them and the chest wall, may easily escape detection by percussion. With this in mind and also the various causes influencing the pitch and resonance of the percussion note, it is difficult to see how minor changes can be of as great significance as some would lead us to believe.

Auscultation.—During auscultation we listen for what we term the breath sounds. These come to us from the lung through the walls of the chest. As we inspire, air is taken through the larynx and trachea into the larger bronchi and then through the smaller bronchi to the alveoli or air cells of the lungs. Coming through the larger tubes and those of smaller calibre which have rigid walls the friction of the air against the sides of the tubes causes vibrations and these are carried with the current of air into the lung. The air, in passing an open tube and by being impinged on angles of bifurcation, likewise give rise to sound and this is carried and conducted. It is said that after the air reaches the fourth division of bronchi no friction is caused, since the tubes of smaller calibre possess no cartilage, nor have rigid walls, and that the interchange of air further in the lung is by diffusion. During its course to the alveoli the air is warmed, causing an increased power of wave propagation. The alveoli or air cells are elastic. Each is in itself a small resonator. As it dilates it gives rise to sound, and within certain limits as it dilates the sound is proportionately amplified. It is the combination of sounds caused by friction, conducted along the tubes and the dilating air sacs, which makes up the inspiratory sound. When the air sacs collapse sound is again produced and friction sounds are caused in its outward passage, but here the current of air is in the opposite direction from inspiration.

According to Baas the breath sounds are modifications of the laryngeal and tracheal sounds only. According to Laennec they are caused only by the friction in the bronchioles and infundibula. According to Bueri they result from the friction of central and peripheral air volumes.

It is said that conduction within the lung takes place only in the direction of the tubes. The air in the lung not in the tube current is a poor conductor. The chest is a resonator. Helmholtz, Müller, and others have determined its fundamental note as a low one. Air conducts the lower sounds more readily than the high ones. The spongy lung dampens high tones more than the air alone. The tracheal and bronchial pitch is high, so that a layer of normal lung deadens these sounds almost completely. On the other hand, solids conduct the higher tones better than air tubes of the same length, consequently when the lung approaches solidification better conduction of tracheal and bronchial sounds takes place. Vesicular breath sounds are of low pitch only. Heart sounds are dampened by normal lung tissue in all areas except where the heart lies in close proximity with the chest wall. However, there the sounds are conducted by the mediastinum.

The shape of the chest partly determines the quality of sound. But inasmuch as respiration is largely a voluntary act intensity, and to a less degree pitch, must be relatively dependent upon the character of the respiration. However, other things being equal, intensity is dependent upon force or respiratory rate, and pitch upon the physical state of the lung (Quimby).

What are the modifications in breath sounds that may be experienced when alteration in the function and physical state of the lungs and adjoining structures takes place? These may be briefly summarized in the following:

Alterations in the intensity of inspiration and

expiration, alterations in the relative duration of inspiration and expiration, alterations in pitch and quality of both sounds.

Alterations in intensity may be brought about voluntarily or involuntarily. When the change is involuntary it is due to a change in the function of breathing or to a change in sound conduction. In the first instance there may be a partial atelectasis which does not permit the lung to take in as much air as is otherwise possible, or on account of partial obstruction in one of the larger tubes respiration is more labored. This last occurs also when the air sacs are dilated and kept so through spasm of their muscles and degeneration of their elastic tissue. In the second instance, that is when due to change in sound conduction, intensities belonging to the larger tubes may be transmitted more readily than normal and add to the intensity normally heard at the periphery. Or conduction of the sounds may be impeded by interposing media between the ear and the source of sound, as in pleurisy with effusion.

Normally inspiration is longer than expiration. The ratio has been variously estimated as low as 2 to 1 or as high as 4 or 5 to 1. The air in entering the lung travels toward the ear of the auscultator, and impinges itself on the angles of bifurcation. Inspiration is consequently more intense and of longer duration than expiration, during which latter act the column of air travels *from* the ear and impinges itself only with another column of air on the sides of the tubes. Anything which delays the normal collapse of the air cells or obstructs the outward passage of air will prolong expiration. This may occur in emphysema, or in partial paralyses of the air cell walls as in tuberculosis, or by foreign bodies having a valve-like action.

I have said that the normal vesicular breathing was low in pitch and the tracheal and larger bronchial pitches were high. Theoretically this should not be so. The trachea is large in lumen and longer than any of the tubes further along the respiratory course. Its note should be low. And as we proceed further into the lung the note should become higher and higher, reaching its highest pitch in the terminal bronchioles. The sound heard at the periphery of the lung should therefore be high in pitch. However, most observers state that the vesicular murmur is low and bronchial respiration high in pitch. Why this should be so I am unable to state positively. However, it may depend upon the fact that air conducts lower tones better than high ones and that the spongy lung dampens higher tones more than low ones. In this way possibly the higher tones are lost except when by increased direct conduction through solids which transmit high notes readily we hear them as happens when we listen directly over the trachea or bronchi, making the latter respiration relatively higher than the vesicular. Certainly we know that intensity diminishes as we proceed from the trachea to the bronchioles, in part because the force is divided and in part because conduction becomes poorer. Solids conduct higher notes better than air, so that when air has been replaced by congestions, new growth, etc., higher pitch should predominate in respiration.

As a general working basis we may say that intensity and pitch as heard at the lung margins are largely dependent upon sound conduction. Intensity diminishes as density diminishes and high notes are proportionately dampened and low notes relatively increased. Anything which increases the density along the respiratory channel will increase intensity and relatively increase the dominance of high notes in the lung margins.

However, intensity may be increased when cavitation is present. Here air is the conducting medium and amplification takes place in the cavity. The resulting pitch depends on the greatness of the resonating space, being low in large and high in small cavities.

Vocal Resonance.—Increase or diminution of vocal resonance depends largely upon sound conduction. Here the sounds formed in the larynx travel along the tubes to the periphery of the chest. Anything along the course of the bronchi affording increased conduction will give increased vocal resonance at the periphery of the lung. This condition is best brought about by an increase in density, as in infiltration, consolidation, new growth, etc. Or it may be caused by amplification within a cavity. On the other hand, conduction from the periphery of the lung to the chest wall must also be borne in mind since the interposition of certain media may interfere with or increase sound conduction. The first may be due to pleurisy with effusion, thickened pleura, air, etc., and an increased conduction to adhesions, new growth, etc.

In considering auscultation, that portion of the chest above the plane of bifurcation of the trachea must be considered in a different light from the portion beneath this plane, for in this upper portion lies the large trachea. And the anatomical position of the trachea, the acuteness and point of origin of the angles of bifurcation, and the length of each first bronchus—right and left—must be considered. These factors have a bearing on the sounds heard at the apices of the lungs. The trachea lies closer to the right apex. The angle of the (first) bronchus to the trachea is more acute and rises higher on the right than on the left. And the right first bronchus is shorter than the left. All of these factors would give to the respiratory sounds on the right more of the tracheal character, hence they are slightly broncho-vesicular. Also, vocal resonance therefore should be and is more intense.

Pleurisy with effusion reaching to this plane may give rise to increased vocal resonance throughout the area of dullness. And when the fluid falls below this level the increased vocal resonance disappears (Sewall). In a case of pneumothorax of the right side, with the lung entirely collapsed and with a small amount of effusion, breath sounds and increased whispered voice were heard by me when the patient was so inclined posturally as to bring the fluid into the apex.

Above the plane of bifurcation of the trachea, breath sounds from the trachea are well conducted by the bony structure of the chest. In two instances breath sounds could be heard above the second rib, and in one of these also above the third vertebral spine, after complete pneumothorax, as shown by *x*-ray, had been attained.

Bronchial breath sounds can normally be heard over the sternum to just below Louis angle, over the acromion processes (Barrach) and along the cervical and upper three dorsal spines. Increased whispered voice is also heard here, as well as far up on the cranium. This is in part due to bone conduction.

Rales and Adventitious Sounds.—These are produced upon and within the chest wall, upon the pleural surfaces and within the lung. We will speak only of those which are produced within the bronchi and air cells.

Within the lung these sounds are vibrations caused by a current of air passing along the respiratory passages to the air cells and meeting a partial resistance. The resistance may be due to partial or complete obliteration of the air cell or bronchus by means of collapse, mucus or fluid. Thus, for instance, the walls of the air cells or bronchioles may through atelectasis be in apposition, or they may be the seat of exudates, serum, etc. A forced inspiration will separate the walls of the air cells or bronchioles or set in vibration the serum or exudate; a sound is the result.

The resulting sound will vary in pitch according to the diameter and length of the air space in which the sound occurs. Vibrations within the smallest bronchioles will be high in pitch, and as the larger bronchioles and bronchi become the seat of origin the pitch will become lower.

The intensity of the sounds will vary with the force causing the vibrations and also with the quantity of the medium set in vibration.

The quality of the sound depends upon the physical state of the medium set in vibration and the resonance of the chamber in which the vibration takes place. Dilatation of the bronchi, or cavities, may give added resonance by reason of their increased air content. And by reason of the variable fluid level, increasing or decreasing the air space, pitch may be also changed.

Bubbling sounds are produced by the passage of air through a liquid medium, as happens in the case of cavities where the entrance of air is below the level of secretion.

Vibration within air spaces may also be produced by sudden changes in the position of the vibrating medium, caused by gravity or by pressure from without. Whatever may be the cause, intensity, pitch, or quality of the sound originally produced, it must before it reaches the ear be modified by the rules governing sound conduction which have already been referred to.

The definition of sound was given as "vibrations interpreted by the ear." The ear is a part of the individual, and by reason of anatomical or pathological variations the same sound may not be conducted alike to the brains of two individuals, or the two brains may vary in experience or education in their interpretation of sound, and consequently, although physics governs sound production and conduction, the personal equation governs sound interpretation—the one an exact science, the other a variable quantity. For this reason, percussion and auscultation are exact methods only within the limits of the human personal equation.

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A NOTE ON POLIOMYELITIS, WITH ITS PREPARALYTIC SYMPTOM.

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In the early stages of poliomyelitis we frequently have a sudden onset with a high temperature lasting several hours or days. There are headaches, pains in the back and limbs, and sometimes rigidity of the trunk and neck. The patellar reflex and plantar reflex may be exaggerated, diminished, or even absent.

As the pathological lesions are confined to the anterior horns, the pia mater, and the spinal cord, drainage of the spinal fluid is indicated as a means of diagnosis. The fluid of poliomyelitis so obtained is colorless. To differentiate the symptoms of poliomyelitis from those of an acute cerebrospinal meningitis, simple meningitis, or tuberculous meningitis, we should resort to a lumbar puncture. The spinal fluid should be carefully examined as to its color, its transparency, or turbidity. The presence or absence of pathogenic bacteria will aid in excluding poliomyelitis. Thus the tubercle bacillus will be found in tuberculous meningitis, and a staphylococcus, diplococcus, or influenza bacillus, in acute meningitis, or in cerebrospinal meningitis.

There is an increase of the leucocytic element, especially the polynuclear percentage, in the earlier stages of the disease, later a mononuclear increase. Still later we find 100 per cent of leucocytes. The globulin reaction in the beginning is negative, later it is positive.

A symptom of great importance, described by Dr. Draper of the Rockefeller Institute, is that flexion of the spine anteriorly produces pain and stiffness of the neck. The lymph glands of the body are enlarged.

An important symptom has been described by Culliver as a peculiar twitching, tremulous, or convulsive movement. It usually affects a part or whole of one or more limbs, the face or jaw. It may also affect the whole body. In the beginning, the symptoms may last less than one second, and do not recur oftener than every hour or so. Later, the spells lengthen to a few seconds, and recur at shorter intervals. The condition is sometimes accompanied by a peculiar cry, similar to the hydrocephalic. During the convulsive movement the child is apparently unconscious, with eyes set for a few seconds. A similar symptom has been described by Prof. Arnold Netter,[1] of Paris. This preparalytic symptom, if noted, will serve as a warning of the approaching paralysis, and, when observed, the limb should be strengthened by support to remove the weight.

The following case,

Jerome H., five years old, was seen in consultation with Dr. D. Paul Waldman on July 12, 1916. He was a fairly well nourished boy with a history of congenital syphilis. He was in apparent good health until six days ago when he was frightened by a dog. The dog did not bite him but licked his hand. The following day the child became languid and complained of headache. There was slight constipation. The appetite was fair. A slight papular and erythematous eruption was noted over the thorax, back, and upper and lower extremities, very little on the face. The temperature ranged between 103° and 104°. There was marked hyperesthesia of the skin with nervous quivering and twitching (preparalytic symptoms).

At midnight on July 12 the right arm became paralyzed, showing involvement of the brachial plexus. No other etiological factor could be made out. The sani-

[1]British Jour. of Children's Diseases, Dec., 1913.

tary surroundings are perfect. Hygienic supervision of the child's body and food could not be better. There had been no exposure to poliomyelitis as far as the family know. Nor could the family physician, Dr. Waldman, shed any more light on the etiology. Whether or no the susceptibility of the patient was increased because of its congenital syphilis is worth considering.

Examination showed the generalized eruption confined to the body—very little on the face. On stroking the skin with the fingernail a marked hyperemic flush remained visible for over ten minutes (the so-called tache cérébrale). The pupils responded to light and accommodation. There was an exaggerated plantar reflex, also exaggeration of the patellar reflex, and marked hyperesthesia of the skin at the slightest stroking of various parts of the body. There was an absence of rigidity of the sternocleidomastoid muscle. The right arm and forearm were limp, the surface temperature normal. A lumbar puncture made between the 4th and 5th lumbar vertebræ showed increased pressure of the spinal fluid and yielded a perfectly transparent fluid; 40 c.c. was obtained without difficulty. This fluid was examined by Dr. Abrahams at the Research Laboratory of the Health Department who reported as follows: mononuclears 80 per cent; albumin, 1 +; Fehling's 3 +.

The child rested comfortably after the puncture and the temperature came down to normal. Five grains of urotropin were given every four hours. Very light gentle massage was given once daily. A light soft nutritious diet consisting of milk, vegetables, fruits, cereals, and eggs was given.

Flexner has suggested the use of hexamethylenamine (urotropin), 3 to 5-grain doses every four hours, as a prophylactic to children in congested or infected districts. In all cases seen by me I have advised 3 grains, given morning and evening for several weeks, as it liberates formalin in the tissues.

There are three types most commonly met with: the catarrhal, the gastrointestinal, and the cerebral.

In the catarrhal type there is nasopharyngeal involvement, or bronchial catarrh, or symptoms resembling the onset of a pneumonia.

In the gastrointestinal type we have symptoms of overfeeding, or disordered nutrition, vomiting, constipation or diarrhea, and always fever. We should always suspect an abortive form of the gastroenteric type if a child, in spite of having its diet carefully supervised, suddenly shows gastroenteric derangement, with anorexia and a general apathetic condition.

The cerebral type is seldom met with in the abortive forms. I have never seen a case with convulsions and rigidity of the neck muscles that was not followed by paralysis.

The reflexes will be found slightly exaggerated, especially the patellar, plantar, and ulnar. In some cases seen by me the reflexes were greatly diminished for one day and found normal the following day.

The abortive type is the most common form, and, unfortunately, the one overlooked by the laity, because of the mildness of its symptoms. In many instances, the onset of slight sneezing, nasal discharge, and a temperature of 100° may be all the evidence of the poliomyelitis. Children convalescing from the abortive type are responsible for the spread of this disease. The symptoms being mild, the disease is overlooked.

155 West Eighty-fifth Street.

Constitutional Effects of Deep Roentgen Therapy.—According to G. E. Pfahler in a small proportion of patients who receive large doses of rays, there develop constitutional symptoms consisting of nausea, occasional vomiting and a certain amount of prostration.

HYPOCHONDRIA.

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TWENTY-FIVE or thirty years ago the word hypochondria was very much in evidence in medical nomenclature, but more recently it has had to give way to the trend of modern terminology. Beard's epoch-making neurasthenia has absorbed some of the symptoms formerly attributed to hypochondria, while melancholia includes some, and hysteria still others. In this paper I shall retain the nearly obsolete term as being old-fashioned enough for me and expressing just the condition I wish to describe.

No one who has been long in general practice has failed to meet with cases of nervous people whose minds were wholly taken up with magnifying their own ailments, either trivial or imaginary. These people are the terror of the doctor. It makes but little difference what is said or done for them, they are still ailing and are always in a deplorable condition, despite the failure to find anything of a tangible nature to account for their bad feelings. The main characteristic with them is the firm grasp which their ailments have upon the mental equilibrium, amounting almost to a self-centered insanity of the melancholic type. And indeed it has usually been considered that hypochondria should be classed with the mental disorders, rather than with the purely nervous or physical diseases.

Hypochondria is a disease of either sex, occurring in my experience with nearly equal frequency among men and women, the preponderance, if any, probably being in favor of the latter. It is a disease of adult life and occurs most often about the time of the climacteric in either sex. Mental worry with a natural pessimistic disposition, combined perhaps with overwork and some slight physical indisposition, are the usual precursors. A lowered state of health from any cause may undoubtedly predispose to it which only needs some strong mental influence to apply the finishing touches. Once developed it may continue a few weeks or it may pass over into a true melancholia and persist as long as life lasts.

Dubois, in his Psychic Treatment, states that "there is no longer any malady called hypochondria," and then immediately proceeds to devote more than two pages to its description. He gives as his definition of it "that condition of the patient in whom his naturally melancholic preoccupations are centered chiefly upon his health, and upon the workings of his organs." Thus it will be seen he classes it as a special form of melancholia, but it appears to me much may be said in favor of its being a distinct entity.

Hypochondria, as I see it, is a hybrid, a cross between melancholia and neurasthenia, but differing decidedly from either. Thus, with hypochondria it is often possible to get the patient to talk rationally and with a certain amount of cheerfulness on some subjects, or even to smile, but if left to his own inclinations his mind soon reverts to the melancholy aspect of his health; and in neurasthenia the condition is much the same. But in true melancholia the poor unfortunate cannot show much interest or any enjoyment in any subject even for a brief period. The gloomy forebodings as to business, social, or religious matters present with each

disease are much more decided in melancholia and predispose to suicide; but this danger is also present to some slight degree in hypochondria. On the other hand, in neurasthenia the patient seems to experience a certain amount of actual pleasure in dwelling upon and "doctoring" his imaginary ills, and self-destruction is therefore an almost unknown termination in uncomplicated cases. These, in my opinion, constitute the principal mental characteristics of the three diseases, although it must be conceded the line of demarcation is on all sides vague and indefinite and the discrimination between them in a given case is a matter of terms almost as much as of judgment.

Hypochondria, when it comes to the physician, is generally a chronic disease and has already run the gamut of home treatment, patent medicines, sympathetic neighbors, and often other doctors. But this may also be said of the other diseases, especially neurasthenia. On account of this there may be some anemia and general deterioration of the health, but a careful examination of the various organs and their functions will show little if anything out of normal. But the neurasthenic is sick physically as well as mentally, although the physical ailments are secondary to and dependent upon the mental weakness. The neurasthenic suffers much from nervousness, probably has disturbed sleep or insomnia, a poor appetite, functional inactivity of the abdominal and pelvic organs, especially of digestion, and a general loss of strength and weight. There is also apt to be dysmenorrhea or amenorrhea, a furred tongue, constipation, hemorrhoids, vertigo, exaggerated reflexes, various paresthesias, and often neuralgia of different nerve trunks, generally the sciatic, the vagus, or the intercostals. Melancholia, if it has lasted for any length of time, is marked by a peculiar facies of a dull and more or less idiotic type which we do not get with the other diseases. These, then, are the earmarks by which we must make our discrimination and which must guide us in our management of the case and our prognosis.

At this point I would like to bring this paper to a close but I know something should be said of treatment. This is difficult and usually unsatisfactory. Very often the patient drifts along as a chronic drug taker, unable to do any work or perhaps leave his bed, and finally develops some organic disease which closes the scene or makes a true physical invalid. I know of nothing better for these cases than change of environment; and travel with a cheerful and intelligent companion as chaperon or attendant will sometimes work wonders for them. This is for the purpose of occupying their minds and giving them something to think about outside of their own feelings. Suggestion holds a valuable place in treatment and the doctrine of good health or early improvement should be constantly preached to them by doctor and attendants. They should not be allowed to talk of themselves or refer to their ill health, but to circumvent this will require much tact and good sense. The late Dr. Gray of New York advised hypnotism as a valuable measure but of this I have no knowledge. If there was any way of instilling Christian Science belief by serums or other means it would be the ideal treatment, but as yet we have not quite reached that desideratum. Hydrotherapy in the form of colon flushings in the knee-chest position for the purpose of freeing the large intestine of putrefactive material or the cold spinal douche preceded by hot water fomentations, as advised by Baruch, may be of some benefit when it can be employed. These measures, together with high-frequency currents, general tonics, nerve sedatives, and placebos (and most drugs are placebos in this disease) constitute our only means of treatment.

One point of practical importance which I would mention in closing is this: Hypochondriacs are very apt to think that this and that article of diet "hurts them" and they keep cutting out the really valuable foods, one by one, until they have little left to subsist upon. When possible it is best to humor their whims to a certain extent, but they should not be allowed to half-starve themselves under any false notions about diet. Ordinarily, some simple stomach remedy or digestive, if prescribed with explicit directions as to its use and results expected, will make them more tolerant of food and do much to aid nutrition.

A CONSIDERATION OF THE OPSONIC TECHNIQUE AS A POSSIBILITY OF EVIDENCE OF LEUCOCYTIC INHIBITION.

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THE work of Sir A. E. Wright has been instrumental in the practical application of ideas of the greatest value to humanity. It is, however, of scientific interest to review the opsonic technique with a consideration of another possibility being responsible for the phenomenon, which may be as potent in the production of it as is the presence of opsonius, and which may lead to the question of its infallibility as regards the proof of opsonius. The writer is not a laboratory man, and presents this merely because of the scientific interest it may hold.

The opsonic technique is performed in the following manner: (1) Serum of the patient + washed leucocytes + suspension of microorganisms.

Serum of normal individual(s) + washed leucocytes + suspension of microorganisms.

Mixtures of each of the above are made in specially provided tubes, and are incubated at 35° C. for about 15 minutes. Microscopic examination of stained slides of each of the above preparations is made to ascertain the phagocytic function of the leucocyte. The difference manifested in the phagocytic activity of the leucocytes Wright ascribes to the presence or diminution of bodies termed opsonius, which by their action upon bacteria facilitate phagocytosis. In the technique the effect of an immune serum upon a bacterial leucocytic combination not being included, it is not necessary to consider this phenomenon here.

In a consideration of this problem the fundamental nature of the leucocyte must be considered. The leucocyte primarily is a protoplasmic body, whose evident function is phagocytosis. Being a protoplasmic body it necessarily possesses the protoplasmic properties of irritability, metabolism (ingestion, digestion, and excretion) motility, reproduction, etc. It is not in appearance unlike the ameba, and many of its peculiarities lead to the name of amebocyte being early ascribed to it. Thus there is a marked resemblance between the two in the manner of locomotion, and the ingestion of particles, and it may be assumed that they likewise resemble each other in the matter of irritability. The protoplasm of the leucocyte is highly specialized, and it possesses an innate, very likely an evolutionary, predilection for these cells (bacteria),

whose existence in the body is inimical to the host. This faculty, which implies function, illustrates a higher degree of protoplasmic resistance to bacterial toxins than visceral cells functionating differently. However, not to transgress the object of this paper, and to bring in interesting but irrelevant facts, it may be said that the leucocyte is an irritable body, and is not always successful in its combat with bacteria, oftentimes succumbing or being devitalized by the bacteria. This could be anticipated from the fact that it is a protoplasmic body. Evidence of the fact that it is an irritable body, and that its function may be determined by its environment are easily obtainable. Thus non-virulent pneumococci are susceptible to phagocytosis, whereas virulent ones are not. The leucocytes not only succumb to but may be devitalized by toxins. This fact is illustrated by the work of Neisser and Weichsberg, who were able to prove by the reducing power of methylene blue by live leucocytes the injury wrought the leucocytes by a toxin called leucocidin, obtained from staphylococci filtrates. Various degrees of injury are wrought the leucocytes by this toxin. In short, then, the leucocyte is an irritable body, and may be adversely effected by environmental conditions in the same manner as any other cell, or as any combination of cells, which comprise the various manifestations of life.

Now, then, there remains to be examined the blood serum, which is the remaining factor in the technique. In disease there occurs a contamination of serum which is a factor proportional to the character (virulency, diffusibility) of the infection. The serum then obtained from the patient represents a contaminated serum, and proportionally as is the diffusibility and virulency of the disease process. The serum obtained from the healthful individual is normal noncontaminated serum. There are here, then, two essentially different sera, and into these are placed irritable, protoplasmic bodies, whose life and function, as has been shown, is directly dependent upon environmental conditions. Exclusive of any other factor, may not the inhibitory effect of a contaminated serum upon a body which is as sensitive as any other protoplasmic element be the determining factor in the slight deviation manifested in phagocytic capacity of these sets of leucocytes? To maintain that it may not be so effected is to deprive it of its property of irritability, which is amply attested to. Therefore may not another factor, exclusive of opsonius, the factor of a protoplasmic body reacting to its environment, be considered in an explanation of the technique.

Whereas these facts may seem trivial and unimportant to many, anything that seeks to contribute to the absolute truth in science is of value.

177 Walnut Street.

The Spinal Fluid Syndromes of Nonne and Froin and Their Diagnostic Significance.—F. M. Haines concludes that compression of the spinal cord and its meninges from whatever cause leads to the formation of a cul-de-sac more or less complete distal to the site of compression. This leads to characteristic changes in the spinal fluid. The earliest characteristic change has been described by Nonne as an increase of proteid without cell increase. As the condition of cord compression persists, the fluid gradually becomes yellow in color (xanthochromia), the proteid content increases enormously, and the fluid, when removed, coagulates spontaneously (Froin's syndrome). Pleocytosis may or may not be present, depending on whether or not the meninges are inflamed. Xanthochromia must be distinguished from erythrochromia due to hemoglobin staining. The Nonne-Froin syndrome when present always indicates a compression lesion of the cord.—*American Journal of the Medical Sciences.*

Medicolegal Notes.

Liability of Railroad Hospital Association.—In an action by the father of a deceased employee of a railroad company against a hospital association for the neglect of its physicians and attendants in failing to give the son suitable care and attention, it appeared that the defendant was an association maintained by the railroad for the treatment of the employees while sick, and was supported by the monthly contributions of all its employees who, so long as they remained in the service of the company and contributed to the fund, were entitled to the benefits of the hospital free of charge. The Kansas Supreme Court applied the rule that charitable associations conducting hospitals are not liable for the negligence of their physicians and attendants resulting in injury to patients unless it is shown that the association maintaining the hospital has not exercised reasonable care in the employment of its physicians and attendants.—Nicholson v. Atchison, Topeka & Santa Fé Hospital Assn. (Kan.) 155 Pac. 920.

Inference That an Insured Physician Knew of Disease Affecting Him.—The Colorado Supreme Court holds that an insurance company cannot avoid its contract of insurance upon a mere inference that the insured, solely because of the fact that he was himself a physician, knew he was afflicted with a particular disease. To justify such avoidance upon the part of an insurance company, the testimony should so satisfy the mind of the court as to be conclusive in that respect. Northwestern Mut. Life Assn. v. Farnsworth (Colo.) 153 Pac. 699.

Illegal Prescriptions for Intoxicants.—The Missouri statute, Rev. St. 1909, Sec. 5784, declares that any physician who shall make any prescription to any person for intoxicating liquors to be used other than for medicinal purposes shall be deemed guilty of a misdemeanor. Section 5781 provides the character of prescription which will protect a druggist in making sales of intoxicants in quantities of less than four gallons. A physician who unlawfully issued a prescription for intoxicating liquor wrote the prescription in such a manner that the druggist who filled it was not protected. In a prosecution against the physician under section 5784 it was held that nevertheless he was guilty of a violation of that section; the word "prescription" as there used meaning a direction of remedy or remedies for a disease and the manner of using them, and not necessarily a valid prescription which would protect the druggist that filled it. State v. Nicolay (Mo.) 184 S. W. 1183.

Licensing of Chiropractors.—The California statute of 1913, regulating the practice of healing arts, makes any one who shall practice any system of healing, or who shall diagnose, treat, operate for, or prescribe for, any disease, without a license, guilty of a misdemeanor, while section 22 omits persons treating by prayer. A drugless healer, of the class known as chiropractors, contended that the act was discriminatory, as it made greater requirements of such healers than it did of spiritual healers. It was held that the statute was not subject to criticism on the ground that it was discriminatory and lacked uniformity of operation, for a drugless healer who adjusts his patient's anatomy might well injure him, while the prayers of an ignorant person would be of no injury. It was argued that to require no diagnosis from those who profess to treat disease by prayer while prohibiting all other unlicensed persons from diagnosing various ailments is an unjust and unconstitutional regulation, favoring one class of citizens unduly. The court said that those who believe that divine power may be invoked by prayer for the healing of the body believe also that God is all-powerful. Patients receiving their ministrations know this, and therefore no fraud or injury may be practiced upon such persons by reason of any lack of skill by the healers in determining the nature of the diseases to be treated. But those who elect to depend upon some other system of treatment have a right to protection by the State from the ministrations of unskillful, uneducated persons. For example, a sufferer from a fever, who summons a licensed physician holding himself out to the public as one qualified to treat the sick, is entitled to the services of a doctor who has been taught to discriminate between typhoid and smallpox. In other words, the right to practice medicine should carry with it some assurance to the public that the licensed practitioner possesses reasonable proficiency in the technique of his profession.—People v. Jordan, California Supreme Court, 156 Pac. 451.

MEDICAL RECORD.

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THE SIGNIFICANCE OF THE APICAL SHADOW IN DENTAL ROENTGENOGRAMS.

ROENTGENOLOGICAL examination of the teeth and jaws, with the interpretation of the roentgenograph, has without question come to be a permanent addition to the methods of detecting possible chronic focal infection as the causative factor in certain cases of systemic disease. It is thus seen that the significance and interpretation of the apical shadow about the apex of a tooth so frequently found in the roentgenogram are of the greatest importance. A brief consideration of this subject is not without interest to every practitoner of medicine.

The dark shadow found around the apex of a tooth means the lessening of density in that particular area, due to decalcification in the bone. Clinically it may result from infection (generally from a dead tooth) or from a blind abscess; and, if cyst and pressure atrophy are excluded, it may mean a devitalized tooth through the apex of which the infection had spread to form an abscess, or a healthy tooth with a blind abscess. In all cases appropriate clinical tests should be employed to determine whether the tooth under investigation is dead or healthy. In some cases a tooth may be proven to be dead by objective tests and subjective symptoms, and still no abnormality may be demonstrable roentgenologically, for the reason that the alveolus may not at all be involved as a result of the infection or the degree of decalcification is insufficient to produce visible changes in the roentgenogram. In fact, subjective symptoms may make their appearance before changes can be detected in the roentgenographic examination.

Mackee and Remer, in an interesting paper on this subject in the *American Journal of Roentgenology* (March, 1916), call attention to the fact that very slight apical shadows should lead to decided care in interpretation, particular consideration being given to the exclusion of anatomical shadows, photographic defects, artifacts, and overlapping shadows. For example, the authors point out that the antrum of Highmore, the foramen of the inferior dental canal, and the nasal cavity may form overlapping shadows in the region of the superior molars, lower bicuspids, and superior central incisors respectively. They insist, however, that a persistent apical shadow, found in a number of radiograms taken from different angles, is most certainly suspicious.

It is true that lack of study of this subject has led to the belief quite common among physicians that an apical shadow means pus and cavity formation in the alveolus. Now, although it is true that a very dense shadow and complete loss of bone detail indicate the presence of a cavity, still, as a general proposition, one must realize that a cavity cannot with positiveness be said to exist in cases in which nothing more than a dark shadow with bone detail is found in the roentgenogram. Mackee and Remer properly assert that an apical shadow does not necessarily mean a cavity or the presence of pus. In fact, pus should not be diagnosed by the roentgenologist but by the dentist. Apical shadow does, however, mean decalcification, which may be from many causes—atrophy or absorption due to prolonged irritation or pressure, acute infection, or the remains of former disease (scar tissue).

It is important to remember that "a shadow can be made lighter or darker, smaller or larger, by varying the exposure, the quality of the ray, the depth of the development, the photographic emulsion, the developer, the angle, etc." When examining the patient roentgenologically for evidence of dental sepsis in cases referred by physicians who suspect it as a cause of systemic disease, the alveoli of both jaws, with the apex of every tooth, should be included in the examination. Conservatism in interpretation should be the rule for the roentgenologist. In every instance the findings of the dentist should be taken in conjunction with those of the roentgenologist.

Ottolengui, in the same journal, directs our attention to the fact that the physician (whether as clinician or roentgenologist) is too frequently apt to label as pathological and declare to be a focus of infection any area which seems to be rarified in the roentgenogram. He makes the following declaration which it would be well for all of us to keep in mind constantly when doing this sort of work: "The radiograph is not a picture of disease. It is a record only of the varying resistance to the passage of the ray offered by the parts pictured. The interpretation of the meaning of these shadows, and a decision as to whether they are caused by pathological conditions or not, require on the part of the radiographic diagnostician a full knowledge of the clinical expressions of the various affections, and of the varying shadows cast in consequence thereof."

SOME PHASES OF ACIDOSIS.

ACIDOSIS is now held to include a good many conditions which formerly were not classified under this head, and in fact it is now believed that acidosis plays a part, sometimes predominant, in the causation, or rather the progress of various diseases and affections. Within the past few years the question has been studied minutely and from several standpoints, and our knowledge in this direction has increased very considerably. Of those who have contributed to the attainment of this knowledge none has been more earnest in his endeavors nor more successful in his results than Cammidge, and it is therefore of interest to find his most recent views on this subject in the special acidosis number of *American Medicine* for June.

Cammidge defined acidosis as a condition in which there is an accumulation of acid products of metabolism in the body owing to an excessive production, or to defective elimination, or to both together, and he goes on to say that it is now generally agreed that the clinical symptoms of acidosis are not dependent upon any specific toxic properties possessed by these metabolic products, but arise from the impoverishment of the body in bases that occurs as a result of the acid character of these products. Thus, considered from the standpoint of a deficiency of bases, the term acidosis may be extended to include conditions in which there is an excessive primary loss of bases, or an inadequate absorption of base-forming substances through the intestinal mucosa to meet the ordinary requirements of the body.

Consequently the possible causes of an absolute or relative acidosis are numerous and to a greater or lesser extent are encountered in a wide variety of conditions. Cammidge confines himself to a consideration of diabetes mellitus in which acidosis assumes the dominant rôle and is often the determining factor in a fatal issue. It is impossible in limited space to recount at length Cammidge's interpretation of acidosis in diabetes mellitus, and it must suffice to say that he points out that as a result of clinical experience a vegetable diet has come to be an important feature of most modern methods of treating diabetes, and that casein has been employed empirically in recent years as the chief constituent of many so-called "diabetic" breads and biscuits. He further points out that a vegetable diet, or at least a system of dieting that contains a large proportion of "vegetable days," has other advantages, not the least of which is the preponderance of base-forming over acid-forming elements that it furnishes.

In the same journal a good deal of attention is paid to that condition of childhood known as cyclic vomiting. Eric Pritchard discusses this phase of acidosis in an original manner, and among the conclusions at which he arrives are that the measure of the severity of an acidosis is not to be estimated on the basis of the amount of acetone or other acid bodies in the urine, but on the degree of carbonate depletion, and that one of the effects on the system is to cause a serious hemolysis. Hence there must be an active regeneration of red blood corpuscles or a profound anemia will result. This is probably the explanation of the enlarged ends of long bones in rickets.

The more chronic effects of acidosis are observed in rickets, cyclic vomiting, recurrent bilious attacks, and the troubles connected with dentition. The treatment, both preventive and remedial, consists in the adjustment of the food to the physiological requirements in each individual case, combined with the administration of alkalies as may be indicated.

There is little doubt that our knowledge of acidosis is very much clearer than formerly, but it may also be said, without much fear of contradiction, that there is yet much to be learned on the subject. While we may be well on the way, we are by no means at our journey's end.

DISEASE IN THE GERMAN ARMY.

Not a great deal of information has filtered through to the outside world from the Central Powers about health conditions in their armies. This is due partly to the iron rings about their troops and the amount of censoring each item of news receives before it reaches America, but partly also to the secretiveness of the German authorities in their handling of military problems. It can hardly be imagined, however, that they deal with the medical problem other than efficiently when we consider their capacity for organization and their scientific attainments.

In one of the last issues of the *Berliner klinische Wochenschrift* which the British censor has allowed us to read, Dr. Goldscheider, who has been in the field with the German army, notes a few of the conditions which he found there. He has some criticism to make of the methods used for transporting the sick which seemed to him to be inadequate. Discussing typhoid fever, he says difficulty was experienced in making an early diagnosis on account of the fact that the bacteriologists were not near enough to the front. He mentions Weil's disease at one point and a few other infectious diseases, but they did not seem to occur in large numbers. Heart trouble appeared to be one of the most serious problems and this corresponds with the experience of the English, who report a condition which has been referred to as the "soldier's heart" by Sir James Barr and has given rise to a great deal of discussion, not devoid of acrimony. Dr. Goldscheider deplores the lack of accuracy in diagnosis of affections of the heart in recruits, the distinction between organic and hemic murmurs and between myocarditis and cardiac neurosis being especially faulty. In fact, he says, a great many soldiers were invalided who should never have been accepted for service.

Dr. Stadelmann, at a meeting of the Berliner Medizinische Gesellschaft, also lays stress on the large number of heart cases; he says that 50 per cent. of all soldiers were neurasthenic and of this number 50 to 70 per cent. complained of heart symptoms while in reality only 5 per cent. had organic heart trouble. These men were formerly removed from the front, given prolonged rest in bed and medication, but they failed to improve under this régime so that now they were kept in convalescent quarters behind the front and given light work to do, their minds being kept off their symptoms. The real trouble with these patients was that they did not want to return to the front.

ANEMIA AND CHLOROPHYLL.

One occasionally sees statements that certain green plants, such as spinach, leeks, etc., have special dietetic value because of an iron content, but so far as we know the claim that chlorophyll, wherever it is found, is a hematopoietic substance, is of recent origin. Professor Bürgi in the *Correspondenz-Blatt für Schweizer Aerzte*, April 16, endeavors to show that the green coloring matter of vegetation is not only the most powerful regenerator of the blood, but a valuable stomachic and regulator of assimilation.

In the same journal for June 3 Maillart of Geneva attempts to demonstrate the same thesis from an economic-historical viewpoint. True chlorosis is notably rare in Geneva, and this may be due to the fact that the town is surrounded by a vast acreage of market gardens. These in turn have been made possible by the great fertility of the land, which has made the industry profitable for centuries. Green herbs are produced in the greatest variety. So much in use are legumes that the Genevese have been termed "legumivores," and legume soup, which also contains leeks, lettuce, and carrots in the winter, and salad vegetables in the summer, is a characteristic Genevese dish which is famous as an appetizer. Aside from the soup, great quantities of green vegetables are consumed: green beans, green peas, watercress, chervil, dandelion greens, artichokes, asparagus, sorrel, spinach, and other chlorophyll-containing vegetables. On the other hand, the demand for vegetables poor in chlorophyll, such as cabbage and cauliflower, is not greater in Geneva than elsewhere in Switzerland. When the Genevese emigrate they invariably miss this abundance of green stuff. Maillart advises the daily use of green legumes, not only for the anemic and dyspeptic, but for the healthy as well. Chlorophyll has been given as such to the anemic, but doubtless cannot replace the fresh vegetables. The author does not allude to the value of tinned beans and peas in this connection, but it is evident that from the dietetic standpoint they cannot replace the fresh articles.

Rubber Tissue Tendon Sheaths.

The old adage "Necessity is the mother of invention" has been exemplified many times during the present European war when lack of time or of materials has forced surgeons to improvise instead of following the beaten track in matters of technique. One instance of this, a device which may be worth utilizing in selected cases in the future, is found in the report by M. Petit of Château-Thierry (*Revue de Chirurgie*, January, 1916) of two cases where the tedious dissection of a fat-fascia flap was avoided by using sterile rubber tissue to prevent tendons from becoming adherent to the skin. In the first case there had been a wound of the forearm which had cicatrized with fusion of the flexor tendons to the skin, bringing about a *main en griffe*. Petit freed the tendons and interposed a rectangle of sterilized rubber tissue. The skin wound was then entirely closed, healing was by first intention and function of the tendons was perfect. Later the sheet of rubber tissue worked out at one portion of the wound but the perfection of the functional result was maintained. In the second case there was adherence of the flexor tendons to the skin of the lower third of the forearm, again with *main en griffe*. The same technique was employed with perfect result in every way; for in this instance not only was function perfect but there has been no evidence that the rubber tissue is to be extruded.

Necessity of Very Prolonged Mercurial Treatment in General Paralysis.

It has generally been understood that a thorough course of mercurial treatment has no permanent value in the treatment of paresis, but something must depend on what is meant by a prolonged treatment. If a cure faithfully kept up for a year be of no avail in one case this does not straightway justify the assumption that another case would not show improvement after two years of exhibition. But to-day we have authorities who mean by prolonged treatment not less than ten years. In a recent number of the *Annales des maladies vénériennes* (May, 1916), Gaucher cites several cases in point. Thus a man contracted syphilis in 1892 and showed the first symptoms of paresis in 1896. He was at once placed on mercurial injections with iodide of potassium inwardly which were maintained year in and year out. For about ten years he remained free from pupillary disturbances and changes in the reflexes. He showed some of the ordinary evidences of constitutional syphilis despite the treatment. The leading symptoms suggestive of paresis were limited to headache, crises of aphasia, vertigo, staggering, diplopia, etc. At the expiration of ten years the psychic-somatic picture of paresis appeared quite suddenly and completely. The mercurial treatment was not in any way modified. Now, 1916, after 20 years of paresis the man still lives, still receives his injections of benzoate of mercury with iodide inwardly. Not all symptoms progress and some of them subside. He is able to take care of himself and his personal affairs. His family no longer wish to have him committed. Years ago such men as Brissaud, Raymond, and Joffroy pronounced the patient incurable. The author looks upon the case as a real cure, although he thinks it unwise to stop the treatment. A parallel case is also related.

News of the Week.

The Poliomyelitis Epidemic.—There were fewer new cases of infantile paralysis reported in this city during the first part of the week than there were in the same period last week, though the deaths had proportionally increased. That the disease is not declining, however, was shown by the fact that the number of new cases (150) reported on Tuesday was greater than on any previous day. Outside of the city the number of cases has increased, a total of 237 cases being reported in New York State from the beginning of the epidemic to July 24, and 274 cases in New Jersey. In this city up to July 26, the total number of cases was 3,260 and of deaths 682.

Great Britain Bans Red Cross Shipments.—The appeal of the American Red Cross that supplies be allowed to be sent from here to Germany has been refused by Great Britain on the ground that they are not needed. In support of this contention, Professor Hochenegg of the medical corps of the Austrian Army is quoted as stating that there is no shortage and no prospect of shortage in medical supplies of any kind or of materials for surgical dressings. The British Government therefore holds that if supplies of rubber and other materials were admitted to Germany it would not conduce to the welfare of the sick and wounded but would merely set free an equal amount of such materials for belligerent purposes.

A Warning to Turkish Hospital Ships.—The Russian Government has given notice that all Turkish hospital ships will be sunk on sight in reprisal for the sinking of the two Russian hospital ships, *Portugal* and *Peryod* by the Turks.

Dr. Charles D. MacCarthy, Jr., of Malden, Mass.,

has received the cross of the Legion of Honor in recognition of his work with the American Ambulance in France.

Sir Victor A. H. Horsley died on July 16 at Amora in Mesopotamia of a heat stroke. He was born in 1857 and was knighted in 1902. He was emeritus professor of clinical surgery and consulting surgeon at the University College Hospital, London. At the outbreak of the war Sir Victor went to France with the Red Cross. Then he accepted a commission as a colonel and went to Egypt as consulting surgeon. Learning of the great need of medical officers in Mesopotamia he requested to be transferred and reached the Tigris last March.

An Army Hospital Train.—A hospital train of ten Pullman cars, designed by the Army Medical Department is in course of construction. Five of the cars are to be equipped with regular hospital beds and have large side doors for loading and unloading stretchers, two will be of the regulation sleeper type, equipped with extra fans, medical cabinets, and ice tanks, one will carry a complete operating room, and another a kitchen large enough to care for over 200 sick. In addition to the regular army personnel, the train will carry a special corps of army nurses to serve in the wards and operating car. The train will be painted maroon, with the insignia of the Army Medical Department.

Army Hospitals on the Texas Border.—Secretary of War Baker announces that the Department is constructing a number of small hospitals at minor posts along the border with base hospitals at Fort Sam Houston and Fort Bliss, Texas. Base hospitals have been authorized and are now being completed, supplied with personnel and equipment, at Brownsville, Eagle Pass, Laredo, Nogales, and Fort Crockett. There are seven field hospitals with the troops on the border, each having a capacity of 216 beds. This does not include the field hospitals of the organized militia now on the border.

Medical Care for Soldiers' Families.—A number of Detroit physicians have volunteered to give medical service free, in case of need, to the families of the members of the National Guard who have been sent to Texas.

Psychological Laboratory at Bellevue.—A psychological laboratory has recently been established at Bellevue Hospital, in New York City, under the direction of Dr. Menas S. Gregory, chief of the Psychopathic and Alcoholic Services. Facilities will be provided for both clinical and research work. As these services admit about 15,000 patients annually, the opportunities for research will be exceptional. Dr. Leta S. Hollingworth, formerly psychologist in the Department of Public Charities in New York City, has been placed in charge of the laboratory.

A Two-Year Pre-Medical Course.—A bill has been introduced in the Georgia Legislature requiring a college course of two years as a preliminary for admission to any medical school in the State. The bill also provides that there shall be no appeal from the decision of the Board of Medical Examiners when the license of a physician is revoked.

Rockefeller Institute.—Dr. Alphonse R. Dochez, hitherto an Associate in Medicine has been made an Associate Member. Dr. Henry T. Chickering has been appointed Resident Physician in the Hospital to succeed Dr. Dochez. The following have been made Associates: Dr. Louise Pearce (Pathology and Bacteriology); Dr. Frederick L. Gates (Pathology and Bacteriology). The following have been made Assistants: Dr. Oswald Robertson (Pathology and Bacteriology), Mr. Ernest Wildman (Chemistry). The following new appointments have been made: Dr. Rhoda Erdmann, Associate in the Department of Animal Pathology; Dr. Rufus A. Morrison, Assistant in Medicine and Assistant Resident Physician; Dr. John Northrop, Assistant in the Department of Experimental Biology; Dr. Jean Oliver, Assistant in the Department of Pathology and Bacteriology; Dr. Ernest W. Smillie, Fellow in the Department of Animal Pathology; Dr. William D. Witherbee, Assistant.

Dr. A. A. Eisenberg, formerly pathological anatomist in the U. S. Army Medical Museum and School, Washington, D. C., has been appointed pathologist at Charity Hospital, Cleveland.

A Memorial to Major Walter Reed.—It is planned to erect a memorial to the late Major Walter Reed, head of the Army Commission which confirmed Finlay's mosquito theory of the transmission of yellow fever, on the campus of the University of Virginia, of which he was a graduate.

Dr. James A. Lyon, assistant Superintendent of the Rutland, Vt., State Sanatorium, who recently entered the service of the government in the 2d ambulance company, was the recipient, in leaving for the front, of a loving cup from the patients of the institution.

Vehement Vegetarianism.—An ardent advocate of the moral and hygienic beauties of vegetarianism, who has been arrested eighteen times for creating a disturbance by his uncontrolled enthusiasm in the cause, was sentenced in a police court in this city the other day to a two year term in the workhouse for attacking a woman who was coming from a butcher shop.

The Broad Street Hospital.—The trustees of this institution have bought a plot at the corner of Broad and South Streets, New York, as the site for a new hospital. The building with 100 beds will be ready for occupancy in the autumn.

A Psychopathic Clinic at Sing Sing.—Warden Osborne announced recently that a psychopathic clinic under the direction of Dr. Bernard Glueck has been established at Sing Sing Prison. The object of the clinic is not only to determine the mental status of the present and future inmates of that institution, but also to inaugurate a study of the underlying causes of crime along the lines suggested at a meeting of the New York Academy of Medicine held last winter. The Rockefeller Foundation has contributed the necessary funds for the clinic. Dr. Glueck, who will be appointed resident psychiatrist, was formerly on the staff of the Government Hospital for the Insane at Washington. The general supervision of the work will be under an Advisory Board consisting of Drs. August Hoch, William Mabon, William L. Russell, George H. Kirby, L. Pierce Clark, and Thomas W. Salmon.

Obituary Notes.—Dr. WILLIAM EVANS CASSELBERRY of Chicago died at his home in Lake Forest on July 11. He was born in 1858, and was graduated in medicine from the University of Pennsylvania in 1879. He began practice in Chicago in 1883. He was professor of laryngology at the Northwestern Medical College and laryngologist to St. Luke's Hospital. He was a member of the Chicago Academy of Science, the National Association for the Study of Tuberculosis, the American Academy of Ophthalmology and Oto-Laryngology, the American Laryngological Association, the Chicago

Laryngological and Otological Society, the Illinois State Medical Society and the American Medical Association.

Dr. SAMUEL D. BOOTH of Oxford, N. C., died on June 29 at the age of 75 years. He was a graduate of the Medical College of Virginia, Richmond, in 1867.

Dr. ROSCOE SMITH of Auburn, Me., died on July 8 at the age of 80 years. He was born at Peru, Me., and was graduated from the Harvard Medical School in the class of 1870. The following year he began practice in Turner, living there until 1889, when he retired, and five years later moved to Auburn.

Dr. JOHN P. CORRIGAN, for over 25 years a practicing physician in Pawtucket, R. I., died in Washington, D. C., on July 6, of ptomaine poisoning. He was born in Ireland in 1856, and was a graduate of the Bellevue Hospital Medical College, New York City. He had recently retired from medical practice and was about to be received into the Order of St. Dominick, having just completed his novitiate.

Dr. JOSEPH W. HENRY of San Francisco died in San Jose on June 28 at the age of 47 years. He was born in Ireland, and was a graduate of the Medical Department of the University of Southern California in the class of 1897.

Dr. HARRY CARTER of Manchester, N. H., died in the Hartford (Conn.) Hospital on July 4 at the age of 40 years. He had for many years been engaged as surgeon in the mercantile marine, and had had several very trying experiences, including shipwreck and fire at sea.

Dr. S. G. POPPLEWELL of Milo, Mo., died of cancer of the stomach on July 5 at the age of 69 years. He was a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, in the class of 1876.

Dr. ARTHUR CLEVELAND COTTON of Chicago died of heart disease on July 12 at the age of 69 years. He was born in Grieggsville, Ill., and was graduated from Rush Medical College, Chicago, in 1878. He was pediatrist to the Presbyterian Hospital and professor of pediatrics in Rush Medical College. He was a member of the Chicago Medical Society, the Chicago Pediatric Society, the Chicago Medical Examiners' Association, the American Pediatric Society, the Illinois State Medical Society, and the American Medical Association.

Dr. CHARLES HAMILTON HUGHES of St. Louis, for many years editor of the *Alienist and Neurologist*, and professor of nervous diseases in the Barnes Medical College, died on July 13 at the age of 77 years. He was born in St. Louis, and was graduated from the Washington University Medical School in 1859. For a short time after graduation he served in the Marine Hospital Service, and then began practice in Warren County, Mo. He served as surgeon in the Federal Army during the Civil War, and at its close became superintendent of the Missouri Asylum for the Insane at Fulton. In 1871 he began practice in St. Louis and soon acquired a wide reputation as a neurologist and alienist. He was no "brain-storm" theorist, but held in many of the murder trials in which he gave expert testimony that the murderer was sane enough to be responsible for his acts.

Dr. EDWARD N. FLYNN of Jeffersonville, Ind., died of Bright's disease on July 9 at the age of 49 years. He was born in New Bedford, Mass., and was graduated from the Louisville Medical College in 1897. He served for four years as mayor of Jeffersonville.

Correspondence.

INTRASPINAL INJECTION OF ADRENALIN CHLORIDE IN ANTERIOR POLIOMYELITIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I desire to present the following brief report regarding the use of adrenalin chloride, intraspinally, as suggested by Dr. S. J. Meltzer in the treatment of infantile paralysis at the New York Throat, Nose and Lung Hospital. There are 51 cases under my observation at the present time. It is unnecessary to give in detail the routine treatment other than that of the adrenalin injections. All the patients received urotropin in moderate doses.

Not knowing the dose of adrenalin in these conditions I began the injection of 3 minims of a 1-1000 solution, but soon increased the dose to 30 minims without any deleterious results. The injections are given every six hours as a routine. The reaction upon the part of the patient from the procedure is practically unnoticeable except that in a few cases where a high intraspinal pressure has been relieved before the injection of adrenalin, headache and vomiting may follow. These phenomena are probably due to the sudden relief of the high intraspinal tension and not to any action of the adrenalin. From a clinical point of view, it is well to state that a vast majority of all the cases have a notable increase of intraspinal pressure. Usually the spinal fluid is allowed to run off through the needle, but in some cases I have drawn off with the syringe from 1 to 15 c.c. It is noted that the intraspinal tension decreases as the injections are continued.

I would not advise the use of adrenalin in larger doses than 2 c.c. since pulmonary edema may be produced by large doses of the drug. However, the slow absorption from the spinal canal will allow the injection of large doses without any deleterious results.

As to the physiological action of adrenalin in these conditions further work must be done, for up to the present the explanation of its action is only theoretical. In the cases where voluntary movement of various parts of the body was lost for a period of time and regained, the loss could not have been due to any degenerative changes in the neurons from pathological lesions. The probability is that the path of the lower motor neurons in the spinal canal was blocked from pressure caused by the exudate produced at the area of inflammation which is in the neighborhood of the ventral horns of the gray matter of the cord, thereby disturbing the continuity of the reflex arc and the free passage of impulses from the upper motor neurons. It has been shown experimentally that adrenalin will relieve, to a marked degree pressure around an inflammatory area and reduce the focus of inflammation. Should the motor disturbance in infantile paralysis be due to pressure, then intraspinal injections of adrenalin given before there are degenerative lesions in the nerve tissue might well produce beneficial results in progressive malady impeded.

The following cases are reported that some idea may be gained as to the condition of the patients before and after the injection of adrenalin. Several other cases showing equally gratifying results are under observation.

CASE I.—J. K., male, aged three years. Admitted to the hospital July 15, 1916. General condition very low.

Unable to swallow food or drink; extremities cold; absence of radial pulse; heart block of a 5-4 rhythm; auricular fibrillation at times; respirations slow and principally diaphragmatic. No voluntary motion of limbs; legs flexed upon the thighs; absence of all skin and tendon reflexes. Hyperextension of spine. July 22: Patient raises himself up in bed; good control of all voluntary muscles; respirations normal; normal rigidity of spine, and force and rhythm of heart excellent. All skin reflexes present except the left plantar. Right knee jerk and both elbow tendon reflexes present.

Case II.—S. D., male, aged five years. Admitted to the hospital July 15, 1916, in a very restless condition. Marked hyperextension of spine; unable to move either the left arm or right leg; complained of severe pain in back and lower extremities. All the skin and tendon reflexes absent. July 22: Normal flexion and rigidity of spine; able to flex, extend, and move the left arm in any direction; raises right leg about 6 inches off the bed; all skin reflexes present except the plantar. Right knee jerk present.

Case III.—J. L., male, aged three years. Admitted July 14, 1916, in a very stupid condition. Entire musculature in a marked state of hypotonicity; no voluntary motion; absence of both skin and tendon reflexes. Sensation of pain hyperacute. July 22: Muscular tone much improved; very good flexion and extension of both arms and left leg; right leg is in a passive state. Both plantar and cremasteric reflexes present. Left knee jerk present.

In each of the above cases adrenalin was administered in doses of 2 c.c. every six hours.

P. M. Lewis, M.D.
House Surgeon.

New York Throat, Nose, and Lung Hospital.

TREATMENT OF INFANTILE PARALYSIS.

To the Editor of the Medical Record:

Sir:—The paper of Dr. Meltzer in the issue of the Medical Record for July 22 emboldens me to publish a suggestion I made a week ago by telegraph to Surgeon General Blue, Commissioner Emerson, and a prominent neurologist in Brooklyn. The first referred the matter to his representative in New York, Dr. Lavinder, who has written that he would give attention to the matter so soon as his work was organized.

I ask a modicum of space to call further attention to the matter. In the February report of the Hygienic Laboratorq, Atherton Sidell published some remarkable data on polyneuritis of pigeons that had been fed on polished rice that may give a valuable clue to the treatment of poliomyelitis, despite the fact that the pathological lesions are quite different. Therapeutics is, after all, but empirical; our most valued drugs like quinine and digitalis having been discovered and successfully used before their rationale was known. Dr. Meltzer's probable rationale of the action of adrenalin in poliomyelitis may be applicable to my suggestion for its therapy derived from Sidell's experiments, who found that pigeons suffering from induced polyneuritis are in an hour relieved from paralysis and entirely restored to health within twenty-four hours, also that pigeons fed with polished rice for the purpose of producing polyneuritis do not contract the disease at all if at the same time given 1 c.c. of a waste product derived from brewers' yeast.

Would not a trial of this agent be demanded in view of the utter helplessness under which the physician now labors? Sidell claims that this waste material of breweries may be concentrated so that 5 grams would suffice for a man. The quantity for a child may be calculated in the usual way. In view of the fact that the preparation is odorless, almost tasteless, and harmless, the experiment is worth trying.

Simon Baruch, M.D.

Long Branch, N. J.

TYPHOID VACCINE IN POLIOMYELITIS.

To the Editor of The Medical Record:

Sir:—In a recent number of the *Journal A. M. A.* appeared an article by Drs. Miller and Lusk on the treatment of arthritis by the injection of foreign protein (see Medical Record, June 17, page 1100), in which the authors advocate the use of typhoid vaccine intravenously. I can speak well of this non-specific treatment of arthritis, and from personal trial and observation can endorse its use in infectious arthritis. It must be given cautiously and carefully in selected cases. It produces a violent reaction, and in some cases an increase of pain in all the affected joints temporarily. Mention is made in the article of the experiments of Vaughan, whereby a certain amount of immunity against specific infections by non-specific bacteria was obtained. Animals were immunized against typhoid and cholera by dead cultures of *B. prodigiosus* and *B. subtilis*. A moderate and transitory immunity against colon infection was obtained by injecting egg albumin into animals. Many years ago Klein in England immunized animals against *B. pyocyaneus* infection by using killed cultures of *B. prodigiosus*. In view of the widespread epidemic of poliomyelitis in the East, with the mode of infection as yet undiscovered and with a mortality rate of 20 per cent., it seems that some non-specific immunizing measures might at least be experimented with. By immunizing children with typhoid vaccine, typhoid fever can be prevented, and it is possible that by the various antibodies thus mobilized another bacillary infection may be prevented or defeated.

The two schools, that of Ehrlich and of Bordet, long contended as to the specficity of antibodies, Bordet and Metchnikoff holding that there was but one, the substance sensibilitrice. Leucocytosis is produced by injections of typhoid bacilli, and antibodies also; the natural defenses of the body might overflow and destroy the bacilli of anterior poliomyelitis. It would be interesting to learn if anybody who had recently been immunized by vaccines of any sort, but particularly typhoid vaccine, developed poliomyelitis. It seems that the procedure can do very little harm, and it might do a great deal of good.

Robert L. Pitfield, M.D.

Germantown, Pa.

A HANDY BANDAGE ROLLER.

To the Editor of the Medical Record:

Sir:—Apropos of a suggestion in a recent editorial article in the Medical Record, the following description of a handy bandage roller, made in an emergency at the home of a patient, may be serviceable to others under similar circumstances.

My patient had a brawny swelling of the breast about two weeks after a difficult labor. The same breast had been badly riddled by a deep abscess after her other child was born, and it seemed as if an abscess was now inevitable. It was in March, 1885, and I had just been reading the valuable contributions of Dr. Philander A. Harris of New Jersey to the *American Journal of Obstetrics*, upon the treatment of mammitis by bandaging and rest, and I determined to use the long, wide bandage over a cotton compress, as he had recommended. But this called for a bandage at least 15 or 20 yards in length and about 3 inches wide. We made it from six or seven lengths of a sheet, lapped and stitched to-

gether, and to wind it I extemporized a crank and spindle from an umbrella rod with its brace attached, that met my eye, simply bending the slim, square brace, near the outer end of it, at a right angle, and leaving 2 or 3 inches of the rod still attached to serve for a handle.

A stout little salt-box—3 x 4 x 9 inches—with two holes at each side, very near together, at one end to receive two short pieces of the rod, and other holes near the other end to receive the crank shaft, and the machine was ready for use. The bandage was passed over the end of the box, under the first rod, over the other and then to the crank, and by moistening the end of it slightly and pinching it snugly to the crank shaft, while the first few turns were made, our bandage was quickly and firmly wound. The wrinkles in the cloth were smoothed out as they passed by the rod at the end of the box, and pressure or traction there, as the bandage was fed into the machine, made the bandage, when finished, as firm and hard as might be desired.

The improvised machine worked so well I brought it home, smoothed the edges and rough places, had the whole thing enameled in black, and have used it and Dr. Harris's long bandage from time to time ever since, and both of them always with satisfaction. C. H. L.

SARATOGA SPRINGS FOR CARDIOVASCULAR DISEASES.

To the Editor of The Medical Record:

Sir:—In the interest of sufferers from organic heart diseases who cannot avail themselves of the unique waters of Nauheim, which have made that resort the Mecca of these unfortunates, I desire to comment upon your editorial on this subject in your issue of June 3, and upon the letter of the officers of the Saratoga Springs Medical Society, published July 1, which opposes the accepted views of heart specialists and eminent internists the world over. The officers of this society have by resolution stated "their deliberate and emphatic conviction that for series of successive CO_2 baths given systematically our natural Saratoga Springs mineral water, etc., is fully efficient," meaning, of course, in cardiac cases in which alone such series are prescribed. And our colleagues display commendable catholicity and courtesy by adding, "and further, that it should be used for such series of baths without addition of any salts, *unless* such additions are plainly ordered in the prescription of the physician."

Whether the American profession will be guided by this resolution of a small number of colleagues whose unpublished observations extending over a brief period of a few months in a resort that is still in its infancy so far as CO_2 baths for cardiac disease are concerned, or by the published observations of physicians and eminent specialists all over the world extending over a period of twenty-five years on a material of over a million recorded baths for heart cases alone, is not for me to point out.

I desire to call attention to the fact that the officers of this society have written: "The physicians of Saratoga Springs decry most sincerely the adulteration of these waters for bathing purposes—except when made on special prescription." The Century dictionary define "adulteration" to be "the debasing by substitution of an inferior article for the genuine." Surely they would not suggest such a thing to their colleagues or permit them to do it!

The zeal of the Saratoga physicians for purism is commendable, in view of the real adulteration of the famous drinking waters of that spa long ago abandoned. But this does not in the least apply to these waters for bathing purposes, which have not yet established a reputation by reason of their very early youth. In fact, the publication of two cases is all the literature I could find upon these baths contributed by a Saratoga practitioner outside of propaganda by an official of the reservation in the shape of papers with lantern slides. The paper of Dr. Baruch in your issue of June 17 is really the first rational explanation of the action of the salines in the Nauheim bath, since he has fortified the opinions established on reliable clinical evidence by physiological data and chemical experiment.

It is now clearly demonstrated that the temperature, which is the chief element (according to Groedel and others) in the Nauheim bath, is made bearable and effective for the depreciated heart patient by supersaturation of the water with CO_2; that the CO_2, locally and by absorption, enhances cardiac tone; that the salines facilitate absorption and prevent loss of CO_2 from the water; that CO_2 is the normal stimulant of the respiration, and that this combination of demonstrated physiological actions trains the insufficient heart to better function and prevents lethal complications.

Dr. Baruch gave the reasons of the superiority of the natural CO_2 water over the artificial, and demonstrated clearly that the Saratoga CO_2 waters combined with the calcium and sodium chloride, which are equal in therapeutic effect to the natural chemicals, offers the closest possible approximation to the far-famed Nauheim waters. It is therefore fortunate that we have the opportunity to send our chronic heart cases to Saratoga Springs.

For all other purposes the natural CO_2 Saratoga water is fully effective. I agree with Dr. Baruch's conclusion that no plain CO_2 bath can with advantage be substituted for the natural CO_2 water when combined with the salines in the treatment of cardiovascular insufficiency. This fact is so well recognized in Europe that in resorts having fine CO_2 water, *e.g.* Kissingen, the waters are always reinforced by salines in baths for cardiovascular diseases. I agree with our Saratoga colleagues in their preference for the term Saratoga CO_2 mineral baths, and in the abolition of the term Nauheim baths in prescriptions. Any additions should, as they very properly insist, "be plainly and explicitly ordered in the prescription of the physician."

Albert J. Wittson, M.D.
273 West Seventy-third Street.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

OPHTHALMOLOGICAL NOTES—PITUITARY TUMORS—TYPHUS IN CAMP OF PRISONERS OF WAR IN GERMANY—DESERTION OF DUTY BY GERMAN SURGEONS.

London, July 1, 1916.

In the section of ophthalmology (R. S. M.) last week, Dr. F. R. Yelland showed a case of visual orientation, following a wound of four months duration, which was first perceived soon after an epileptic fit. The patient had been improving recently after having had right hemiplegia and erroneous visual projection. A similar case was reported to the B. M. A. last March. Mr. Paton had carried out certain tests on the present case which satis-

fied him that the faulty projection was not due to defective eye movements, but rather to complete destruction of the right occipital cortex, the left being but slightly affected. It looked as if there had been complete severance of the superior longitudinal commisural fibers. Afterward a case of "retinitis pigmentosa" of an unusual character was shown by Captain Carruthers in a young man who had been a soldier for three months. He came under notice as he could not see to drive on the approach of dusk. A younger brother and an elder sister had suffered from night-blindness. Comments were made on the case by the president and several members. A giant perimeter was shown by Captain Hudson, who invited suggestions for improving it; some were offered by Lieut.-Colonel R. H. Elliot, who related some experience he had had with an instrument of his own make.

Dr. A. S. Cobbledeik read a paper on four cases of pituitary tumor, all in women, three of them over 60 years old. The first showed contraction of the visual field, 10 to 20 degrees in extent, and a scotoma for color upward and outward from the central fixation point. This troubled her in reading, and people's faces seemed tinged with blue. There was contraction in the temporal half of the field. Later drowsiness with violent headaches came on with Cheyne-Stokes breathing, but the pupils were not affected. The urine was normal. At the post-mortem examination a pituitary tumor as large as a walnut was found, which Dr. Buzzard regarded as a cyst. Gland-substance enough remained to ensure normal metabolism during the sixty-three years the symptoms lasted. In the second case there was right homonymous hemianopia and myxedema. Memory had begun to fail and speech was indistinct. There was lesion of the left optic tract, probably due to pituitary growth. Thyroid extract was given and there was some improvement of memory and also of numbness which had been present. The discs seemed normal. Little change was noticed in the patient's condition for three years, but after that there was rapid deterioration of vision; the nervous state increased, vertigo and flickerings before the eyes were complained of. The face and hands swelled and later the symptoms were in some degree like Menière's disease, but without deafness or sickness. In the third case there was optic atrophy, obesity, myxedema and diabetes. The sight had been deteriorating for four years, and in the last year drowsiness was on the increase. No tendency to hemianopia. Skiagrams showed enlarged and lobulated *sella turcica*. The fourth case was diagnosed as early optic atrophy, myxedema, and pituitary tumor. There was defective memory, falling hair, suffocating feelings, and heart attacks. A year ago life was despaired of. The discs were normal, but vision for white contracted in every direction.

You have probably some information as to the epidemic of typhus in the camp of the British prisoners of war in Germany. We had a committee of six surgeons sent over to take up duties which had been abandoned by the German surgeons-in-charge. This abandonment seems almost incredible, so contrary is it to the practice of the profession in all countries—Germany included. But on this occasion the desertion of duty was only part of the offence. For these German surgeons not only stayed away from the camp, but made no effort to secure a supply of medical necessaries for their deserted patients. When asked for such by British surgeons on the spot, the answer was insult to the "English swine." We may hope these men were exceptional, but it is a matter of surprise that so far such conduct has not brought condemnation from their professional brethren in their own country.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 13, 1916.

1. Certain Occupations as Contributing Factors to Diseases of the Skin. Charles H. White.
2. Leonardo Da Vinci's Scientific Research. (Concluded.) Arnold C. Klebs.
3. Hematocele of the Tunica Vaginalis. Charles M. Whitney.
4. A Statistical Study of the Mortality from Diabetes Mellitus in Boston. H. Morrison.
5. The Treatment of Chronic Disease as a Problem of Applied Physiology. Francis H. McCrudden.
6. Acute Arthritis Experimentally Produced by Intravenous Injection of the Staphylococcus Pyogenes. E. C. Steinharter.

1. Certain Occupations as Contributing Factors to Diseases of the Skin.—Charles H. White mentions some 46 or more diseases of the skin apportioned among approximately 120 different occupations. He says that he has personally treated all but one of these diseases and has treated in all probability representatives of a very large proportion of the many occupations. He warns against the assumption that these diseases fall to the lot of all men and women who engage in these multifarious pursuits. There are no available statistics covering the whole subject of occupational skin diseases, but in the case of eczema we have more or less reliable figures. The writer cites a number of observers who practically agree that about one-fourth of all the cases of eczema which they treat are directly attributable to the occupation of the patient, and asks the question: "Granted, therefore, that a certain proportion of the community is susceptible to the dangers inherent in its chosen occupation, can anything be done to mitigate or abolish these dangers?" This he answers strongly in the affirmative and believes the desired end may be accomplished by the education of the employer and the employed. Physicians who spend their lives among contagious and often dangerous diseases are fortunately usually spared from sharing the fate of their patients, mainly because of their knowledge of self-protection, and this same knowledge must be disseminated among all classes of human beings. He believes it will not be as difficult a task to educate the employer as many think, since it is not for his interest in any way to have his men incapacitated.

4. A Statistical Study of the Mortality from Diabetes Mellitus in Boston from 1895 to 1913, with Special Reference to Its Occurrence Among Jews.—H. Morrison finds that during the period of 1895 to 1913 there were in Boston 1775 deaths from diabetes mellitus out of a total of 229,468 deaths. In Boston, as elsewhere, there has been a steady rise in the death rate from this disease; it was 7.1 per 100,000 in 1895 and 21.3 in 1913, or 3.1 per 1000 total deaths in 1895, and 13.3 in 1913. The death rate from diabetes has been relatively very high among Jews in Boston, occurring about two and one-half times as frequently among Jews as among their neighbors. A similar analysis shows that the death rate from this cause was very high among those of German, English, and American parentage, so that death from this disease occurred about two times as frequently among them as through the community in general. The largest number of deaths from diabetes occurred among those of Irish parentage, 656 out of 1775, or more than one-third of the total. This death rate, however, was not out of proportion to their population. There were only 11

deaths from diabetes among negroes in Boston from 1895 to 1913. This series of 1775 deaths from diabetes was made up of 958 females as against 817 males. This is contrary to the general observation that diabetes occurs more frequently in the male sex. The largest number of deaths occurred among persons of the seventh decade. The duration of this disease could not be estimated from this study, for nearly half the death returns did not answer at all this question or gave it in indefinite terms. This is a point to be borne in mind in making out death certificates. The author believes the reason for this increase in the death rate from diabetes mellitus is due to the increasing complexity of civilization. It is particularly prevalent among Jews, not because of ethnic peculiarities, but because a severe environment during many centuries has developed a nervous type easily thrown out of balance.

6. Acute Arthritis Experimentally Produced by Intravenous Injection of the Staphylococcus Pyogenes.—Edgar C. Steinharter recalls that he has previously pointed out that the staphylococcus organism of shifting grades of virulence localized on intravenous inoculation in different structures of the body, and within certain limits a selective localization of this microorganism for special organs could be developed by cultivation of the organism in functionating tissue. He has also shown that when the staphylococcus attains an affinity for a certain structure of the body, a fresh subculture of the organism obtained from a focus of infection was apt to possess properties leading to its localization in that tissue. The strain used in the experiments now reported was the one used in the gastric ulcer series. It was obtained from blood culture in a case of septicemia in man. Following the intravenous injection of the organism into the general circulation of rabbits, the joints showed no gross pathological changes except a very occasional slight hyperemia of the periarticular tissues. However, cultures of the apparently negative joints very often yielded a pure growth of the staphylococcus. Further experiments showed that with a more virulent strain of the staphylococcus it localized in the joints and produced typical lesions of arthritis. The organism recovered from the arthritic joints had a tendency to again localize in joints. In some cases the arthritis was the only lesion found at autopsy, but in other cases it was associated with one or more other lesions, namely, duodenal ulcer, appendicitis, cholecystitis, myocarditis, pericarditis, endocarditis, nephritis, colitis, and myositis. The results of localization obtained in connection with the studies of staphylococci are singularly suggestive of Rosenow's experiments with the streptococci. If these facts apply in these cases of streptococci and staphylococci, it would seem possible that they may apply to still other organisms, for so far as we can determine, the essential factor governing localization is growth in the tissue. After an organism has grown in a certain environment, it tends in later generations to select that environment, or at least, to thrive best in that environment.

New York Medical Journal.

July 15, 1916.

1. Syphilis of the Nervous System. Eugene D. Bondurant.
2. Vertigo and Seasickness. Lewis Fisher and Isaac Jones.
3. Bone Setting and Its Modern Revival. Norman D. Mattison.
4. Tubal Sterilization. Alfred Hein-berg.
5. Military Preparedness and the Surgeon. G. N. Kreider.
6. Rubella or German Measles. Edward Gray.
7. The Microscope in Dermatology. Oscar L. Levin.
8. Connellan King Diplococcus Infection of the Tonsil. James Joseph King.
9. Mayer's Solution. A Noncaustic Hypochlorite. Douglas H. Stewart.

1. Syphilis of the Nervous System.—Eugene D. Bondurant claims that one in five of the inhabitants of the United States has the taint of syphilis in his blood, and that one in five of those who contract syphilis receives some material injury to the nervous system therefrom. One in five of the patients in our insane asylums is placed there by syphilis, this disease ranking first as a cause of insanity. Most of the organic nervous disease met with in practice is a result of syphilis. As a contribution toward facilitating the recognition of involvement of the nervous system in the syphilitic process in its early as well as late stage, he reminds his readers of the following: The neurasthenia syndrome is often present as the earliest evidence of cerebral or meningeal syphilis involving the convexity. The psychasthenic syndrome likewise gives early warning of a diffuse syphilis cerebri affecting the vertex. The occurrence of either of these forms of neurosis in one who has had syphilis indicates danger of subsequent general paresis. Ptosis and other oculomotor palsies are usually diagnostic of meningeal syphilis of the base. Most atrophy of the optic nerve is syphilitic in etiology. Many headaches and neuralgias are caused by syphilis. Most of the pupillary light reflex abnormalities seen are of syphilitic etiology. Chronic neuritis of sensory type is usually syphilitic. Symptoms of spinal sensory root irritation—stabbing pains, anesthesia, disorder of position sense, delay in rate of transmission of nervous impulses, etc., are usually symptoms of syphilitic disease. The onset of epilepsy after the age of thirty-five years means a syphilitic infection. The occurrence of arteriosclerosis, cerebral hemorrhage, softening, etc., before the age of thirty-five years, is seen only in those previously infected by syphilis. Nearly all spastic paralysis is syphilitic in origin. Nearly all disturbances in gait are due to syphilis. Most aphasias and other speech defects in adults are due to syphilis. Most of the abnormalities of the deep reflexes, with the exception of those seen in acute non-specific infectious diseases, are evidences of syphilis. A large percentage of the cases of acute and chronic mental diseases are primarily syphilitic in causation. Syphilis of the nervous system is in its early stages curable by any and all measures which will cure syphilis. In its later stages, after the death of the nerve cells, it is incurable by any means whatsoever.

2. Vertigo and Seasickness, Their Relation to the Ear.—Lewis Fisher and Isaac H. Jones state that all vertigo of whatever cause, be it from stomach, kidneys, eyes, or what not, is directly due to a disturbance along some part of the vestibular paths. It should be borne in mind that the static labyrinths always act in unison. They continuously keep sending out an equal flow of tonic impulses to the whole body. When, however, a pathological process impairs or exaggerates the action of one of the labyrinths, there results a definite disturbance of this nicely adjusted mechanism with vertigo as a symptom. Impairment or stimulation of both sides to exactly the same extent produces no vertigo whatever. Seasickness is therefore an ear phenomenon, by which is meant that the end organ of equilibrium, namely, the static labyrinth, is disturbed by the unaccustomed movement of the boat or ship. Disturbances of the vestibular apparatus can be definitely analyzed by means of the new ear tests. Cases of vertigo, therefore, need no longer be regarded as vague or mysterious, but should be cleared up by means of these ear tests.

4. Tubal Sterilization. Pregnancy Following Bilateral Salpingectomy: A Report of Two Cases and a Complete Review of the Literature.—Alfred Heineberg

reports two cases in which this unexpected sequel emphasized the fact that if sterility had been the object sought by the operations in these cases they would have been classed as failures. He says that pregnancy has unexpectedly occurred in many patients after operations upon the Fallopian tubes performed for the express purpose of producing sterility and in others who were subjected to bilateral salpingectomy for the relief of tubal disease. He gives a résumé of the literature of the clinical and experimental experience with tubal sterilization from which he finds that one may fairly arrive at the following conclusions: 1. There is no method of tubal sterilization which affords absolute security against conception. 2. Simple ligation of the Fallopian tubes with either single or double ligatures has been followed by the largest number of reported failures. 3. Excision of a wedge-shaped section from each cornu of the uterus, followed by careful closure of the opening with musculomuscular and seroserous sutures has yielded better results than any other method. 4. In the light of our present knowledge it seems unwise to advocate any other method than cornual resection. These conclusions are in accord with those arrived at in previous reviews of this subject by Charles (56), Geissler (57), Günther (58), Mironow (59), Offergeld (60), Perdrizet (61), Pestalozza (62), and Sarwey (63.

8. Connellan-King Diplococcus Infection of the Tonsils.—James Joseph King has observed about 100 cases of arthritis at the Hospital for the Ruptured and Crippled in New York from which he concludes that every case of septic arthritis, commonly called rheumatism, is caused by a focus of infection somewhere in the body. It may be found in the tonsils, ears, accessory sinuses, gastroenteric tract, genitourinary tract, and in and around the teeth. The most frequent focus is found in the mouth and the tonsils. A very simple tonsillitis may be followed by complications such as nephritis, endocarditis, myocarditis, arthritis, so serious as to endanger life. The infection may become latent and produce serious trouble weeks or months later at a point far removed from its original site. Where the focus of infection in arthritis exists in the tonsil, the treatment should consist of autogenous vaccines until all infection is cleared up and then the removal of the tonsils by enucleation. In the Connellan-King diplococci infections the blood changes seem to be a simple anemia and in a few cases a slight increase in the number of eosinophiles, four to six per cent. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat. After two weeks of treatment the arthritis was only slightly improved, but the ethmoiditis and pus in the nose had entirely disappeared. The essayist has found the vaccines eminently satisfactory in a high percentage of the cases treated.

Journal of the American Medical Association.

July 15, 1916.

1. Pityriasis Lichenoides Chronica: A Clinical and Microscopical Study of a Case Mistaken for Lichen Planus. Fred Wise.
2. Traumatic Pulsating Exophthalmos. William Zentmayer.
3. Some Technical Features of Laminectomy for Spinal Disease and Injury, Based on 150 Spinal Operations. Charles A. Elsberg.
4. Some Bodily Changes During Anesthesia: An Experimental Study. Frank C. Mann.
5. Nitrous-Oxid-Oxygen Anesthesia in Major Surgery. A. B. Cooke.
6. Stab Wounds of the Chest Involving the Diaphragm, with Diaphragmatic Hernia or Evisceration. Charles C. Green.
7. The Factor of Fear in Nervous Cases. Hugh T. Patrick.
8. Heterophoria in Children. Wendell Reber.
9. Blood Transfusion, with Special Reference to Group Tests. Walter V. Brem.
10. The Etiology of Nonparalytic Ocular Imbalance: Some Original Conceptions and Interpretations Based on the Physiology and Psychology of Ocular Movements. Will Walter.
11. Cast of Mastoiditis Complicated by Purulent Cerebrospinal Meningitis; Operation and Recovery. W. H. Huntington.

1. Pityriasis Lichenoides Chronica.—Fred Wise presents a clinical and microscopical study of a case mistaken for lichen planus. The eruption exhibited by this patient so closely resembled a widespread lichen planus that a number of dermatologists, even after careful scrutiny, held the opinion that it was, indeed, an unusual example of that dermatosis. The localization and distribution of the lesions, their color, consistence, burnished surface, configuration, occasional grouping and linear arrangement, together with the fact that the patient complained of considerable itching of the affected skin, were determining factors in the diagnosis. There were, however, certain points of departure from the typical picture presented by a disseminated eruption of lichen planus. The papules, instead of being predominantly polygonal, were for the most part oval and round in outline; umbilication was seen in only a small proportion of the lesions, most of them presenting a smooth, glistening surface, without a trace of delling; the fine, whitish, adherent, linear scaling—Wickham's striæ—so characteristic of lichen planus papules, were lacking. Finally, the absence of lingual and buccal mucous-membrane lesions, in a case presenting an eruption so extensive in its distribution, contributed an added element of doubt to the diagnosis of lichen planus. (In Werther's case, however, the buccal mucosæ were affected by the disease.) From the histological standpoint, the minute structure was seen at a glance to be quite different from the characteristic picture of lichen planus, and to conform to that which, when correlated with the clinical appearances, left no other diagnosis open for consideration than that of parapsoriasis. It is well known that the microscopical changes in this group of affections are by no means pathognomonic, in the same sense that the histopathology of lichen planus is pathognomonic, for the various pathological alterations peculiar to parapsoriasis may also obtain in many other cutaneous diseases, or may at least play a minor part in the general morbid process of other dermatoses. A diagnosis of parapsoriasis based on the microscopical findings alone is considered to be, as pointed out by Arndt, a rather uncertain procedure, and should be made with circumspection. Such a diagnosis is fully justified, however, when the clinical and histological data are considered side by side and are correlated to one another, as was done in the present instance.

2. Traumatic Pulsating Exophthalmos.—William Zentmayer says there can be little doubt that in the majority of cases of traumatic origin the lesion is a rupture of the internal carotid in the cavernous sinus, and that the dilatation of the ophthalmic veins and of the nasofrontal and angular veins is the result of the venous stasis thus created. It therefore seems logical to seek to prevent the stasis rather than to remove the end-result. An analysis of the 29 cases collected in this paper shows that the common carotid was ligated 16 times, resulting in a cure in 7, improvement in 5, and failure in 4. Common ligation of the common carotid and the ophthalmic vein was done once, resulting in a cure. Combined ligation of the internal carotid and facial vein was done once, resulting in a cure. Ligation of the orbital veins was done once, resulting in slight improvement. Slow ligation of the carotid was done twice, resulting in one cure and one slight improvement. Ligation of both carotids was done once, resulting in failure. Compression of the carotid

and internal treatment was followed in four cases, resulting in cure in two cases, improvement in one, and in one the result was unknown. Gelatin injections were used in one case, resulting in a cure. There was no treatment in six cases.

3. Some Technical Features of Laminectomy for Spinal Disease and Injury.—Charles A. Elsberg. (See MEDICAL RECORD, July 1, page 34.)

4. Some Bodily Changes During Anesthesia.—Frank C. Mann presents an experimental study and states that a study of the blood of dogs subjected to etherization demonstrated the following facts: The amount of circulatory blood is diminished about 10 per cent. after from six to nine hours of light etherization. There are variations in the cholesterin values, but the changes are not uniform. The specific gravity does not change under light etherization, and under deep anesthesia increases only as asphyxia becomes a factor. The number of red corpuseles, the amount of hemoglobin, and the fragility of the red cells do not change. There is always a leucocytosis in ether anesthesia. The degree of leucocytosis varies from a very slight increase in the number of cells to more than double the normal number. The increase is usually present after from three to four hours of etherization, and is due mainly to cells of the polymorphonuclear form. The leucocytosis is not dependent on the spleen and is not prevented by atropin. It is probably the result of a direct action on the bone marrow. Phagocytic action is certainly not depressed by an etherization period of from five to six hours.

6. Stab Wounds of the Chest Involving the Diaphragm with Diaphragmatic Hernia or Evisceration.—Charles C. Green. (See MEDICAL RECORD, July 1, page 36.)

8. Heterophoria in Children.—Wendell Reber submits figures which would indicate that one in 183 of all refractive cases will represent a child with an essential heterophoria, and that one child in 10 that exhibits muscular imbalance will need some manner of treatment for its abnormal muscular status. An analysis of 35 cases is reported. He concludes that heterophoria in children is in a certain proportion of cases an entity which must have some kind of attention. Painstaking consideration of all the general physical factors is most imperative. Thorough-going correction of the refractive status is imperative, but in some cases it is merely "first aid." Exophoria when intrinsic will probably be best met with weak prisms (from 1 to 2 degrees), bases *out*, plus lateral rotation exercises. Exophoria when intrinsic will often respond to training alone, frequently will need prisms, bases *in* (from 1 to 2 degrees), for permanent use, and rarely comes to operation. Hyperphoria when intrinsic almost always demands vertical prisms of from one-third to one-half the total infinity deviation, and when paretic will more frequently than any other muscular anomaly justify operative interference.

9. Blood Transfusion, with Special Reference to Group Tests.—Walter V. Brem describes the technique and rationale of the method of blood grouping and presents the following conclusions: The practical working out of our group tests and method of transfusions has proved most satisfactory. We have determined the groups of numerous donors and have made Wassermann tests on their bloods. Our laboratory keeps in touch with these donors, who are glad to give several hundred cubic centimeters of their blood for a small amount of money. They come to the laboratory, and, by the needle and vacuum flask method, we withdraw the quantity of blood desired, having first cocainized the skin over the vein. Some of these donors have been used many times during four years. They lose no time from work, the procedure is practically painless, they feel that the money is easily earned, and the patient is under no obligation to the donor. Having our donors classified and knowing their Wassermann tests are negative, we are in a position to give transfusions quickly. A group test of the patient's blood requires only a few minutes after the blood is obtained, and then we can summon the correct donor. The method is simple and easy for everyone concerned, and the results, as far as I can judge from the literature, are as satisfactory as from other methods of transfusion. The defibrinated or citrated blood is injected intravenously through a needle without previous incision of the skin. The skin is cocainized at the time of injection.

The Lancet.

June 24, 1916.

1. An Address on Injuries of the Eye and Orbit. Arthur D. Griffith.
2. Address on Diseases of the Throat, Nose and Ear, and Their Treatment in Hunter's Time. W. H. Kelson.
3. The Removal of Adenoid Growths. J. L. Aymard.
4. Operative Treatment of Osteoarthritis. W. I. deC. Wheeler.
5. On the Agglutination Reaction of the Bacilli of the Typhoid-Dysentery Group with Normal Sera. T. R. Richie.
6. The Causation and Cure of Certain Lunacies. Rupert Farrant.
7. Annual Report for 1914 of the Registrar General. (To be concluded.) John F. W. Tatham.

1. Injuries of the Eye and Orbit.—Arthur D. Griffith says that in analyzing 350 consecutive cases from active service he finds that 25 per cent. are cases of active injury to the eye or orbit and 15 per cent. are cases of a condition that is a rarity in peace practice, and which may be called "shock amblyopia." This term is applied to diminution or loss of vision following a shock in which no structural change is produced in the eye or optic nerve. The shock is usually from the explosion of a shell or grenade near the patient, though it may be due to other causes. In discussing wounds of the globe the author states that if one eye is ruptured it should be removed. If both eyes are ruptured, as a rule, they should be left. He would rather remove many damaged eyes unnecessarily than allow one patient to become blind through his fault. Where one eye is injured, the signs to look for in the sound eye are photophobia, lacrymation, and circumcorneal injection. These constitute the picture of sympathetic irritation. If it is decided to remove an eye there are two ways of doing this, by evisceration or by excision. The operation which the writer has performed in the majority of cases is an amputation of the anterior part of the eye, leaving the longest stump which can be covered by the flap of conjunctiva. Conjunctiva and Tenon's capsule are divided circularly, going behind the wound if possible, otherwise excising it. These membranes are turned back as a cuff for at least one cm., and the anterior part of the eye amputated at this level, or farther back if that is rendered necessary by a scleral wound. The contents of the sclera are turned out and every trace of choroid removed. An operation which has some place in war ophthalmology is exenteration of the orbit. This consists of removing the whole of the contents of the orbit except the periosteum. The object is to provide the fullest possible drainage for the orbit. The writer has done this in two instances.

4. Operative Treatment of Osteoarthritis.—W. I. deC. Wheeler describes the operations which he performed for the relief of crippling osteoarthritis of knee and the hip joint and shows *x*-ray pictures illustrating the condition of the patient three years after the operation. The first operation was performed on

the knee joint, the lipping of the tibia being carefully removed through a well-marked line of cleavage. A weight and pulley were attached to the limb for ten days and massage was administered for a short time subsequently. A few days after the operation the joint could be extended and flexed without pain. A month after the first operation the right hip joint was opened through Kocker's posterior incision. The capsule was freely opened and, while the hip was rotated freely in all directions, the newly formed bone was chiseled away from about two-thirds of the circumference. On the following day pressure on the heel caused no pain. Eight months afterward the patient walked without crutches and with perfect comfort. There are three classes of patients that receive benefit by operation. Cases in which there is a line of cleavage between the new and old bone; cases in which irregular osteophytes form in connection with the joint in such a way as to produce ossification in the fibrous layer of the capsule, and cases of rheumatoid arthritis in which there is destruction of the joints without osteophytic outgrowths. This form of the disease is common in young people and much can be done for them by the administration of vaccines if the focus can be found. If the cases are cryptogenic attention should be directed to the condition of the large intestine.

5. On the Agglutination Reaction of the Bacilli of the Typhoid-Dysentery Group with Normal Sera.—T. R. Richie states that since the appreciation of the actual facts regarding "normal" agglutination of the organisms in the group under discussion is a very pressing matter in view of the many enteritis cases to be investigated at the present time, in association with Dr. Rajoman and Dr. Western, he undertook the examination of a series of normal, so as to determine the normal mean agglutination for the bacilli in question when examined with the technic in use in their laboratory (Bacteriological Laboratory of the London Hospital). The blood of 792 persons was tested, and none of them, so far as they were aware, had suffered from any infection by any organism against which the sera were being tested. The writer describes the technique which he and his associates used and gives the following general summary of his conclusions: 1. *B. Typhosus.*—(*a*) Complete agglutination in a dilution of 1-16 should be looked upon with considerable suspicion. (*b*) Complete agglutination in a higher dilution (1-32 or above) should be looked upon as diagnostic. *B. Paratyphosus A and B.*—Complete agglutination in a dilution 1-16 is suspicious, and in 1-32 or higher may be looked upon as diagnostic. *B. Dysenteriæ* (Shiga).—Complete agglutination in a dilution of 1-64 and above should be regarded as diagnostic. *B. Dysenteriæ* (Flexner).—Complete agglutination in a higher dilution than 1-128 should be looked upon as diagnostic, but in a dilution of 1-128 or lower it cannot be relied upon for diagnostic purposes. 2. In the case of medical students, laboratory workers, and the hospital class of the population, the tables given show that a larger percentage respond to the test in higher dilutions than do "normal" members of the population. This must be taken into consideration in applying the above conclusions.

British Medical Journal.

June 24, 1916.

1. Clinical Lecture on the Right Side of the Heart and Its Relation to Overstrain. William Russell.
2. The Theory of Blood Pressure Measurement. Leonard Hill and James M. McQueen.
3. Systolic Pressure in Acute Nephritis. Rodolf G. Abercrombie.
4. Congenital Cystic Kidney with Local Diffuse Peritonitis; Surgical Destruction of Part of the Kidney; Recovery. John D. Malcolm.
5. Memorandum on the Prevention of Amebic Dysentery. J. Gordon Thomson and D. Thomson.
6. Causation and Cure of Certain Forms of Lunacy. Rupert Farrant.
7. The Treatment of Backward Displacements of the Uterus. (To be continued.) Frederick J. McCann.

2. The Theory of Blood Pressure Measurement.—Leonard Hill and James M. McQueen call attention to the difficulties and disagreements met with in the study of blood pressure measurements and state that in order to give accurate information on the factors concerned in blood pressure measurements a scheme must permit of compression being applied to an artery in a pulsable and not rigid manner, and a rise of a peripheral resistance *pari passu* with increasing compression must be arranged for. When an armlet or bag of Hill's pocket sphygmomometer is made to compress an artery where it lies on bone or with little tissue around it—for example, temporal, dorsalis pedis, aberrant radial—it deforms the artery and prevents the passage of the pulse at a pressure less than diastolic. The finger of the physician acts in the same way, and therefore cannot estimate the systolic pressure accurately. Compression of the tissues surrounding the artery so as to block the venous outlets is essential to accurate blood pressure measurement. This congests the blood beneath and beyond the armlet or bag. The pulsing of the congested mass of tissues renders armlet or bag capable of delivering a circular compression to the artery, and one which yields to the pulse and prevents deformation of the artery until the systolic pressure is overtopped. Sufficient area of veins must be blocked if the blood pressure measurement is to be an accurate one, consequently the bag or armlet must be broad. The bag, together with the observer's hand, inclose the forearm, and so makes the bag of Hill's instrument equivalent to the armlet. Failure to make the bag broad enough accounts for many of the inconsistencies in the literature of blood pressure measurement.

3. The Systolic Pressure in Acute Nephritis.—Rodolf G. Abercrombie has recently treated at a base hospital in France several hundred cases of nephritis occurring among the soldiers, and has taken advantage of the opportunity thus afforded for the study of the blood pressure during the acute phases of this disease. He has found that the blood pressure is always raised during some stage of the course of the disease, although not to so great a height as in the case of chronic nephritis. Wide diurnal variations in the pressure were usually present, the pressure being highest in the evening. Associated with this evening rise of temperature there has been paroxysmal dyspnea and headache. Usually the amount of albumin diminished *pari passu* with the fall in pressure, although residual albumin often persisted after the pressure had fallen to normal. Sometimes, however, the two curves bore no relation to each other.

6. Causation and Cure of Certain Forms of Lunacy.—Rupert Farrant publishes a summary of his study of the causation and cure of certain forms of lunacy carried on during the last seven years. He states that it is a continuation of that previously published on the thyroid gland in the elucidation of goiter and exophthalmic goiter. This work consists of the microscopic examination of sections taken from the pineal, pituitary, thyroid, and sexual glands—first at different ages and periods of life; secondly, the effect induced in these glands by the acute and chronic toxemias, and, thirdly, the changes found in cases of lunacy. From the examination of some 3,000 specimens it is found that these glands differ at different ages and periods of life; with advance of life they tend to atrophy. It is found that the pineal and pituitary react to certain toxemias, the ultimate result of which is fibrosis. The re-

lation of the thyroid to certain toxemias with the induction of hypertrophy, cysts, and adenomata the writer has already described in a former article. In primary and secondary amentia, atrophy of the pineal, pituitary, and thyroid were found in three main groups of cases. In dementia præcox and other cases of dementia an alteration was found in the glands which varied with the duration of the case. In some cases of acute confusional mania, melancholia, manic-depressive, and other forms of insanity, changes were found in the thyroid, pituitary, and the sexual glands. The changes varied from hypertrophy to atrophy. The pituitary gland was found sometimes to have given rise to symptoms of hyperpituitarism and ranging to apituitarism, in idiocy, dementia præcox, and other forms of insanity. The thyroid gland was frequently found to be abnormal in children, adolescent, and adult lunatics. Signs of alteration in the pineal were found especially in children and adolescents. Alteration was found in the sizes of the testicles associated with ductless gland changes. Pyohhea and carious teeth were found to be a frequent accompaniment of lunacy in adults. The writer has deduced that many cases of lunacy may be classified according to the toxemia present and the change that it has induced in the ductless glands. Alteration in the sexual glands, whether primary or secondary, leads to altered mentality up to insanity. The lines on which treatment may be carried out based on this view of the pathology is that toxemias, if present, should be removed by medicinal or surgical measures and the glands allowed to involute if they are hypertrophied, or if they are degenerated with deficient secretions these secretions should be supplied. Good results may be expected before cortical brain lesions have taken place.

Berliner klinische Wochenschrift.

March 20, 1916.

Isolated Sclerosis of the Pulmonary Artery.—Hart states that isolated genuine sclerosis of this vessel in the young is undoubtedly rare. Not many cases are on record. Romberg was the first to show that the lesion may be isolated and unaccompanied by symptoms. In 1912 Schneller and Schumacher attempted to collect the recorded cases, but included numerous cases which were not strictly isolated. The author recognizes but five cases, with possibly a sixth, in which there was a slight sclerosis of the aorta. These agreed not only pathologically, but clinically—cardiac disturbances ending in insufficiency, edema, and cyanosis, increased cardiac dullness to right, murmurs over all valves, with predominance of mitral, and small and rapid but regular pulse. The diagnosis was congenital heart lesion, presenting especially mitral insufficiency. Autopsy showed a high degree of hypertrophy of the right ventricle, but with fully intact valves and marked sclerosis of the pulmonary artery. To these five (six?) cases the author has the rare good fortune to add two more. 1. A woman of 30 came to autopsy with the diagnosis of myodegeneratis cordis. She was highly dyspneic and cyanotic and murmurs were heard over the entire greatly enlarged heart. No history was available. The second case was in a young woman of 25. The cardiac troubles had begun a half year before and had rapidly increased until three weeks before she had become bedridden with cyanosis, dyspnea, and marked palpitation. The symptoms were typical, as given above, but the diagnosis at the time was stenosis and insufficience of the mitral. Death soon supervened. In both cases the autopsy finds were startling, especially in the second case, in which a positive diagnosis had been made. The right heart in both cases was hypertrophic while the left was atrophic and appeared like a rudimentary appendage. Elaborate studies in some of the recorded cases showed that the sclerosis of the pulmonary artery, albeit isolated, differed in nowise from the same lesion when part of a generalized arteriosclerotic process. As for the etiology one patient had been a heavy beer drinker who had suffered originally from beer-drinker's heart, a condition which would throw strain upon the pulmonary artery of a purely mechanical character. Had some toxic factor been present other vessels would probably have suffered. An entirely different causal nexus must have been present in the author's case, in which the left heart had become atrophic, as is sometimes the case in mitral disease. Apparently the left heart withers because of a blood scarcity. The relation of pulmonary sclerosis to hypertrophy of the right heart is not clear. Which is primary and which secondary? The author holds that the vascular lesion occurs first.

Cystoscopy and Radiation in Inoperable Cancer of the Uterus.—Heimann states that cystoscopic control in the radiation treatment of uterine cancer has become an accepted procedure. The latter is best shown in certain cases. Thus in a woman of 49 the portio has been transformed to a cauliflower the size of a hen's egg, which bleeds freely on contact. Both parametria are infiltrated, worse on the right. The cystoscope shows a small bladder, markedly bulging over at the trigon. Marked transverse folds, tumefied. Mucosa injected. Ureteral openings cannot be brought into view. After the combined use of mesothorium and deep radiation, the cancer vanished, the vaginal walls came together, the bladder had improved so that both ureteral orifices could be brought into view. In a second case a similar condition of the bladder became almost normal after the disappearance of the cancer. The improvement in the situation, size, and condition of the bladder does not always run parallel with the improvement in the cancerous growth. When the condition of the bladder is one of parietal edema the viscus may return to its normal condition save when the growth of the cancer has caused deep-seated changes in the vascular apparatus. When these are severe we find the so-called bullous edema, as the lymph, no longer able to escape, causes a detachment of the epithelial layer. Beyond this comes actual perforation. All kinds of results are seen in the course of radiation. The edema may disappear, remain unchanged, or grow worse. Bullous edema has been seen to disappear after radiation. As is known, the state of the bladder is a factor in determining operability. In regard to the infiltrated parametria these become softer after treatment in favorable cases. In one of the author's cases an initial success was not maintained and matters rapidly changed for the worse. But whether treatment is of benefit or not cystoscopic control is equally serviceable.

Old Substitutes for Scarce New Remedies.—Servoss thinks that the scarcity of syntheties is not an unmixed evil. Some old forgotten resources may now be profitably revived, such as colchicum for rheumatic affections, which with alkalis can in part replace the salicylic derivatives. Aconite and veratrum have been neglected for coal tar antipyretics, and the same is true of henbane and lobelia as antispasmodics. We no longer use conium or gelsemium, although they can often replace morphine, while hyoscine properly given is a better hypnotic than sulphonal or veronal. The author sees no harm in borrowing from the selective materia medica under the circumstances. We should make a trial of it, at least, and if any remedies are dependable credit should be given where it is due. He makes this suggestion fully realizing that it will not be popular with the profession, who, however, are slavish in their attitude toward foreign manufacturers. —*Indianapolis Medical Journal.*

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Forty-second Annual Meeting, Held at Washington, D. C., May 8-10, 1916.

THE PRESIDENT, DR. LEWELLYS F. BARKER OF BALTIMORE, IN THE CHAIR.

Monday, May 8—First Day.

War and the Nervous System. — Dr. LLEWELLYS F. BARKER of Baltimore delivered this address, saying that as the result of the studies which had been made during the present European war our knowledge had been enlarged in reference to organic nervous lesions, functional nervous disorders, psychiatry, and normal psychology. So far as wounds of the brain and spinal cord were concerned, the accepted views regarding topical diagnosis were being corroborated. It had been established that certain organic lesions of the central nervous system might be caused by modern high explosives without external wound. Surgeons were unanimous in urging the thorough investigation of every head wound, no matter how trivial it might at first seem to be. As regarded the peripheral nerve injuries, it had been shown that loss of power due to section of tendons or muscles might sometimes be confused with paralysis due to lesions of the nerves themselves. Contrary to what many had expected, nervous states not due to organic lesions, though fairly numerous, had in reality made up but a very small proportion of the total number incapacitated by the war. All the well-known types of the functional nervous disturbances had been met with. While the number of simulators and malingerers was large, those more experienced in the psychoneuroses believed that the number of true, or vulgar, simulators was very small. It had been pointed out that malingering was itself a psychological symptom. As regards the psychoses, it was surprising that such a small number of cases of insanity had been reported. It was asserted that the majority of soldiers in whom psychoses had been observed either had had symptoms of the diseases before the war or had given definite evidence of predisposition to mental disorder. The evidence seemed to favor the view that the human nervous system was to-day better able to stand strain than ever before in its history.

The Differentiation and Organization of Sensations. —Dr. STEWART PATON of Princeton, N. J., read this paper, in which he said there were two points he wished to emphasize as the result of observations upon the embryos of some of the higher vertebrates: First, the great necessity of looking at the neurological phenomena from a broad biological standpoint. Second, he wished to emphasize, if possible, the great value that came to us from a study of comparative neurology. In the chick embryo of 55-57 hours of incubation he had found the motor half of the reflex arc developed far in advance of the sensory half. This tract was developed from the lower caudate quarter of the cord up to the level of the third nerve. At 120 hours one could follow the development of the third nerve to its terminal distribution. Evidently this was an ancestral inheritance. The sensory half of the arc was very gradually superimposed upon the motor sector. When the embryo first responded to stimuli from the outside world we found that the first organ to come in and modify our responses was the thyroid; a little later the adrenals. At this period, 120-125 hours, there was a perfectly enormous differentiation in the sympathetic nervous system. Only very much later did the sex organs apparently come into the neural circuit.

Neuraxial Differentiation of the Fibers from the Horizontal and the Fibers from the Vertical Semicircular Canals, Demonstrated by Means of the Bárány Tests.—Drs. CHARLES K. MILLS and ISAAC H. JONES of Philadelphia prepared this paper, which was read by Dr. Jones, who said that no matter where the primary seat of the affection which caused vertigo might be situated, whether in the stomach, kidney, liver, pancreas, tonsils, or the brain outside of the vestibular apparatus, the resulting toxemia, the abnormal nervous stimulus, or the cardiovascular did not produce vertigo until the vestibular apparatus—the labyrinth and its associated pathways and encephalic centers—was involved. The Bárány tests furnished them with the means for studying this vestibular apparatus. These tests enabled them to say with more positiveness that an intracranial tumor, abscess, or other lesion was situated in the third ventricle, the cerebellopontile angle, was limited to the pons or the cerebellum, or was labyrintnine. Cajal had shown histologically that fibers from the vestibular portion of the eighth nerve entered Deiter's nucleus and continued from the inferior cerebellar peduncle into the cerebellum itself. This tract had been generally recognized and accepted. The writers believed (1) that this path included the fibers from the horizontal semicircular canals exclusively, and (2) the fibers from the vertical canals had an entirely different course. The former were confined to the oblongata, while the latter ascended into the pons. In thirty-two cases in which the labyrinths themselves and the eighth nerves were normal and the horizontal canals gave normal reactions, the vertical canals failed in some or all of the well-known responses. That the labyrinths themselves were normal was made probable by the presence of perfect hearing, and corroborative evidence of neuraxial lesions was additional confirmation. In five cases stimulation of the vertical canals produced no nystagmus, no vertigo, and no falling, and yet violent projectile vomiting occurred. This showed that the vertical canals themselves were functionating; in fact, there was even a hyperactive response of the tenth nucleus to the stimulation of the canals. In one case in which the lesion was clearly thrombosis of the right posterior, inferior cerebellar artery the right horizontal canal failed to respond normally, whereas reactions from the right vertical canals were normal. They believed that the ear stimulus which produced vertigo passed to the cerebrum through the cerebellum. While the paths which carried vestibular stimuli through the cerebellar to the cerebrum were not demonstrated absolutely in all their extent, the facts at their disposal appeared to indicate that they were received by the cerebellum through the inferior cerebellar peduncle from the horizontal canals and the middle cerebellar peduncle from the vertical canals, and after completing their cerebellar itinerary pass to the cerebrum by way of the superior cerebellar peduncles. In the experience of the writers interruption of the impulses from the vertical canals was produced by tumors of the cerebellopontile, internal hydrocephalus causing pressure on the floor of the fourth ventricle, and intracerebellar tumors causing pressure on the pons. Finally, they were confident that the fibers from the horizontal canal and the fibers from the vertical canals had separate pathways in the neuraxis. That the horizontal canal fibers were confined to the oblongata and entered the cerebellum through the inferior peduncle and that the vertical canal fibers ascended into the pons and entered the cerebellum through the middle peduncle, however, they believed to be highly probable, but felt that their evidence to date was not sufficiently large to indicate with confidence the exact course of these fibers.

Sensory Disturbances of Cerebral Origin. — Dr. ALFRED GORDON of Philadelphia read this paper, in which he presented the records of nine anatomoclinical cases distributed as follows: Four cases of cortical lesions, three of capsular, one of thalamic, and one of pontine lesion, and called attention to the special characteristics of each of these groups and the differential features in regard to the sensory disorder. He found that the generally adopted views concerning sensory disturbances of cerebral origin did not always present the real condition. For example, in one of his cases there had been a large hemorrhage strictly limited to the parietal lobe, nevertheless there had been a hemiplegic condition on the opposite side. Also in a case with involvement of the very posterior portion of the internal capsule which was supposed to be purely sensory in function there had been no sensory disturbances at all during life. His conclusions from this study were that, in spite of the generally accepted views concerning sensations of cerebral origin, certain conservative reservatons should be made whenever diagnostic deductions were to be made.

Dr. DAVID I. WOLFSTEIN of Cincinnati said that a colored man had come into the receiving ward but had not been admitted because nothing could be recognized He had come a week later, and it had been found that he had localized convulsions of the face and arm and there was very complete arteriosclerosis. He also had a loss of the position sense and impairment of the localizing sense. The *x*-rays showed that he had been stabbed in the head with a penknife and that a piece of the blade was extending into the precentral convolution. The blade was extracted and the man recovered promptly from the convulsions, but the arteriosclerosis and the disturbance of the sensations remained as before.

Dr. Herman H. Hoppe of Cincinnati said that he recalled a case of tumor in the arm center in which the first manifestation had been pain in the tip of the finger, this disturbance of sensation preceding the Jacksonian seizures. The tumor had been located in such a way as to cover both the ascending and the parietal lobe. It was impossible to tell where it originated.

Some Unusual Features of Jacksonian Convulsion.—Drs. Samuel Leopold and E. Murray Auer of Philadelphia, in a paper prepared by them and read by Dr. Leopold, reported a number of cases showing unusual features of Jacksonian epilepsy. Diphtheria had been the etiological factor in one case. Unilateral sensory phenomena associated with hydrocephalus had been noted in one of the cases. The presence of thalamic pains, together with Jacksonian convulsions, verified by necropsy, constituted one of the unusual manifestations. Jacksonian convulsion had occurred in cases with the lesion located at a distance from the motor cortex. The peculiar manifestations of Jacksonian attacks in syphilis were noted in two cases.

Spasmodic Tic Produced by Cerebellopontine Tumors.—Dr. Harvey Cushing of Boston read this paper, stating that a patient had been sent to the Brigham Hospital with the diagnosis of right parietal tumor producing Jacksonian attacks of the left face. His assistant arrived at the same conclusion on seeing the patient. It seemed typical. The patient was conscious and could turn his head, even though the attack was going on. He was very certain on two or three occasions that the attack and spasm, with the sensory disturbance which he said came with it, had spread into the arm and side. In going over him carefully it became evident that this was a cerebellopontine tumor of the usual type, and upon operation a tumor had been found relatively early and removed in so far as one was justified in removing these things, leaving the capsule. In a series of fifty to sixty pontine cases this had been the only case in which he observed these definite attacks, and this began originally as nothing but a little blepharospasm of the left eye. He had been having attacks every ten minutes when he came in. They subsided after operation. Here was a peripheral lesion which caused weakness in the face, but less commonly produced spasmodic tic, which might be mistaken for Jacksonian attacks. Since that he had seen one other example of almost exactly the same kind.

Dr. J. Ramsay Hunt of New York said that he had in his papers upon the sensory route of the facial nerve emphasized the production of reflex spasms of the face. He had had a series of cases of reflex quiverings and spasms of severe degree. In one case there had been spasm of the auricular mechanism only. Evidently only certain cells of the facial nucleus had been in a state of excitability. Therefore he did not think these cases necessarily depended upon pressure upon the pons.

Dr. W. G. Spiller of Philadelphia said that some years ago Dr. Mills had had a case of spasm confined to one side of the face which at necropsy showed tumor of the cerebellopontine angle. Dr. Spiller had had a case of a man struck on the right side of the forehead. He said that the eyelids of both sides were affected. Dr. Jones concluded that there was a tumor of the cerebellopontine angle, and this was confirmed by necropsy.

Dr. W. B. Cadwalader of Philadelphia remarked that in a case which he had observed there were clonic movements of one side of the face without loss of consciousness. It was decided that there was probably a cerebellopontine growth, and autopsy showed an endothelioma a short distance anterior to the eighth nerve.

Stock-Brainedness. The Causative Factor in the So-Called Crossed Aphasias.—Dr. Foster Kennedy of New York presented this paper, in which he said that the cause of the indecision in regard to the location of the speech centers, and, therefore, the causation of the aphasia, lay in the fact that apparently irrefragable evidence could be produced by the protagonists of each of the different views. The cases used to disprove the validity of Broca's area only impugned the theory of constant conjunction of right-brainedness and left-handedness, or vice versa. The conviction had grown, therefore, that there was truth in both dogmata, but that adequate explanation of many anomalous cases could not be given without the injection into the argument of some new factor not as yet brought under scrutiny. The author desired in the most tentative fashion to suggest that the simple statement that a given patient was right- or left-handed was not adequate in the light of some cases to be mentioned later. No more information than was contained in this somewhat bald announcement had been given by any of the writers on this topic saving Byrom Bramwell, yet it would appear that not only by investigating the question of a patient's handedness but also the prevalent type of handedness in his stock would throw light on a very obscure chapter of neurological medicine. In the literature of aphasia one found that but few cases disagreed with the general hypothesis that in right-handed persons the centers of language were situated on the left side of the brain. In the few instances where aphasia had resulted from injury to the right brain, some anomalous and adventitious circumstance had usually been brought forward to account for the situation. It would appear, then, that from the cases reported in this paper this trend, when present in the stock, might produce in the few right-handed individuals of the sinistral stock a condition of brain similar to their collateral relatives and ancestors, with the result that the speech area in such persons came developed in an ectopic position.

Dr. Hugh T. Patrick of Chicago said that about thirty-three years ago, when he was a medical student, Dr. Janeway gave a sort of rule of thumb in deciding on who was right-handed and left-handed, a rule which seemed to work pretty well; that is, that a left-handed person must be a left-handed writing person. All other activities were of less importance.

Dr. Joseph Collins of New York City said that it was currently reported or spoken of in literature that the majority of children were left-handed. That was widely believed. However, credible statistics showed that only about 5 per cent. of adults were left-handed. There must be a serious mistake on one side or the other. He was inclined to think that it was on the side of those who believed that children were all left-handed or that the majority of them were left-handed. Second, to all rules there were exceptions. It was quite possible that some of these cases referred to by Dr. Kennedy were exceptions to the rule, which was that the speech area of left-handed individuals was on the right side of the brain. Third, if Dr. Patrick would substitute fighting for writing he would agree with him. If a man fought with his left hand he was left-handed. If a man did the primitive things of life, the things that were necessary in order for him to continue his activities, he was a left-handed individual. Dr. Collins said that he was left-handed, but did all such things as writing, golf, and drawing with his right hand; in striking, at least in doing any of the fundamental things, he was left-handed. He was inclined to believe that the executive speech area might be vicariously assumed by areas of the brain adjacent to the injured part of the brain, which would explain the majority of cases which were exceptional to the generally established rule.

Dr. E. B. Angell of Rochester, N. Y., said that some years ago a woman of thirty-two had come to autopsy for brain tumor. As a child of five she had thrombosis of two-thirds of the operculum and part of the motor tract of the left side. As a child she had been right-handed. As the result of the hemiplegia and loss of the power of the right arm she had to develop the left hand. She regained the power of speech. At the autopsy were found the remains of the destructive process of the old thrombosis. The right side corresponding to the right operculum and the right motor hemisphere were much enlarged. The cortex was much thickened, showing the influence of the change from right to left as she grew up to womanhood.

Dr. Charles K. Mills of Philadelphia said that he felt more like responding to the discussion by Dr. Collins than to the paper by Dr. Kennedy, although both, of course, went together. There was nothing he disliked so much as to disagree with Dr. Collins, as everybody knew, but he thought Dr. Collins was altogether wrong about this thing of the primitive instinct of preservation. This did not have to do with the faculty of speech and development of one or the other hemisphere. It was the educational acquirements of the brain that had to do with this. It was very true that Dr. Collins might be able to hit out with his left hand, but he would say that the probabilities were that he hit out with both sides of his brain, with speech as well as in other ways. He believed Dr. Kennedy had really the right explanation. If you had the inheritance of speech through many generations with the inheritance of right-handedness, the left-handedness in a given generation was then sort of an accidental deviation, so to speak, and it didn't have the force that it would have had if the left-handedness had been inherited through many generations.

Dr. J. Ramsay Hunt of New York City said that, in the interest of harmony between Dr. Mills and Dr. Collins, he would suggest that Dr. Collins was both right and wrong; that some of his functions he performed with the cortex and some with the globus pallidus. Many of the acts, for instance fighting, must be referable to the automatic mechanism. So we saw that a man could be right-sided in regard to the globus pallidus.

Dr. Bernard Sachs of New York City said that it was a fact that the majority of children were, in the ordinary sense, born ambidextrous, and the important thing was that most people became later in life absolutely right-handed. Another point was that the loss of speech defect was associated with loss in both hemispheres about equally, and it was only later in life that the preponderance of the left hemisphere had become well established. He believed there were different groups of cases. The ordinary child born ambidextrous could be made a right-handed child. There were some individuals who never could be made right-handed. He positively believed that the larger number of people were right-handed because they were made so by education.

Dr. W. G. Spiller of Philadelphia said that he had had occasion to examine a child bearing out Dr. Sach's statement. A child born right-handed had been burned in a gas flame and had been unable to use the right hand for five or six weeks. During that time he used the left hand, and when the bandage was removed continued to use the left hand. It required training to induce the child to resume the use of the right hand. Undoubtedly, if the effort had not been made to train the right hand the child would have continued using the left hand.

Dr. Francis X. Dercum of Philadelphia remarked that if his recollection served him correctly, the right side of the child was larger at birth. He thought there was more muscle tissue in the right side than in the left. It could not be merely a matter of training, but if the right hand was injured the left hand was trained.

Dr. Harvey Cushing of Boston said that he thought it might be of interest to call attention to a fact that was well known that right- and left-handedness went back into other forms of life than mammals. It was a matter that was of interest even to Leonardo da Vinci, who made a study of spirals. Occasionally there was a left-handed reversal of this form. In certain shells, perhaps one out of ten thousand, there was a left-handed spiral, all the remainder being right-handed. Then, too, he believed that parrots were right-handed, or right-clawed, as a rule, and whether or not any experiments had been made to ascertain whether this could be altered by removal of speech he did not know.

Dr. Alfred Reginald Allen of Philadelphia stated that the blood supply of the human being and most mammals and vertebrates was not symmetrical with the vertical axis. It was probable that the left side of the brain might get a better blood supply than the other side of the brain.

Dr. Isaac Adler of New York said that he had been making some cranial measurements and ran across a peculiar relation of the right hemisphere. In the right-handed person the right parietal lobe was more prominent than the left. In the left-handed person it was not so. It was about equal. The conclusion was that most left-handed people, therefore, were ambidextrous.

The Effects of Laminectomy and Simple Exposure of the Cord Upon the Reflexes and Upon Some Symptoms of Spinal Disease.—Dr. Pearce Bailey and Dr. Charles A. Elsberg of New York City prepared this paper, which was read by Dr. Elsberg, who stated that in a large number of spinal operations remarkable changes in the skin and tendon reflexes had been observed. Laminectomy and exposure of the spinal cord frequently had a marked influence upon the symptoms and physical signs of spinal disease. In some instances complete and permanent relief had followed the operation.

Dr. E. Sachs of St. Louis said that there were two points which struck him forcibly; that was, that these changes lasted only at most forty-eight hours, frequently only twenty-four hours, and in the second place, that, with one or two exceptions, most of the changes he recorded were changes in which spasticity improved to the point of normal reflexes or in which normal reflexes subsided and became really subnormal. He would like to ask Dr. Elsberg whether a possible explanation might be that it was due to a temporary loss of cerebrospinal fluid. He thought that it had been demonstrated pretty conclusively that it took from welve to forty-eight hours for cerebrospinal fluid, if it had been lost in a considerable quantity, to reform. In the second place, these symptoms that he had described might be due to a cutting of the inhibitory influence of the central nervous system. Might it not be that the temporary removal of the cerebrospinal fluid opened these central paths again and in consequence the inhibition of the central nervous system came into play again?

Dr. James J. Putnam of Boston said that he should like to call attention in the first place to the fact that Fritzig many years ago reported certain effects due to laying bare the cortex of the brain. Simple exposure had a very considerable effect. A great many years ago Dr. Putnam had had under his care a patient with an intramedullary spinal tumor which had been operated upon by Dr. Keen of Philadelphia, with the result of finding that nothing could be removed. Then the patient went on with complete paralysis of his leg and then he developed very intense, almost unbearable pain in the arms. Dr. Warren then operated again. He could not say exactly whether the operation had been done in the cervical region, but he thought not. He thought that the idea was that a free exit should be obtained for the cerebrospinal fluid and the other operation had been done in the dorsal region. At any rate, the spinal canal had been reopened and, to their great pleasure and surprise, the patient's pain went away and never came back again as long as he lived. He had done, as Dr. Putnam dared say others had, quite a good many lumbar punctures for the relief of dizziness. In trying to explain the favorable result in these cases he could not find any better way to account for it than that it broke up the habit of the nervous system. He thought there was distinctly such a thing, and knew there was as regards functional nervous disorders, and he thought there might be as regards the organic processes of what we might call state or habit; and it happened now and then that, when some considerable influence came into temporary play changing this, the set character of the process that was going on might be altered. At any rate, in a great many kinds of conditions one saw results that could not be explained under any other hypothesis.

Dr. Foster Kennedy of New York said that he would ask if Dr. Elsberg did not consider that in an operation done on the spinal region or any operation a great many factors entered into the procedure. One of them was essentially the anesthetic. He thought he had seen in cranial cases, as well as in spinal cases, when the patient was coming out of the anesthetic, that the reflexes were abolished, and he had seen an extensor plantar reflex and so-called Babinski sign not change to flexor but become absent and later reappear as before. He would suggest to Dr. Elsberg the question as to whether or not the anesthetic had any influence.

Dr. Francis X. Dercum of Philadelphia said that this discussion recalled to his mind some experiences he had had with the late J. William White at the Philadelphia Hospital quite a number of years ago, in which they noted a quite persistent improvement in several of their cases for which they could not account. They had found no lesion in the cord and the patients simply got better after the laminectomy. Dr. White and himself wrote a paper upon the subject, entitled "The Value of Operation Per Se." They thought it due to some unexplained improvement of nutrition, something that brought more blood in the healing process to the wounded cells, and that the nutrition of the cord itself was raised and some restoration of function followed.

Dr. E. W. Taylor of Boston said that some work that he had been doing for a couple of years might perhaps throw some side light on this question. In cases which had been anesthetized, no matter what the operative procedure, invariably the acetone and diacetic acid varied anywhere from 36 to 72 hours, and the muscular and mental activity of these patients was pretty near parallel with the persistence and amount of acidosis, and he would feel that the change noted in these cases was one of depression and that perhaps an investigation along the line of acidosis in the changes in the reflexes would be fruitful.

Dr. Joseph Collins of New York said that he thought that the explanation that Dr. Taylor had just given was the proper explanation and the one that would stand the test. He would suggest, therefore, and would put this in practice in his own cases hereafter, that the bicarbonate of soda be given in moderate saturation, as he understood that that was the surgical procedure in order to diminish the acidosis. He thought

he ought to say that in a considerable number of cases of laminectomy done by Dr. Elsberg for him there had been no improvement whatsoever in any of the morbid manifestations of disease.

Dr. Charles A. Elsberg of New York City said that they had also a theory to explain these symptoms, but did not think it was worth very much more than the other theories proposed. It was purely theorizing. They had investigated these cases from various viewpoints. They had, for example, watched the condition of the reflexes in a considerable number of patients who had been under prolonged anesthesia not only after operations on the cerebrospinal system, but other operations, and had seen suppression of the reflexes for a few hours until the patient was fully awake, but never after that. They thought very much over the question of whether the escape of cerebrospinal fluid had anything to do with it. One must remember that in opening the dura he is exposing the cord to a higher pressure than it had before. In addition to that he had injected considerable amounts of saline solution just before the cord was closed in order to have it full of cerebrospinal fluid, and it showed nothing different from those in whom the spinal fluid had escaped. The question of acetone was one that he was unable to speak about. He had examined a number of patients who had acetonemia and that had regularly a depression of normal reflexes.

Progressive Atrophy of the Globus Pallidus. A Special Form of the "Paralysis Agitans Syndrome" Occurring in Early Life and Associated with Atrophy of the Cells of the Globus Pallidus.—Dr. J. Ramsay Hunt of New York City read this paper, stating that paralysis agitans undoubtedly included a variety of types which were related clinically but which must present differences in the localization and character of the underlying pathological lesion. In the present study an effort was made to isolate a special group of paralysis agitans cases, namely, the juvenile type, on the basis of certain definite changes in the motor cells of the corpus striatum. In one case which was studied the sole lesion was atrophy and disappearance of the large motor cells of the globus pallidus system. The globus pallidus system was the motor center proper, while the neostriatum (caudate and putamen) formed an inhibitory and coordinating cortical mechanism. The mechanism which was involved in this disease was the motor or afferent system of the globus pallidus. A destructive lesion in the case of the globus pallidus produced not only paralysis of certain automatic and associated movements, a slowness of movement and loss of motor initiative but a great increase in muscular tonus as well. An affection of the small-cell system of the neostriatum released the motor mechanism of the globus pallidus from control, and there resulted the phenomena of the chorea of Huntington. A destructive lesion of both types of cells produced chorea, athetosis, spasms, rigidity, and tremor in various combinations.

Dr. B. Sachs of New York said that he was absolutely in sympathy with Dr. Hunt's efforts to separate some of the groups of paralysis agitans. One of Dr. Hunt's cases he had had an opportunity to study. The case of this boy had impressed him at the time by the fact, and he had made the statement, accordingly, that here was a case of paralysis agitans appearing in early life and with some of the symptoms that we ordinarily associated with disseminated sclerosis. In other words, when the disease occurred in early life, it had some of the symptoms which we knew always occurred in early life, although the other disease appeared later in life. He had no right, nor had he the desire, to deny that it might be due to changes in the globus pallidus and that there might be some explanation for the lesions in other cases of paralysis agitans. These changes in the globus pallidus were the only changes that Dr. Hunt was able to put his finger on. There was danger of making that the seat of the chief pathological lesion. The question arose whether they were not simple terminal changes? Had they any actual causative relation to the disease which had lasted twenty years? In a case of this sort it wou'd be absolutely necessary to see the anterior pole of the brain and the very lowest part of the spinal cord in order to be sure that we had really got at the chief changes underlying the disease.

Dr. J. Ramsay Hunt of New York said that, of course, this was only one case; but one case, if thoroughly studied, was as good as a thousand, and he felt that he was right. As to the diminution of cells, he had been very careful in making comparison with the normal count, not just guessing. Then the cells showed all the changes of chronic atrophy. Now, of course, if he had suddenly presented such a case and asked his hearers to believe that it was because of paralysis agitans, they might wonder. Wilson had come very near it with Wilson's disease. Here was a disease involving the caudate nucleus that immediately threw a light on that reflex. There were two great cell groups here, the large cell group of the globus pallidus and a smaller group. Then the phylogeny and anatomy all favored such an idea. These tracts of the system developed very early in the life of the fetus.

Werdnig-Hoffman, Early, Infantile Progressive Spinal Muscular Atrophy.—Dr. M. A. Bliss of St. Louis read this paper, stating that an apparently healthy and intelligent child, who had made the normal progress of an infant for the first few weeks or months of life, began without sudden onset, and without obvious cause, to lose power. The weakness was first noticed in the legs and in the hips; as the disease progressed the lower portion of the back became so affected that the child was no longer able to sit up. The disease pursued a progressive course, the shoulders, thighs, upper arms, forearms and legs being successively involved, and finally the muscles of the hands and feet. Fibrillar twitching of the muscles might be present in some cases. The limbs were usually absolutely flaccid, and the deep reflexes were abolished. There was no pain or tenderness, and no disturbance or sensation. The disease ran a slowly progressive course, death taking place from failure of respiration or bronchopneumonia. Although pathologically these cases closely resembled the progressive muscular atrophy of adults, they presented considerable differences. The disease started in the proximal muscles, and only later affected the hands. The atrophy was not so striking as in adult cases; in fact, the infant often appeared well nourished. Cases with spastic condition of the legs were rare. He reported in detail the cases of three children by the same mother, all apparently normal and healthy at birth, but who fell victims to this disease at the age of about nine months and died as the result of it before they reached the age of three years.

Amyotrophic Lateral Sclerosis.—Dr. John H. W. Rhein of Philadelphia read this paper, in which he stated that the subject of his report was aged 56. The symptoms were atrophy of both arm muscles, including the small muscles of the hand, the flexors and the extensors of the forearm, biceps, triceps, shoulder girdle, pectorals, and serratus magnus. There were fibrillary tremors of both arms. Both sides of the tongue were atrophied, the knee and arm jerks were exaggerated, but there was no Babinski sign or spasticity. The Wassermann reaction was positive. Death occurred about a year after the onset. The pathological study was made of the cord, medulla, pons, internal capsule, basal ganglia, corpus callosum, and cortex with Marchi as well as other methods. The results of this study were presented.

Dr. F. R. Fry of St. Louis said that some years ago he had reported a classical case of Friedreich's ataxia in a girl of twelve or fifteen years of age. At a later period the mother of this girl, who was then about forty-two years of age, developed amyotrophic lateral sclerosis. He simply mentioned that little coincidence as possibly interesting from an etiological standpoint as to whether this syndrome did not represent the same kind of amyotrophic tendency that Friedreich's disease itself was clinically considered to be.

Dr. Samuel Leopold of Philadelphia said that he had reported on this same subject. In his case the individual had died within two years. He found some round-cell infiltration, and, on looking up the subject to see what relation syphilis had with this condition. found that in about one-third of the cases syphilis played a very important rôle. So that might be a dominant feature in these very rapid cases.

Tuesday, May 9—Second Day.

Familial Spastic Paralysis.—Dr. C. Eugene Riggs of St. Paul, Minn., read this paper, saying that the classical syndrome of this disease was spastic paralysis of the lower extremities, often involving the trunk muscles, occasionally the upper extremities and sometimes the face muscles as well. The muscles of the upper and lower extremities, as in his cases, were hard and resisted passive movements. Reflexes were increased; ankle-clonus and Babinski were commonly present. Pes equinus and adductor contractions occurred. Some patients soon became bedridden, while others might walk for some time. Optic atrophy might occur; as might also weakness of the eye muscles, nystagmus, vertigo, idiocy,

speech defects, bulbar symptoms, atrophy of the small muscles of the hand, bodily defects, hyphosis, and scoliosis. Sensation was normal, and there were usually no involuntaries. He reported three cases of the same parents, in which neither parent was alcoholic or neuritic. They had three other children which did not become affected. The familial characteristics were clearly evidenced in these patients although no definite fault could be discovered in the racial line of either parent.

Dr. JOHN H. W. RHEIN of Philadelphia said that about two years ago before the Philadelphia Pediatric Society he had described a family very much the same as that described by Dr. Riggs. There were five members, all of whom were affected in the same way. One child escaped. All these children had developed the disease in the fourteenth year of age. One of these children had died at the age of 14, after a serious convulsion. The Wassermann reaction of the father and mother of the children had been negative. This was the only generation in which this had occurred. He had looked up the literature and found the disease reported in 111 families by some ninety observers.

On the Diagnosis of Subacute Combined Sclerosis of the Spinal Cord Associated with Severe Anemia.—Dr. WILLIAM B. CADWALADER of Philadelphia read this paper, in which he stated that in 1913 Dejerine had published an article in which he called attention to a certain type of sensory dissociation observed by him in three cases of posterolateral sclerosis of the spinal cord, one of the cases coming to autopsy. The type of combined sclerosis ran a subacute course and had its origin in an infection or a toxic process, the nature of which had not been definitely determined, or was referable to pernicious anemia. The author recorded the notes of the histories and the results of examination of nine cases that he believed conformed to the type of combined sclerosis of the spinal cord associated with anemia. In each of these cases there was more or less disturbance of voluntary motor power of the lower extremities, with ataxia and moderate spasticity. The tendon reflexes were exaggerated, and in all but one the presence of a typical Babinski sign was demonstrated. Two types of sensory phenomena were recorded, subjective and objective. The patients all complained of subjective disturbances of sensation, variously described as numbness, burning, tingling, coldness and heaviness of the lower extremities or of the hands. Examination showed that tactile sensation and sensations for heat, cold, and pain were normal in all but one case. Bone sensation, as tested by the appreciation of the vibrations of a tuning fork, was lost or modified in the lower limbs in every case. The inability to recognize posture of the toes, associated with diminished appreciation of passive movements of the toes or fingers, was present in all cases. It was known that the various deep sensations and stereognostic perceptions passed through only the long fibers of the posterior columns, and it was the long fiber system alone that was involved in this type of combined sclerosis. It was clear, therefore, that by applying these known pathological and physiological facts it was possible in most cases, accurately to determine the location and extent of the sclerosis when it occurred within the posterior columns, and, by determining the location and extent of the sclerosis, a positive opinion as to the nature of the condition that had produced it could be given.

Dr. JAMES J. PUTNAM of Boston said that he was fortunate enough a good many years ago to see eight cases and to have four postmortem examinations in rapid succession and then for many years he took great interest in this very striking trouble. In the first place he was rather surprised that Dr. Cadwalader spoke of a reflex condition, the knee jerks, etc., as exaggerated. That was to say, he spoke of the whole picture as of being of a spastic trouble even in the early stages. Certainly in almost all the cases he had seen, and Dr. Taylor and he at one time reported fifty, that had not been the case, and, whether it was that they missed the early stage, he did not know, but he did not see how that could have been, for he had seen these patients from the very earliest moment. The microscopic changes were certainly very striking. He had seen a very considerable improvement in at least one of these patients through training similar to that one used in tabes.

Dr. C. EUGENE RIGGS of St. Paul said that as to treatment, he had in one or two instances noticed very marked improvement from the intravenous injection of salvarsan. He remembered a patient who had died recently in which he was able to get the blood count up to normal; although the cord symptoms remained the same. The patient left his observation and some time ago died. He presumed there had been a return of the anemic state. He remembered a patient two or three years ago who could not walk. That patient walked in a somewhat unsatisfactory manner when he left the hospital and he had heard of no recurrence of the trouble. Bramwell stated that he had one case of remission in pernicious anemia which lasted nineteen years; therefore he thought the patient still needed watching.

Dr. CHARLES L. DANA of New York City said that this seemed to be a disease which was increasing in this country. Certainly he saw many more cases than he did a few years ago and not long ago he had received a letter from a gentleman in charge of a large sanatorium in the Middle West in which he said, though not a specialist himself, that he had a great many cases of this type coming to his sanatorium. If you saw these cases very early and recognized their character, not necessarily by any distinct evidence of pernicious anemia, for you often don't get that, you could hold them and sometimes keep them well for years. He had a patient of this kind now in the fourth year and distinctly better than when he first saw him. If the cases went on until they were really established, the patients almost always died in two or three years. Hence, it was a matter of extraordinary importance to the neurologists and to the general profession to detect these cases early.

Dr. L. F. BARKER of Baltimore said that in his experience there were two extremes of clinical symptoms. Sometimes the extreme was on the ataxic side, sometimes the spastic side. In other words, sometimes the degeneration was more marked in the lateral funiculi and sometimes in the posterior funiculi. The emphasis on cases occurring without anemia seemed to him important. He believed it made clear that the cord lesion was not due to anemia but that the cord lesion and anemia probably had a common cause. It was a disease of the whole body. There was another factor which should always be kept in mind. None of these patients had acid in the stomach juice. It was a disease, therefore, which probably involved the whole body, a very extensive distribution of lesions and disturbance of function. It looked as though it were a toxic affair. Another point he would emphasize was the occurrence sometimes in families. He remembered distinctly two instances in which two brothers were affected. He had seen the best results from large doses of hydrochloric acid after meals and arsenical preparations internally, through salvarsan, together with a period of rest and general upbuilding. He had one man who had been very well for several years; his hemoglobin had gone to 108 and he was a very robust man. His brother had died. The patient's hemoglobin was down below 30 per cent. at one time. He could not believe he would continue well. He thought he would ultimately die of the disease.

Dr. HUGH T. PATRICK of Chicago, presented this paper, saying that in 1908 Laurans collected nineteen cases of facial diplegia in multiple neuritis. To this list the author has added twenty-nine, including his own, but perhaps two or three of these might be considered doubtful besides half a dozen that he had taken at second hand, the original reports not being accessible. Perhaps the most frequent type was a not very severe multiple neuritis beginning in the legs, affecting the arms less, with total facial diplegia. The combination of complete double facial palsy with less intense involvement of the extremities was the striking feature. In only one rare instance was the facial palsy partial. But the degree of quadriplegia was exceedingly variable. Assuming that multiple neuritis was always caused by a poison and knowing that certain tissues were peculiarly vulnerable to certain poisons, perhaps it was equally reasonable to say that certain poisons had a special predilection for certain tissues. This could not confidently be answered in the affirmative. But the negative aspect was interesting. Apparently the most frequent causes of multiple neuritis did not cause facial diplegia. No case had been due to a metallic poison (except probably one of plumbism) and he believed no case due to alcohol, although one patient had been a wine dealer. He had found no typical case due to diphtheria, though of 171 cases of diphtheritic paralysis collected by Ross, five showed more or less facial diplegia and of fifty cases of precocious palatal paralysis in diphtheria collected by Rolleston, two had had

labial palsy. There was no case following typhoid unless his first case was one. The most frequently surmised cause had been influenza but in no case was the definitely ascertained and in only four out of thirty-four cases was it thought highly probable.

Dr. SIDNEY I. SCHWAB of St. Louis said that he had had two cases, one of which died and the other recovered, in both of which the bladder and rectal reflexes were lost. That brought up two points of particular interest: one was the diagnostic side of these cases, that was the differentiation from so-called myelitic processes and, second, the mechanism of the process itself. It seemed almost a clinical proof, it appeared to him, of the work of Rose, the experimental work in regard to which, through the sheath of the sciatic nerve, material could be carried in certain instances to the spinal canal. He thought the method by which the spinal cord was finally attacked was through the sheath of some of the peripheral nerves. He believed it was impossible anatomically to procure bladder and rectal insufficiency purely through the peripheral mechanism. It was too complicated and there were too many collateral branches and we must conclude that in these cases there was some definite process which got to the cord along the nerves which happen to be attacked. The other feature he happened to know about was the curious emotional state of these patients. The neuritis itself might be somewhat insignificant, but in the midst of this neuritic complication the sudden or even gradual paralysis caused in these patients, at least in two he knew about, a most profound emotional disturbance. The last patient he had became very emotional and very depressed, slightly maniacal, and with the disappearance of the facial diplegia these symptoms disappeared.

Dr. WILLIAM G. SPILLER of Philadelphia said that he might add another case of facial diplegia which occurred in neuritis. He had been interested in alcoholic neuritis. A year or two ago he had had a man in his service with marked neuritis of the Landry type. There had been ascending paralysis. He had had marked diplegia facialis. It was purely alcoholic. He had been admitted to the "drunk" wards many times. In regard to Dr. Patrick's statement regarding the possible toxic factor, during the past winter there had been an interesting case in the Philadelphia Hospital, that of a boy recovering from tetanus. During the latter period he had developed facial paralysis. Facial palsy was fairly common in tetanus. The facial palsy had developed during the fourth or fifth week from a draft. He thought that the tetanus intoxication predisposed the lad to the effect of the draft.

Dr. ARCHIBALD CHURCH of Chicago said that there had been admitted to the neurological service at Michael Reese Hospital last November a young man who presented the condition Dr. Patrick had outlined, rather mild multiple neuritis with diplegia. He had made a searching investigation for the cause of the disease, although the condition had appeared some two weeks before his admission. There had been a most painstaking search of the secretions of the body, spinal fluid, blood and everything else which was open to laboratory investigation, but these had been entirely negative. The causation therefore was obscure, but the boy had been excessively fond of candy, to which he had access, and had eaten one to two pounds a day. After the onset of symptoms, which were largely sensory at first, a severe diarrhea developed. He had recovered rapidly and was discharged in ten weeks able to walk and feeling quite comfortable. Another case he had seen many years ago and which had occurred with acute intestinal disturbance.

Dr. CHARLES L. DANA of New York City said that he had watched cases of neuritis in alcohol wards for twenty-five or thirty years, and there had never occurred a case of facial diplegia. He had been accustomed to look out for that phenomenon because many years ago he had had a case which fell definitely into the group that Dr. Patrick had described. This had been a case of a young man quite well known, a tennis player, very active, athletic and a moderate drinker, who had gone down to North Carolina and, while there, had been exposed to a good deal of cold and wet, possibly canned food, and had developed a slight degree of multiple neuritis and very complete facial diplegia. He had gradually but slowly recovered from his neuritis and almost completely from the diplegia. Dr. Schwab had spoken of the mental state. Rather curiously, though this patient had been somewhat depressed, he had apparently gotten well. About ten years afterward he had developed melancholia and shot himself. He thought the suggestion Dr. Patrick had made that these things were toxic in character was in harmony with what we had been believing in regard to the pathology of paralysis. He had for a long time considered that it was an infectious neuritis and he did not see that the fact that a neuritis was unilateral would exclude infection. We got infectious herpes. It seemed to him that along that line we should discover the cause of the disease.

Dr. SMITH ELY JELLIFFE of New York City asked what lay behind the individual susceptibility in these cases? It certainly was recognized that the toxic factor might be one of the links in the chain, but what about the nervous system itself? What about the variations in the nervous system? What about the condition which Adler had called specific attention to and from that attitude of mind one must interpret the hysterical monoplegia of toxic origin, the diplegic cases of bacterial origin. In such cases one must go to the hysterical side of the mechanism.

Dr. S. LEOPOLD of Philadelphia said that he wished to place on record a similar case in which the etiology was clear. It showed the typical facial diplegic and multiple neuritic phenomena, in which the origin was given as quinsy. It was known that quinsy was associated with streptococci. The etiology might be fairly closely associated.

(*To be continued.*)

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, May 3, 1916.

DR. WILLIAM J. TAYLOR, VICE-PRESIDENT, IN THE CHAIR.

Mental Disease and Mental Defect; Their Magnitude and Import.—Dr. OWEN COPP, Physician in Charge, Pennsylvania Hospital for the Insane, observed that it was a common fallacy of the public mind and especially of the mind of the legislator, that mental disease and mental defect might be neglected without serious consequences, which fallacy was grounded upon a deep unconsciousness of the magnitude of the matter. Mental disease, though multiform, affected three classes of individuals: (1) the insane; (2) the feeble-minded, and (3) the epileptic. Percentages taken from the last United States census, while not necessarily signifying a relative increase in the prevalence of insanity, proved the public burden to be increased by accumulation of insane in institutions more than twice as fast as the general population. Figures presented only the average for the whole country, a wide variation obtaining in different States; for example New York had a ratio of 74 per cent. larger than Pennsylvania in institutions, and an admission rate of 59 per cent. in excess of Pennsylvania, while Massachusett's ratios in excess of Pennsylvania's were 75 and 114 respectively. The deficiency of enumeration and provision for the feeble-minded and epileptic was shown to be greater than for the insane. The annual cost of the burden of insanity alone at the conservative estimate of $175 per capita of insane in institutions in 1910 was presented as $32,863,425 in all the States of the Union. This, however, did not show the cost of home care, the loss of income from productive labor, the handicap of the wage earner by a dependent in the family, nor the consequences of stress upon relatives with similar inheritance predisposing to mental breakdown. It ignored also the collateral burden of inefficiency, vagrancy and pauperism, delinquency and crime, of alcohol and drug inebriety and associated evils upon the present generation, to say nothing of the future. Goddard's tragic story of Martin Kallikak illustrated the possibilities of harm to succeeding generations. There should be in the writer's opinion a militant attack upon the whole problem, the first step in advance should be a definition of the problem itself and its exact relations to social and economic conditions. Progress already made by public and private agencies was noted. There was needed in every large community a psychiatric hospital, free to the poor, the center of investigation and diagnosis of mental abnormalities for the guidance of educators, juvenile courts and charitable agencies; for short intensive treatment of acute mental conditions on the plane of the hospital for physical diseases; in affiliation with the medical school and university for clinical teaching of psychiatry and abnormal psychology that the future family physician might be retained to foresee, prevent, and afford early treatment of incipient mental disease; with its outpatient department to facilitate

home treatment through a social service arm reaching out into the community to promote mental hygiene and supervise the after care of the mentally affected restored by treatment in institutions.

Dr. F. X. Dercum emphasized the importance of the practical questions in the field of insanity and called attention to the lack of facilities for the care of the mentally defective. The victory of the therapeutics of insanity was to be gained by an increased knowledge of its pathology, notably of the rôle of the internal secretions and of the autonomic and sympathetic nervous systems. A still greater victory was to be found in the prevention of insanity by physiological and moral living. All causes damaging the germ plasm of the parent impaired the structure and metabolism of the descendants. The rôle of syphilis and alcoholism was obvious.

Dr. George E. Price observed that it was curious that the branch of medicine having to do with the most vital element—reason, had been the slowest in scientific development. It was scarcely more than 100 years since the first attempt at rational care of the insane had been inaugurated. He felt that Dr. Copp in speaking of prevention through education had struck the keynote of the problem. The great mass of people referred to by Dr. Copp, apparently normal, but who are the victims of an unstable nervous system because of poor heredity formed the class to be helped by an understanding of normal living.

Dr. Copp, in closing emphasized the necessity of a mental patient receiving the same study as that given any other form of disease, and as a case in point cited an instance of a young girl who had developed some mental trouble said to be dementia præcox, but in whom by a thorough examination such as would be made in a general hospital juvenile paresis was revealed. The history showed that the father had died of general paresis in a hospital for the insane, that the mother and five brothers were syphilitic. The difference between the hospital attitude toward mental disease and the simple care attitude was observed to be that in the latter, effort ceased with the care of the father; while in the former, the attempt was made to prevent infection and to bring others under treatment. That much could be done for the mental patient was demonstrated in that during the last year 55 per cent of a large admission rate at the Pennsylvania Hospital for the Insane recovered; or, were so far improved that they could live under ordinary conditions of life. Not only was it not humane to neglect the chronic case, but not economical. Partial regeneration of nerve centers and development of dormant energies were possible, thus reducing the cost of care of the patient and contributing materially to his support.

Splenectomy as a Therapeutic Procedure. — Dr. Edward B. Krumbhaar, in an historical outline of splenectomy, said it was one of the oldest abdominal operations of which the profession had definite knowledge. It had undoubtedly been practised by the Greeks and Romans and was continued at rare intervals through the Middle Ages. With the advent of anesthesia and the greater surgical skill of the nineteenth century the use of the operation had been extended to the removal of the chronically diseased organ. In the past three years a more active study of the surgical treatment of certain so-called primary anemias had led to the much wider application of splenectomy, which type of case the paper chiefly dealt with. Diseases in which removal of the enlarged spleen was definitely contraindicated included the various forms of leucemia, malaria, atrophic cirrhosis of the liver, and most cases of tuberculosis and syphilis. Too much emphasis he felt could not be laid upon the necessity of ruling out atypical forms of leucemia before splenectomy was undertaken. The presence of a hemorrhagic diathesis should usually be sufficient to prevent operation, although the repeated hemorrhages from varices, or other mechanical cause, as in Banti's disease, were rather indications for operation than otherwise. In the severer anemias if the bone marrow were found to be aplastic splenectomy should not be attempted. The operation had met with surprising success in Banti's disease, Gaucher's disease, the congenital and acquired forms of hemolytic jaundice, and to a lesser extent pernicious anemia. The cause of improvement or cure in these diseases he said was but little understood and was probably different in different disease. In Banti's disease it was important that the operation should be undertaken before the disease had progressed beyond the first of the three stages. Before undertaking the operation, however, all possible causes for the syndrome presented should be ruled out so far as possible by a complete, but not necessarily prolonged, study of the course of the disease, with frequently repeated blood examinations. From an observation of reported cases it would seem wiser to restrict splenectomy in Gaucher's disease to those cases unusually handicapped by the results of the disease but which were still good surgical risks. The field in which splenectomy had been practised with the greatest success was undoubtedly that of hemolytic jaundice. The most important disease to which splenectomy had been applied, on account of its greater frequency and greater severity, was pernicious anemia. Although it was still too early to promulgate any definite decision upon the value of the operation in this disease it was possible to base views upon substantial evidence; although great improvement might be said to persist in a certain number of cases, in the majority the effect of the operation was to produce a remission. The time of operation and the determination of the case to be subjected to operation were questions which must be decided after the lapse of time and the acquisition of more evidence. The operation had already proved of sufficient value to form the prediction that such an accumulation of evidence would in time be forthcoming.

Dr. Edwin E. Graham asked if Dr. Krumbhaar could give any information upon the difference in the prognosis in the three grades of Banti's disease, as he had distinguished them.

Dr. Krumbhaar, in replying to Dr. Graham, recalled one record in which very good results were found after splenectomy late in the third stage of the disease when the patient was very anemic, and with an advanced degree of cirrhosis and ascites. Further than this he could not say.

Dermatitis Caused By Cosmetics and Wearing Apparel, Particularly Those Containing Paraphenylene Diamin.—Dr. Frank Crozer Knowles observed that it had been only of recent years that dermatitis of the scalp, face, neck, and wrists could be positively ascribed to irritants, the exact formulæ of which were known. In 1901 Mewborn reported a case of severe dermatitis of the face caused by the use of a French hair dye the active principle of which was paraphenylene diamin. Apparently the major portion of hair dyes depended for their action upon this element. The frequency of the eruption from this chemical could be judged from the report in the *Journal of the American Medical Association* of eight cases during the first six months of 1909. Heimann had reported six instances within the last month. The distribution of a dermatitis in the upper third of the face, the swollen eyelids, the vesiculation of the rims of the ears were suggestive of the cause. The reaction frequently occurred several days or even weeks after the last application of the dye. The symptoms of intoxication from paraphenylene diamin and other poisonous aniline dyes, it was said, might be divided into (1) Toxic skin eruptions, dermatitis and urticaria, with great burning and itching; (2) Gastrointestinal symptoms, such as nausea; (3) Nervous symptoms, sleeplessness, dizziness, weakness of the legs, epileptiform attacks, and syncope. In several instances death had resulted and cases had been reported in which retrobulbar neuritis with impairment of central vision and a central scotoma for red and green were observed. Damianos had recorded an instance of chronic poisoning from a hair dye containing this substance used over a considerable period. Paraphenylene diamin was not the only chemical responsible for a dermatitis of the scalp and the contiguous parts; instances had been reported in which resorcin, and "triple extract of heliotrope" had caused a dermatitis. Foerster had reported a case caused by the use of a proprietary mouth wash containing formalin; Heimann, an interesting case in which a dermatitis was caused by the use of a bust developer, the outbreak extending to the extremities, neck and face. Aurantia or hexanitrophenylamin, used in the staining of cheap yellow shoes, might also cause an outbreak of dermatitis. Anilin dyes were often also causal of an eruption. Attention was called to the danger of dermatitis from the use of fur dyed with paraphenylene. The apparent immunity shown by some persons might be explained by the resistance of the individual or the perfection of the dyeing process. Since the hair dye mentioned was prohibited from sale in France, Austria, and Germany its toxic properties could be readily appreciated. Olson had made the reasonable suggestion that if the selling of fur dyed with paraphenylene diamin were not prohibited by law there should be at-

tached a label stating that this dye had been employed. Since the wearing of fur was so universal it was urged that the laity in general should be cognizant of the attendant dangers and physicians constantly on the watch for this etiological factor. As a prophylactic measure it should be recognized that dyed fur should not touch the skin.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

THE UNIVERSITY OF THE STATE OF NEW YORK.

May, 1916.

Answer a total of ten of the questions on each paper, but no more.

ANATOMY.

1. Define the following terms: (a) diploe, (b) epiphysis, (c) medullary cavity, (d) Haversian canal, (e) tuberosity.
2. Give the origin of the muscles inserted in the tuberosities and bicipital groove of the humerus.
3. In what vessel does *each* of the following terminate: (a) lateral sinus (*sinus transversus*), (b) internal saphenous vein (*vena saphena magna*), (c) brachial vein (*vena brachialis*), (d) hepatic vein (*vena hepatica*)?
4. Give the minute anatomy of lung tissue.
5. Name the spinal nerves entering into the formation of plexuses and state the plexus with which each is connected.
6. Name and describe (a) the lobes of the liver, (b) the fissures that divide them.
7. Describe the intercostal arteries and give their relations.
8. Describe the development of the femur, and state when (at what time of life) the epiphyses join the shaft.
9. Describe the endocardium.
10. Describe the spermatic cord (*funiculus spermaticus*).
11. Name *three* layers that are differentiated at the embryonic area in the development of the ovum, and mention the structures developed from each.
12. What is (a) the cauda equina, (b) the foramen of Winslow, (c) the optic thalamus, (d) the trigonum vesicæ, (e) the Eustachian tube?

PHYSIOLOGY.

1. Name the automatic centers located in the medulla oblongata.
2. What is the ratio between the respiration and the pulse? What is the average measurement of the adult male chest in (a) deep expiration, (b) complete inspiration?
3. Name the superficial reflexes. Describe a test that may be applied to ascertain the integrity of *each* of the superficial reflexes.
4. Explain the physiology of the accepted fresh air and dietetic treatment of tuberculosis.
5. Name, in order of importance, the avenues through which the heat of the body is lost.
6. Describe in detail the changes undergone by food in the stomach.
7. Give in pounds the normal quantity of blood in an individual weighing 150 pounds.
8. Name the chemical elements that are constant in the human body.
9. State the function of the secretions of the prostate and Cowper's glands.
10. What changes take place in the composition of the blood as it passes through the kidneys?
11. What are the general functions of fat within the body?
12. Describe the physiology of the contraction of a muscle fiber.

CHEMISTRY.

1. What are the alkali metals? Give the valences and the general characteristics of the alkali metals.
2. Describe iodine giving (a) its occurrence in nature, (b) its properties, (c) its therapeutic uses.
3. What is amyl nitrite?
4. Describe a test for lactic acid in the stomach contents.
5. What are proteins? Where in the body are proteins found? Name the chief proteins.
6. Give a test for (a) glucose in the urine, (b) uric acid in the urine.
7. Define water of crystallization. Distinguish between deliquescence and efflorescence.
8. Describe a method of preparation of hydrogen sulphide. What are the properties of hydrogen sulphide?
9. Differentiate between alloy and amalgam.
10. What is wood alcohol? Give the formula and the properties of wood alcohol.
11. What are fatty acids? Name *three* fatty acids.
12. Give the formula for (a) saltpeter, (b) Chile saltpeter, (c) blue vitriol, (d) green vitriol.

HYGIENE AND SANITATION.

1. What are the first two duties of a physician when called to attend a case of communicable disease?
2. What principles must be observed in the safe storage of rain water for a drinking supply?
3. What features should be considered in locating and constructing a privy on the premises of a village schoolhouse?
4. Give the maximum period of incubation in *each* of the following diseases: (a) smallpox, (b) scarlet fever, (c) whooping cough.
5. What diseases may be conveyed through cow's milk?
6. Give the theory of the application of vaccination against smallpox.
7. Name *five* diseases that may be contracted by eating uncooked meat.
8. What *five* common metallic substances are factors in the production of occupational diseases?
9. Give in detail the method used in the United States for accomplishing the registration of marriages.
10. How may Vincent's angina be positively diagnosed? With what communicable disease is it most frequently confused?
11. What are the purposes for which the Binet-Simon test is employed?
12. What are the two most important factors to be observed in preventing the occurrence of bubonic plague?

SURGERY.

1. Describe gangrene of the foot due to diabetes.
2. Give the symptoms and the surgical treatment of the early stage only of tuberculosis of the hip joint.
3. State *two* effective methods of controlling hemorrhage from the popliteal artery, when without access to surgical instruments.
4. Give the technic of lumbar spinal puncture.
5. Describe the operation of thoracotomy for empyema.
6. Describe a radical operation for epithelioma of the lower lip (omit aseptic technic).
7. Give the clinical picture of an acute osteomyelitis of the tibia.
8. What is the treatment of impacted fracture of the head of the femur?
9. Give the clinical history of a case of chronic appendicitis.
10. Discuss the surgical management of gunshot wound of the abdomen.
11. State the most common form of dislocation of the shoulder, and give Kocher's method of reduction.
12. Describe and diagnose femoral hernia.

ANSWERS.

ANATOMY.

1. *Diploe* is the cancellous tissue found between the outer and inner layers of the flat bones.

Epiphysis is a bony process which was developed separately from the bone and afterwards joined the bone.

Medullary cavity is the hollow part in the center of a long bone, and which contains the marrow.

Haversian canal is the central canal of a Haversian system.

Tuberosity is a non-articular, rough, broad prominence of a bone.

2. To the *greater tuberosity of the humerus*, there are attached, the Supraspinatus (*origin* from Supraspinatus fossa of scapula and supraspinatus fascia), infraspinatus (*origin* from infraspinatus fossa of scapula and infraspinatus fascia), and Teres minor (*origin* from dorsal surface of axillary border of scapula). To the *lesser tuberosity*, the Subscapularis (*origin* from subscapular fossa and axillary border of scapula). To *bicipital groove*, the Latissimus dorsi (*origin* from six lower thoracic vertebræ, lumbar fascia,

crest of ilium, and from lower three or four ribs).

3. The *lateral sinus* terminates in the internal jugular vein; the *internal saphenous vein* terminates in the femoral vein; the *brachial vein* terminates in the axillary vein; the *hepatic vein* terminates in the inferior vena cava.

4. *The structure of the lungs.*—"In the lungs the bronchi branch in a tree-like manner, the final ramifications opening into the pulmonary cells. The larger intrapulmonary bronchi are lined by columnar ciliated epithelium resting on a basement membrance. Lying under this basement membrane are longitudinally disposed elastic fibers with loose connective tissue. More externally is a layer of smooth muscle fibers arranged circularly, the bronchial muscle. External to the bronchial muscle is a fibrous coat containing scattered, irregular plates of hyaline cartilage. The smaller bronchi (bronchioles) have no cartilaginous plates, but their muscular coat is well marked. Each bronchiole leads into a small number (three or four) of wider thin-walled spaces, lined by flattened epithelium, and called atria. Out of each atrium open two or three blind diverticula, each of which is called an infundibulum. The walls of the infundibula are studded with hemispherical sacs known as alveoli, which are lined by flattened, non-nucleated, epithelial cells. Between adjacent alveoli there is a dense network of capillaries, supported by a small amount of fine connective and elastic tissue; the network of capillaries is thus common to the two adjacent air cells, and the blood in the capillaries is separated from the air in the alveoli merely by two thin layers of epithelium. In birds, even the alveolar epithelium appears to be absent, the blood and air being separated solely by the capillary wall."—(Bainbridge and Menzies' *Essentials of Physiology.*)

5. The first four spinal nerves enter into the formation of the *cervical plexus;* the fifth, sixth, seventh, and eighth cervical and the first thoracic nerves enter into the formation of the *brachial plexus;* the first four lumbar nerves enter into the formation of the *lumbar plexus;* the fourth and fifth lumbar, first, second, third, fourth, and fifth sacral, and the coccygeal nerves enter into the formation of the *sacral plexus.*

6. The *lobes of the liver* are: Right lobe, left lobe, lobus quadratus, lobus caudatus, and Spigelian lobe (the last three are subdivisions of the right lobe). The *fissures of the liver* are: Umbilical fissure, fissure for the ductus venosus, transverse fissure, fissure for the gall bladder, and fissure for the inferior vena cava.

"*Right and left lobes* are separated from each other by the umbilical fissure on the under surface, and posteriorly by the fissure of the ductus venosus. The right is the larger, and contains the transverse fissure and fissure for the vena cava; is subdivided into the three following lobes:

"The *lobus quadratus:* bounded by the umbilical and transverse fissures and the fossa of the gall bladder.

"The *lobus Spigelii* is on the posterior surface, and is the projection between fissures for the inferior vena cava and ductus venosus, behind the transverse fissure.

"The *lobus caudatus* connects the preceding lobe with the main mass of the right lobe, and lies behind the transverse fissure.

"The *longitudinal fissure* is occupied by the round ligament, and divides the organ into right and left lobes; it is separated into two parts by its union with the transverse fissure.

"The *anterior* part or *umbilical fissure* contains the remains of the umbilical vein, and lies between the left lobe and the lobus quadratus. The *posterior* part or *fissure of the ductus venosus* lies between the left lobe and the lobus Spigelii, and contains the remains of the ductus venosus.

"The *transverse* or *portal fissure* is placed at right angles to the longitudinal fissure, between the lobus quadratus and the lobus Spigelii, and lodges the hepatic duct, artery, and portal vein, nerves, and lymphatics. The artery lies between the duct in front, and the vein behind.

"The *fissure for the vena cava* is placed obliquely at the posterior margin of the liver, behind the gall bladder, lying between the right lobe and the lobus Spigelii, and separated from the transverse fissure by the lobus caudatus. The hepatic veins enter the vena cava at the bottom of this fissure."—(*Aids to Anatomy.*)

7. "The *superior intercostal* artery arises from upper and back part of the subclavian, behind scalenus anticus, bends backward over pleural dome in front of neck of first rib to first and second intercostal spaces, supplies small branches to cord and deep spinal muscles. On the neck of the first rib, the first intercostal nerve is external, and first thoracic ganglion of sympathetic, internal to artery.

"The *thoracic intercostals* (nine pairs) arise from posterior part of aorta, run transversely outward on bodies of vertebræ, and behind pleura to intercostal spaces. The right ones, crossing over front of spine, supply the bodies of vertebræ and pass behind the esophagus, thoracic duct, and azygos veins. The arteries of both sides are crossed by sympathetic chain and its splanchnic branches. On reaching intercostal spaces, they divide into anterior and posterior branches; the *anterior* branch crosses the space obliquely upward so as to get to lower border of the upper rib near the angle: at first it lies between external intercostal and fascia, subsequently between two intercostal muscles; anastomose with anterior intercostal of internal mammary, thoracic branches of axillary. Above the artery is a companion vein, and below the intercostal nerve. The *posterior* branch passes backward between vertebræ and superior costotransverse ligament, sending inward, *spinal* branch through intervertebral foramen to cord, membranes and body of vertebræ, and backward, *muscular* branch which divides into inner and outer branches to muscles of back. A branch, *the collateral intercostal*, is given off near the angle of the rib, which runs along the upper border of the lower rib. Branches accompany the lateral cutaneous nerves of the thorax from the main trunks of the intercostals. The three lower branches pass forward between muscles of abdominal wall; anastomose with epigastric and phrenic."—(*Aids to Anatomy.*)

8. "*The femur is developed* by *five* centers: one for the shaft, one for each extremity, and one for each trochanter. Of all the long bones, except the clavicle, it is the first to show traces of ossification: this commences in the shaft, at about the seventh week of fetal life, the centers of ossification in the epiphyses appearing in the following order: First, in the lower end of the bone, at the ninth month of fetal life (from this the condyles and tuberosities are formed); in the head at the end of the first year after birth; in the great trochanter, during the fourth year, and in the lesser trochanter, between the thirteenth and fourteenth. The order in which the epiphyses are joined to the shaft is the reverse of that of their appearance: their junction does not commence until after puberty, the lesser trochanter being first joined, then the great, then the head, and, lastly, the inferior extremity (the first in which ossification commenced), which is not united until the twentieth year."—(Gray's *Anatomy.*)

9. "The *endocardium* is a serous membrane that covers the inner surface of the heart. Histologically it consists of two layers, an inner lining of simple squamous epithelial cells (endothelium or mesothelium), and an outer layer composed of connective-tissue fibers, connective-tissue cells, and smooth muscle cells. The endocardium is reflected over the heart valves where the smooth muscle is particularly abundant."—(Hill's *Histology.*)

10. The *spermatic cord* consists of the vas deferens with artery to the vas, spermatic artery, and pampiniform plexus of veins forming spermatic vein above, sympathetic nerves, the cremasteric artery, the genital branch of the genitocrural nerve, lymphatics, together with some areolar tissue; it extends from the internal abdominal ring to the testis, passing in its course along inguinal canal, from which it emerges by the external abdominal ring, and thence in front of the pubes to the scrotum. The vas deferens is placed at the back of the cord.

11. *The three layers of the blastoderm* are: The epiblast, mesoblast, and hypoblast.

From *the epiblast* are derived: The skin, and its appendages (hair, nails), and glands (including the mammary glands); the nervous system (brain, spinal cord, ganglia and nerves); the epithelial parts of the organs of special sense.

From *the mesoblast* are derived: The skeleton, connective tissues, muscles and bones, heart, blood-vessels, lymphatics, and spleen; the urinary and generative organs.

From *the hypoblast* are derived: The epithelial lining of the alimentary canal and its glands; the epithelial lining of the respiratory tract, Eustachian tube, thyroid and thymus.

12. The *cauda equina* is the lower part of the spinal cord, consisting of the roots of many nerves.

The *foramen of Winslow* is a foramen connecting the two sacs of the peritoneum; it is situated behind and below the transverse fissure of the liver.

The *optic thalamus* is one of the basal ganglia of the brain; it forms the side of the third ventricle and part of the floor of the lateral ventricles.

The *trigonum vesicæ* is a triangular surface at the base of the bladder, immediately behind the urethral orifice; it is bounded behind at each angle by the orifice of a ureter.

The *Eustachian tube* is an osteocartilaginous channel connecting the middle ear with the pharynx.

PHYSIOLOGY.

1. The *centers situated in the medulla oblongata* are those for: Respiration, salivary secretion, mastication, sucking, deglutition, speech production, facial expression; it also contains the cardiac and vasomotor centers.

2. The normal respiratory rate is about 18 per minute; the normal pulse rate is about 72 per minute. Hence the ratio between the respiration and pulse is about 1:4. The average measurement of the adult male chest is about 32 to 35 inches, in deep expiration, and about 34 to 38 inches in complete inspiration.

3. *Superficial reflexes.* 1. *Plantar;* elicited by stroking or scratching the sole of the foot, which causes attempts to withdraw the foot from the source of irritation. 2. *Gluteal;* a contraction of the gluteal muscles *en masse* when the buttock is gently pricked or scratched. 3. *Cremasteric;* when the thigh is irritated on its inner surface by grasping, stroking, scratching, etc., the homolateral testicle is distinctly retracted. 4. *Erectile reflex of penis;* produced by gentle friction of the glans penis, especially of the frenum, resulting in turgidity of the organ and erection. Its analogue in the female pertains to the erection of the clitoris. 5. *Abdominal;* consists of a retraction of the anterior abdominal walls when the skin is slightly irritated. 6. *Mammary;* in women, a retraction of the epigastrium when the mammary region is tickled. 7. *Palmar;* corresponding to the plantar, usually less developed than the latter."—(Hall's *Physiology.*)

4. "The *objects of climatic treatment* are to furnish a complete change of environment, to withdraw the patient from the influences under which he contracted the disease, to subject him to a climate which will promote healing in the lungs by increasing the activity of the digestive functions and thus stimulating nutrition, by improving the tone of the nervous and circulatory systems, either by invigoration or protection, and by lessening exposure to secondary infections. Further climatic treatment may have for its object palliation of distressing symptoms in patients whose diseases may not prove fatal for months.

The main *object of dietetic treatment* is to enable the patient to regain his lost weight but not to make him a "flabby, breathless mass of inert fat." A patient who eats and digests well is a patient half-cured. The teeth should receive careful attention and be placed in order at once. The preparation and serving of meals should receive the strictest attention, as the kitchen is the only pharmacy that many patients should know. The meals should be carefully chosen and each planned in relation to the preceding. The physician should carefully scrutinize the diet and lay down broad general rules. It is a wise plan to vary the articles of diet as much as possible, and special dishes on special days of the week should be avoided when possible. The table should be attractively arranged and the food well and quickly served (not quickly eaten). Many patients will eat well if the courses follow one another in rapid succession, whereas if long delays occur cough or fatigue may prevent the eating of the desired amount. To pile up a plate with large amounts and to expect a patient who, especially at first, has little or no desire for food to consume it is a mistake. Repeated helpings until the desired amount is eaten is preferable."—(Lawrason Brown, in Osler's *Modern Medicine.*)

5. *Heat is lost to the body* through the skin, the lungs, and in the urine and feces.

6. In the *stomach* the food is mixed with gastric juice, more thoroughly triturated, moved around the stomach, and finally expelled into the duodenum. In the stomach the proteins are split up into proteoses and peptones by the pepsin of the gastric juice, and certain bacteria are killed by the hydrochloric acid; starches are not affected; fats are split up by a gastric lipase.

7. Formerly the quantity of blood in the body was said to be about one-thirteenth of the body weight. Just now it is said to be about one-twentieth of the body weight. According to the former of these, an individual weighing 150 pounds would have about 11½ pounds of blood; on the latter basis he would have about 7½ pounds of blood.

8. The *chemical elements in the human body* are: Carbon, hydrogen, oxygen, nitrogen, chlorine, sodium, potassium, sulphur, calcium, iron, phosphorus, magnesium, fluorine, iodine, silicon.

9. The function of the secretions of the prostate and Cowper's glands is not understood. These secretions are essential to or aid in maintaining the motility of the spermatozoa; perhaps they render the seminal fluid more fluid and so aid in its ejaculation. According to Dearborn, "the secretion of the prostate seems to preserve the vitality of the spermatozoa, while that of Cowper's gland is a mucus which prevents their too wide dissipation in the vagina."

10. The blood on its passage through the kidneys loses water, salts, urea, carbon dioxide, and extractives.

11. *Functions of fat in the body.*—(1) It helps to maintain and regulate the body heat; (2) it acts as a protection to certain delicate structures; (3) it gives form and roundness to the body; (4) it acts as a reserve substance which the body can draw upon for nutrition in case of emergency; (5) it probably plays a part in the maintenance of the life and nutrition of the cells of the body.

12. To produce contraction of a muscle fiber a certain stimulus is necessary. A nerve impulse is generally the stimulus, but mechanical, chemical, electrical, and thermal stimuli will do as well. The time that elapses between the application of the stimulus and the contraction of the muscle is called the latent period. During contraction the following changes take place in a muscle: (1) It becomes shorter and thicker, but the volume remains the same; (2) it consumes oxygen; (3) it sets free carbon dioxide; (4) it forms sarcolactic acid; (5) it becomes acid in reaction; (6) it becomes more extensible and less elastic; (7) there is an increase in heat production, and consequently a rise of temperature; (8) the electrical reaction becomes relatively negative.

CHEMISTRY.

1. The *alkali metals* are sodium, potassium, lithium, rubidium, and cesium. They have a valence of one. Each of them makes a single chloride, a hydroxide, and one or more oxides. The hydroxides are more or less alkaline and are basic in character.

2. *Iodine* is a solid, occurring in bluish-gray crystalline scales; it has a metallic luster, is volatile, and has a peculiar odor: it is slightly soluble in water, but is very soluble in alcohol, ether, carbon disulphide, and benzene. It is a weak bleaching and oxidizing agent. Iodine is a disinfectant, parasiticide, irritant, and counterirritant.

3. *Amyl nitrite* is a liquid containing $C_5H_{11}NO_2$ and other nitrites.

4. *Test for lactic acid.*—Put three drops of concentrated solution of phenol and three drops of an aqueous solution of ferric chloride in a little water; to this add a little of the filtered gastric contents (after a test meal); if lactic acid is present the blue color turns to a canary-yellow.

5. *Proteins* are nitrogenous organic substances of complex composition and unknown constitution. They are found in every cell and tissue of the body, and are indispensable to the "life" of these cells and tissues. The chief proteins are: Albumins, globulins, nucleoalbumins, histons, protamins, albumoses, peptones, hemoglobins, nucleoproteids, glycoproteids, keratins, collagen.

6. *Test for glucose.*—If albumin is present it should be removed. The urine is then tested for *sugar* as follows: Render the urine strongly alkaline by addition of Na_2CO_3. Divide about 6 c.c. of the alkaline liquid in two test tubes. To one test tube add a very minute quantity of powdered subnitrate of bismuth, to the other as much powdered litharge. Boil the contents of both tubes. The presence of glucose is indicated by a dark or black color of the bismuth powder, the litharge retaining its natural color.

Test for uric acid.—To a few drops of the urine add a little dilute nitric acid and evaporate to dryness; a yellowish-red residue is left; add a little ammonia; a violet color results.

7. *Water of crystallization.*—Many substances, upon assuming the crystalline form, take with them a certain number of molecules of water which are necessary for the maintenance of the form (and often of the color) of the substance. This water is called *water of crystallization.*

A *deliquescent* substance is a solid which has such a tendency to unite with water that it absorbs it from the air, becoming damp and finally liquid.

Efflorescence is the property of certain crystalline bodies whereby, on exposure to air, they lose their water of crystallization and fall to powder.

8. Hydrogen sulphide may be prepared by the action of dilute sulphuric acid upon ferrous sulphide:

$$FeS + H_2SO_4 = FeSO_4 + H_2S.$$

Hydrogen sulphide is a colorless gas with a disgusting odor and taste (like rotten eggs); soluble in alcohol, slightly soluble in water; it is used as a reagent in the chemical laboratory.

9. An *alloy* is a substance composed of two or more metals.

An *amalgam* is an alloy containing mercury.

10. *Wood alcohol* is methyl alcohol, CH_3OH. It is a colorless liquid, with a sharp, burning taste and an alcoholic odor; it burns with a pale flame, giving less heat than that of ethyl alcohol; it is a good solvent for resins, sulphur, potash, and other substances. It is poisonous.

11. *Fatty acids* are monobasic acids, of the acetic series, with the general formula $C_nH_{2n}O_2$. Acetic acid, CH_3COOH; valerianic acid, C_4H_9COOH; palmitic acid, $C_{15}H_{31}COOH$.

12. Saltpeter, KNO_3; Chile saltpeter, $NaNO_3$; blue vitriol, $CuSO_4$; green vitriol, $FeSO_4$.

HYGIENE AND SANITATION.

1. In case of communicable disease, the physician should isolate the patient and inform the local health authorities.

2. "In collecting rain from roofs, it is very necessary to insure cleanliness of the supply, by allowing the first flow to run to waste, thereby avoiding contamination by dirt, leaves, bird-droppings, soot, and other matters deposited upon the roof and collected in the gutters. A number of automatic devices are in use for the purpose of diverting the first washings away from the conductors. After this has been done, they change position, so that the subsequent fall is saved and stored. . . . Cisterns for storage of rain should be so constructed and arranged as to admit of easy inspection and cleaning. They should be kept covered so as to exclude dirt and dust of all kinds, insects, mice, and other animals, and to shut off light as well, for the presence of light is an important aid to the development of lower plant forms. The best materials for their construction are bricks, stone, cement, and slate. Cement makes a good lining if one is desired; mortar, however, is objectionable on account of the solvent power of water upon lime, which will cause progressive increase in hardness. Cisterns should be provided with overflow pipes discharging into the open air rather than into the house sewer, and their exits should be protected by wire netting against the entrance of leaves and small animals." (Harrington's *Hygiene.*)

3. "The *privy* must be at least six feet away from any dwelling, and fifty feet away from any well, spring, or stream; ready means of access must be provided for the scavenger, so that the contents need not be carried through a dwelling; the privy must be roofed to keep out the rain, and be provided with ventilating apertures as near the top as possible; that part of the floor which is not under the seat must not be less than six inches above the level of the adjoining ground and moreover be flagged or paved with hard tiles having an inclination toward the door of the privy of one-half inch to the foot, so that liquids spilt upon it may run down outside and not find their way into the receptacle under the seat; the size or capacity of this receptacle may not exceed eight cubic feet, by which limitation a weekly removal of its contents is necessitated; the sides and floor of this receptacle must be of some impermeable material, the floor being at least three inches above the adjoining ground level; the seat of the privy should be hinged so as to allow of the ashes being readily thrown in, and the receptacle unconnected with any drain or sewer.—(Notter and Firth's *Hygiene.*)

4. The maximum period of incubation of *smallpox* is twenty days; of *scarlet fever* is twelve days; of *whooping cough* is ten days.

5. *Diseases which may be conveyed through cow's milk:* Tuberculosis, typhoid, scarlet fever, diphtheria, measles, foot and mouth disease, milk sickness, cholera, tonsillitis, and gastrointestinal disturbances.

6. *Theory of the application of vaccination against smallpox:* "The more recent view of the immunity conferred by vaccination against smallpox is based upon the demonstration that the disease variola in man and the disease vaccinia in the bovine species are of the same nature and not different, as was formerly believed. This has been established by numerous inoculation experiments. The disease in the cow is a modified form of the human disease. The effect of the passage of the unknown microorganisms through the insusceptible bovine is to diminish the virulence of the germ, that by its subsequent inoculation in man immunity is secured without the profound disturbance which infection with a germ of unmitigated virulence would involve."—(Delafield and Prudden's *Pathology.*)

7. *Five diseases that may be contracted by eating uncooked meat:* Trichinosis, tape worm, echinococcus disease, tuberculosis, anthrax.

8. Lead, zinc, mercury, arsenic, and antimony may produce occupational diseases.

9. It is impossible to answer this question. There is no method used; each State does as it pleases, and in some States there is no law on the subject.

10. *Vincent's angina* may be positively diagnosed by the finding of the fusiform bacillus and the spirocheta darticola in the membrane; it is most frequently confused with diphtheria.

11. The *Binet-Simon test* is employed to test the mentality of children and feebleminded persons.

12. Two most important factors in preventing the occurrence of bubonic plague are: (1) Complete destruction of rats and keeping them out of buildings; (2) persons exposed to infection should receive a prophylactic vaccination with Haffkine's vaccine.

SURGERY.

1. *Diabetic gangrene* "is prone to occur in persons over fifty years of age who suffer from diabetes mellitus. The vessels of these patients are often markedly atheromatous. In some cases the existence of the diabetes is unsuspected before the onset of the gangrene, and it is only on examining the urine that the cause of the condition is discovered. The gangrenous process seldom begins as suddenly as that associated with embolism, and, like senile gangrene, which it may closely simulate in its early stages, it not infrequently begins after a slight injury to one of the toes. It but rarely, however, assumes the dry, shrivelling type, as a rule being attended with swelling, edema, and dusky redness of the foot, and severe pain; the dead part remains warm longer than in other forms of senile gangrene; there is a greater tendency for patches of skin at some distance from the primary seat of disease to become gangrenous, and for the death of tissue to extend upward in the subcutaneous planes, leaving the overlying skin unaffected. The low vitality of the tissues favors the growth of bacteria, and if these gain access the gangrene assumes the characters of the moist type and spreads rapidly. There is usually a peculiarly offensive odor about the patient, which differs from that of other forms of moist gangrene." (Thomson and Miles' *Surgery.*)

2. *The early symptoms of hip-joint disease* are: Night cries (in a child); lameness in the morning; a slight limp; tendency to become tired on slight exertion; wasting; spasm; pain; swelling, and deformity (either real or apparent).

Treatment: In the early stages, rest in bed is indicated, with extension; also, tonics, restoratives, fresh air. If necessary, the limb should be straightened and put up in plaster of Paris, or a brace or other mechanical appliance should be used. Intraarticular injections of iodoform have been recommended. Resection of the hip may be necessary.

3. *Hemorrhage from the popliteal artery* may be controlled by: (1) Placing a pad in the popliteal space and then keeping the leg in forced flexion by means of a bandage; (2) pressure on the femoral artery.

4. *Lumbar puncture:* "The back should be carefully sterilized and through asepsis must be preserved in every detail. The patient may lie on the right side with the left knee well drawn up, may lie prone with a pillow under the belly, or may sit in a chair with the body bent forward. The site of the intended puncture may be frozen with ethyl chloride, but no general anesthetic is required. A Pravaz syringe is employed. The needle, which should be three inches in length, is guarded by the surgeon's index-finger and the point is inserted one-half inch to the right of the median line and between the third and fourth lumbar vertebræ. It is pointed upward and a little inward under a spinous process. In a child the needle enters the canal at a depth of from two to three centimeters; in an adult, at a depth of from four to six centimeters. The fluid is permitted to fall drop after drop into a sterile test-tube." (DaCosta's *Surgery.*)

5. *Empyema.* "Treatment should be undertaken without delay. Aspiration seldom cures, but may be

undertaken where the dyspnea is great, and an anesthetic given afterward for the excision of a piece of rib. Drainage is always necessary, and is best done by excising a portion of the fifth or sixth rib in the midaxillary line. The patient should be allowed to come round quickly from the anesthetic, so that the coughing which occurs will expel the masses of coagulated lymph and help to expand the lung. A big drainage tube is then inserted. Daily dressings are necessary, but irrigation of the cavity is seldom needed." (*Aids to Surgery.*)

6. *The treatment of epithelioma of the lower lip* consists in early and free removal of the affected portion of the lip and of the infected glands. In comparatively small growths which do not involve the angle of the mouth, a V-shaped incision is carried through the entire thickness of the lip so as to include the disease and an area of healthy tissue beyond it. In larger growths, particularly when situated at the angle of the mouth, it is necessary to carry an incision transversely into the cheek to enable the lip to be repaired without leaving deformity. When it is necessary to remove the greater part of the lower lip, the defect may be filled up by flaps of skin taken from below the jaw (Syme's operation). When the tumor is adherent to the lower jaw, it is necessary to resect a portion of that bone along with the lip. The frequency with which recurrence takes place in the lymphatic glands below the jaw renders it advisable to remove these in all cases, whether they are palpably enlarged or not. J. Hutchinson, Jr., recommends that the submaxillary and submental triangles on both sides should be cleared out as a routine procedure." (Thomson and Miles' *Manual of Surgery.*)

7. *Acute infective osteomyelitis.* Causes: The general vitality is lowered, and there is some focus of ulceration in the mouth or throat, by which organisms enter and circulate in the blood. All that is now necessary is that some part of the bone should have its vitality depressed by a blow, strain, or exposure to cold, and the organisms then attack it. The bacteria most commonly found are the staphylococci, but streptococci are present occasionally. The disease usually begins in the new growing bone at the end of the diaphysis, rarely in the epiphysis. The lower ends of the femur and radius, the upper ends of the tibia and humerus, are the commonest seats.

"*Symptoms.*—The disease begins with a rigor, high temperature, and severe pain. The part becomes swollen, infiltrated, and congested, with distended veins over it. The pulse is rapid and small and the tongue dry, and delirium soon comes on. It should be distinguished from acute rheumatism by the fact that the interarticular and not the articular region is affected. Fluctuation can be detected if the bone be superficial, or the abscess may burst on the surface. The bone is then found to be bare over the extent of the abscess cavity. When the bone is deeply seated or the disease confined to the medulla, the swelling is later in evidence, but the pain and toxemia are very severe, and the patient may die from this before local signs show themselves. When the epiphysis is attacked, septic arthritis often quickly follows, and a loose flail joint may result.

"*Treatment* must be very prompt. A free incision must be made through the periosteum and the pus evacuated. In any case, whether pus is found or not, the surface of bone must be gouged away to expose the medulla freely, and any gangrenous tissue scraped out. The cavity must then be washed out and freely drained. The wound in the soft structures is not closed in any part. If symptoms of pyemia occur, it may be necessary to amputate the limb through the joint or bone above, so as to cut off the source of emboli. When a large portion of or the whole diaphysis is necrosed, there are two courses; either to cut short the disease by removing the dead portion at once, or to leave the sequestrum to stimulate the formation of an involucrum. Where there is a single bone, as in the arm and thigh, the sequestrum is left; where there is a double set of bones, as in the forearm and leg, the sequestrum is removed at once. Celluloid, zinc, and ivory rods have been inserted to stimulate osteogenesis. In most cases it is doubtful how much bone is actually dead, so that it is better to open up the cloacæ in the newly formed involucrum to remove the sequestrum. The cavity heals by granulation." (*Aids to Surgery.*)

8. "*In impacted fractures* in the old, liable to break neck close to head, it is unwise to attempt forcible reduction to secure better position of the fragments. These cases should be handled as carefully as possible, and if there are no contraindications the patient should be placed upon a firm level mattress, the foot of the bed slightly elevated, and the leg immobilized either by sand bags placed on both sides or by the application of a long external T-splint. If there is muscular twitching, it is advisable to supplement this dressing by the application of a Buck traction apparatus with from three to six pounds fastened to the stirrup. This weight steadies the part and often gives considerable comfort. This dressing should be used for from four to eight weeks. It may be removed at this time and a short spica of plaster of Paris perhaps applied from the waist to midthigh, and the patient allowed upon crutches. In the aged it is better to remove all apparatus at the end of about five weeks and allow the patient to get up, at first sitting up a short time daily, later resting in a chair, and at the end of about ten weeks walking with crutches.

"Exception to the above rule in the treatment of impacted fractures is in cases occurring in early childhood or middle age, which, if left uncorrected, may result in a deforming coxa vara with considerable subsequent deformity and loss of function. In these cases it is advisable perhaps only after consultation with another surgeon to correct the deformity under ether, place the part in extreme abduction and traction, and while in this corrected position to apply a gypsum spica splint from chest to toes of the affected side after the method of Whitman." (Roberts and Kelly's *Fractures.*)

9. *Chronic appendicitis* may follow an acute attack, but "cases are sometimes met with in which the patient has never had an attack which would suggest acute appendicitis; he complains of impairment of his general health, of abdominal discomfort, sometimes amounting to pain, and inveterate constipation. There may be discomfort in the right side of the abdomen on bending the body or on lifting weights. In some cases the chief complaint is of disturbance of digestion (appendicular dyspepsia). Physical examination is often inconclusive, as there may be no localized tenderness, and nothing can be made out on palpation of the right iliac fossa. The diagnosis is necessarily difficult, and may only be arrived at by a process of exclusion. In many cases it is only cleared up on opening the abdomen, when there is found a kink, stricture, concretion, or twist of the appendix, or adhesions in its neighborhood. Removal of the appendix and liberation of adhesions usually bring about a cure." (Thomson and Miles' *Surgery.*)

10. *Gunshot wound of the abdomen.* "The treatment, even without symptoms of visceral injury, is immediate enlargement of the wound, in order to explore the abdomen, check hemorrhage, and close such visceral perforations as may be found. The abdomen is then flushed with salt solution, and closed or drained, according to the amount of soiling present. If the omentum protrudes it should be ligated and removed, while coils of intestine should be carefully washed with salt solution and returned to the cavity. In cases in which there is doubt as to whether or not a wound enters the peritoneal cavity, such wound should be enlarged and the diagnosis positively made, preparation being made at the same time to treat any visceral injuries that may be found. In gunshot wounds on the battle field an exception has been made to the rule of immediate exploration, because it has been found that the chances of recovery are better without operation."—(Stewart's *Surgery.*)

11. The most common form of dislocation of the shoulder is the subcoracoid. *Kocher's method of reducing* is: To flex the forearm, press the elbow to the side, rotate the arm outward. Bring the arm forward and upward to a right angle with the body, then rotate inward, while the elbow is brought down over the body so that the fingers sweep the opposite shoulder.

12. "A *femoral hernia* protrudes through the crural canal, and presents through the saphenous opening. The coverings are: (1) Skin and subcutaneous tissue, (2) cribriform fascia, (3) anterior layer of the femoral sheath, (4) septum crurale and extraperitoneal fat.

The *Signs* are usually characteristic, viz., a more or less reducible swelling, with an impulse on coughing, and a neck which runs into the abdomen by way of the saphenous opening. From *inguinal hernia* it is distinguished by the neck being below Poupart's ligament and external to the pubic spine. A *psoas abscess* pointing through the saphenous opening is reducible, and has an impulse on coughing; but fluctuation can be felt between the swelling at the saphenous opening and the swelling always present in the iliac fossa in these cases. A *pouch in a varicose saphenous vein* close to the saphenous opening has a characteristic thrill on coughing which should prevent mistakes." (*Aids to Surgery.*)

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CLINICAL METHODS OF MEASURING ACIDOSIS.*

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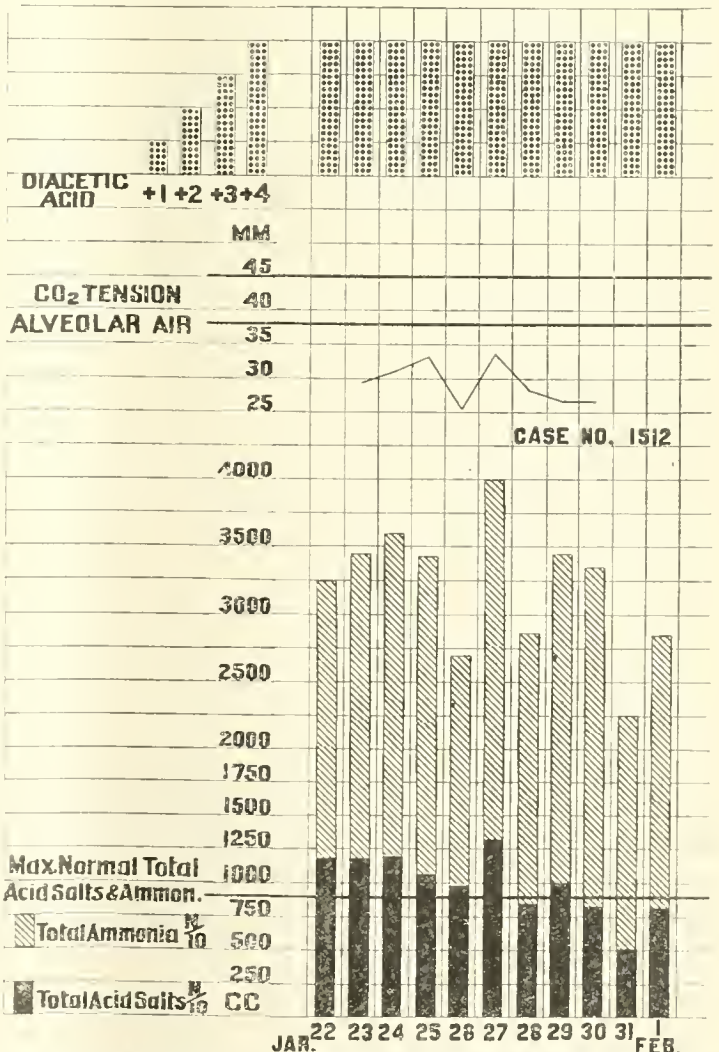
RECENT advances made in medical research have led clinicians to attach greater significance than formerly to the acid content and output of the body. Notably in diabetes and nephritis is it important to have some measure of these facts. The past few years have witnessed the development of several methods of determining with approximate accuracy and reasonable facility the degree or amount of acid intoxication of the body.

A comparative study of the value and limitations of these various methods may be helpful to those clinicians who are not in touch with research or well-equipped clinical laboratories. The phenomenon of acidosis may be estimated either accurately or approximately by the following methods: (1) By a study of the urine in which (*a*) the total acid excretion, (*b*) the total ammonia, and (*c*) the output of ketone bodies have much significance. (2) By a study of the carbon dioxide tension of the alveolar air. (3) By determining the carbon dioxide combining power of the blood. (4) By measuring the hydrogen ion concentration of the blood.

The more practical of these methods will be discussed in detail and illustrated by case records, while the difficult and extremely technical procedures will be but briefly noticed.

The study of the urine, while affording extremely suggestive information, does not necessarily yield a true measure of the body acidity. It tells us only how much acid is excreted. When the production of acid in the body is increased, the outgo in the urine is likewise increased, but there is no definite relationship between the two. Furthermore, there is no simple, accurate way of estimating the total acidity of the urine.

In the metabolism of food and in the tissue changes which accompany work and other energy manifestations, carbonic, sulphuric, phosphoric, oxalic, lactic, hippuric, uric, amino, and other acids are formed. With the exception of the volatile carbonic acid gas, which is eliminated through the lungs, these acids or their various salts, which are non-volatile, are excreted in the urine in varying amounts. According to the laws of physical chemistry, they are dissociated into electrical units, the positive or hydrogen ions and the negative acid radical ions. According to this conception these two sets of ions float about in the solution except when attracted by the poles or electrodes of an electric current. Some acids possess this power of dissociation to a greater degree than do others, hence are known as strong acids, examples of which are sulphuric and hydrochloric acids. Other acids dissociate to a very slight degree and are known as weak acids, examples of which are carbonic and acetic acid. The true acidity of a fluid depends



CASE 1512.—Male. Age, 48 years. Severe diabetes complicated with carbuncle and deep cellulitis in neck, and myocarditis. Operation followed by death from exhaustion without coma. It will be noted that this patient had a severe acidosis evidenced by the excessive excretion of urinary acid and ammonia and by the low carbon dioxide tension.

*Address, in part, before the George Washington Medical Society, Washington, D. C., February 19, 1916.

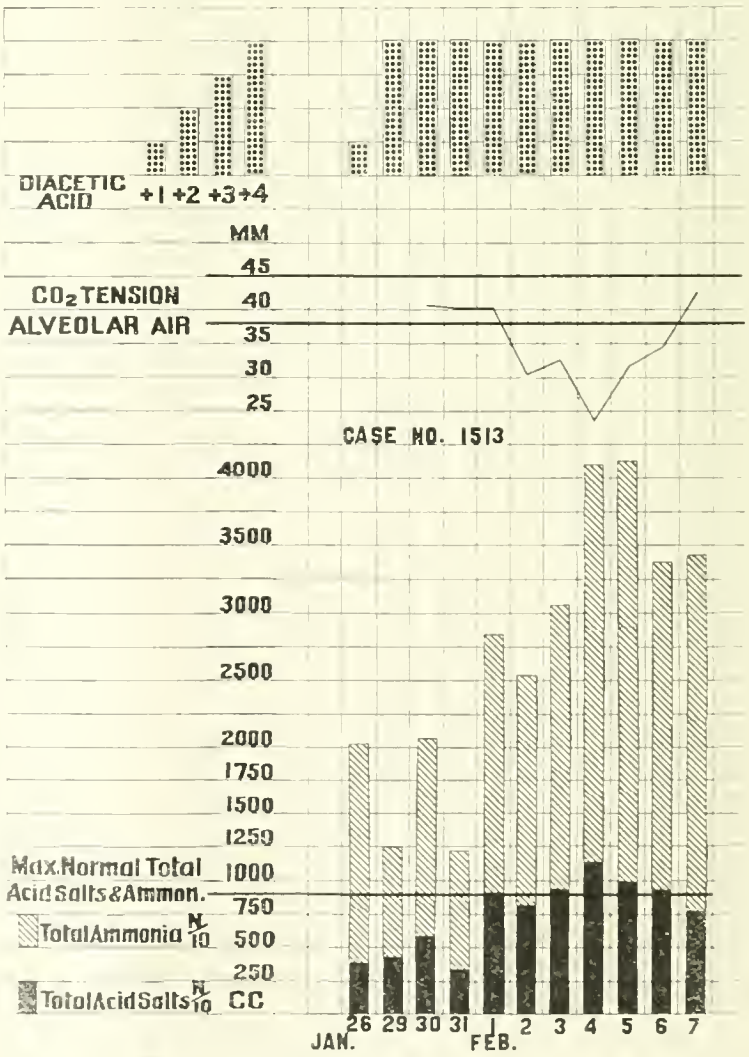
not on the amount of acid but on the amount of hydrogen ions in solution. The measure of these can be determined only by elaborate and extremely technical electrical methods quite beyond the scope of the average clinical laboratory.

The study of the urine by chemical titration methods yields quite different information. By this we determine how much acid hydrogen can be replaced by an alkali or base of definite strength. Thus we attempt to determine the total amount of replaceable hydrogen, which is not the true measure of acidity, for, as above stated, the acidity of a fluid depends upon the amount of dissociated hydrogen ions. Furthermore, in the chemical determination of urine acidity we assume that the turning point from acid or alkali to neutral is definitely revealed by indicators, and this is untrue. No two indicators have the same end-point, hence the determinations by chemical titration means are more or less arbitrary. Notwithstanding these technical difficulties and defects the titration method of estimating urinary acidity is of considerable value when properly done.

The method suggested by Folin is recommended. Decinormal sodium hydrate is used as the alkali and phenolphthalein as the indicator. Neutral potassium oxalate is added to precipitate certain calcium salts which tend to obscure the end-point. It may be done as follows: Place 25 c.c. of urine in a beaker or flask. Add about two teaspoonfuls of finely pulverized neutral potassium oxalate and two drops of a 1 per cent. phenolphthalein solution. Stir or shake vigorously for a few seconds, then titrate with a N10, or decinormal, sodium hydrate solution until a faint but permanent pink appears. Having thus ascertained the number of cubic centimeters of decinormal alkali required to neutralize 25 c.c. of urinary acid, the acidity of the entire 24-hour quantity may be readily calculated. It is better to state this total acidity in terms of decinormal alkali; but, if it is desired to convert it into grams of sodium hydroxide, this may be done by multiplying the total number of cubic centimeters of decinormal alkali by 0.004, the number of grams of sodium hydroxide in 1 c.c. of decinormal solution; or, if it is desired to express it in terms of oxalic acid, multiply by 0.0063, the number of grams of oxalic acid in 1 c.c. decinormal solution.

Having thus neutralized the 25 c.c. of urine, from this same specimen one can easily determine the amount of ammonia present. For clinical purposes, the formalin titration method is sufficiently accurate. This is done as follows: To the 25 c.c. of neutralized urine add 10 c.c. of neutral 40 per cent. formalin. Then titrate again with decinormal alkali. This reading will represent the number of cubic centimeters of decinormal ammonia in the 25 c.c. of urine, from which the amount in the 24-hour specimen may be estimated. The acidity of the urine and that represented by the ammonia are additive. Their sum gives the most accurate expression of titratable urinary acid excretion. For purposes of clinical research Folin's method of estimating ammonia should be employed.

In a preceding paragraph it was mentioned that in the body metabolism two types of acid, volatile and non-volatile, are formed, and that the former is eliminated through the lungs while the latter is excreted by the kidneys. The amount of volatile acid or carbonic acid in the blood bears a constant relationship to the non-volatile acid present. It has been established that the acid content of the body remains practically constant even in the presence of increased production, and that death will supervene before a measurable increase occurs. The body protects itself against this increased production by withdrawing bases or alkali from the tissues, by a remarkable physiochemical property of combining the newly formed acid with neutral salts and proteins in the blood in such way that these substances still remain neutral, by the formation of ammonia from neutral substances, that is the breaking down of proteins, and further by diminishing the amount of carbonic acid in the blood by increased ventilation of it through the lungs. It follows that if the acidity of the blood is repre-

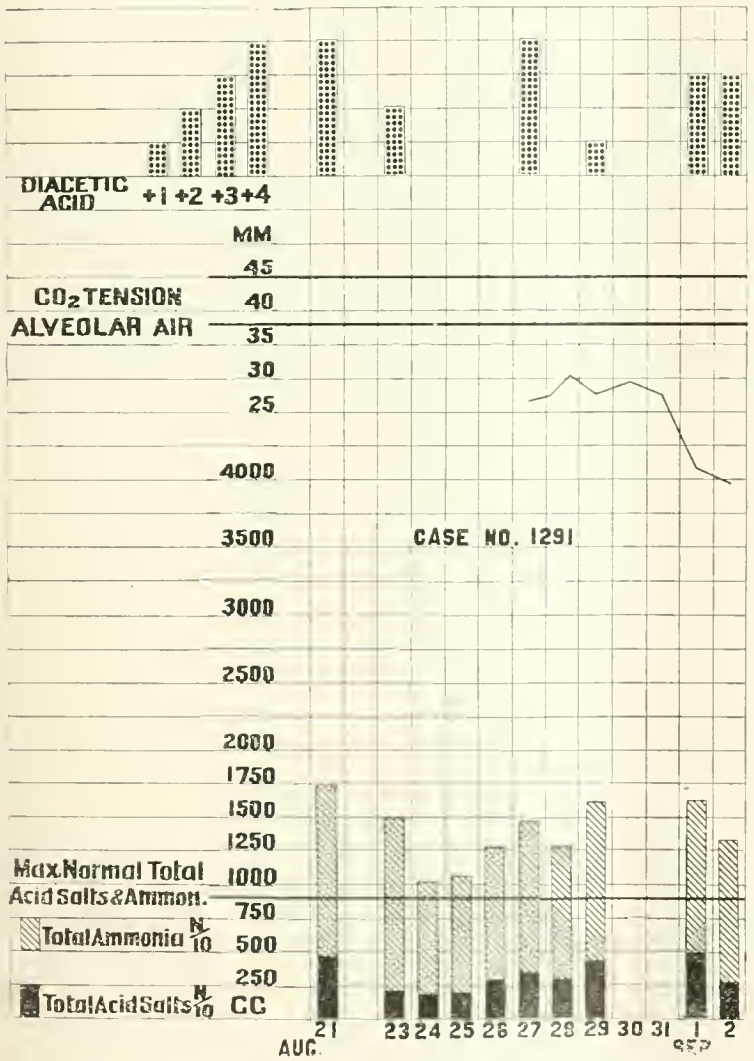


Case 1513.—Male. Age, 74 years. Severe diabetes complicated by advanced arteriosclerosis and gangrene. Operation. Ether anesthesia. Death from exhaustion and without coma. For four days after operation patient exhibited only a mild acidosis, as will be seen from the carbon dioxide tension and urine acid and ammonia output. Following this a severe acidosis developed. The administration of copious doses of soda, water, etc., raised the carbon dioxide tension to practically normal limits two days before death. This case illustrates tremendous acid production with the body eliminating it chiefly as urinary acid. If acid had been retained by the body on the two days preceding death, a much lower carbon dioxide tension would be expected.

sented by the sum of its volatile carbonic acid content and the various other non-volatile acids, that a determination of one enables us to estimate the other; furthermore, if the sum of the two remains constant and one increases in amount, the other must correspondingly diminish. Therefore, a low per cent. of carbonic acid in the blood means a high per cent. of non-volatile acid; conversely, when the non-volatile acids are diminished the carbonic acid content is increased. These facts may be directly ascertained by a determination of the carbon dioxide combining power of the blood, using the unpublished method of Van Slyke, or by taking advantage of the fact that the percentage of carbon dioxide in the lung air is practically the same as that in the arterial blood and employing the much simpler and more practical test of estimating the percentage and barometric tension of carbonic acid gas in the lung air.

Fredericia's Method for Determining the Carbonic Acid Tension of the Lung Air.—Numerous methods for determining the carbon dioxide tension of the lung air have been suggested, but for one reason or another most of them are too complicated or difficult for practical clinical work. The chief objection to many of the methods that have been proposed is that two sets of apparatus are required, one for the collection of the air sample, the other for its analysis. Fredericia's* apparatus was designed to overcome this objection, and his instrument may be used for both purposes. The apparatus, as will be seen from the accompanying cut, is essentially a U-shaped gas-collecting tube, with stop cocks so arranged that a sample of air may be confined in one portion of it and subjected to such chemical treatment as is desired.

The tube is so constructed that that portion of it from stop cock *C*, when closed, to and including the bore of stop cock *G* contains 100 c.c. The section of the tube from *F* to *E* is graduated in tenths of 1 per cent of the total volume of this part of the gas chamber. The scale reads from 2 to 8 per cent. Stop cock *C* is of straight bore, as is seen in the illustrations. Stop cock *G* is of three-way bore. In one position, one arm of the tube communicates with the other; in a second position, communication between the arms is closed; in a third position, the bulb portion of the tube is closed while the other arm communicates with the outlet tube; in a fourth position, these are reversed and the bulb portion communicates with the outlet and the other arm is sealed.



CASE 1291.—Female. Age, 30 years. Acidosis of severe diabetes, fatal. Patient had been fasted for 72 hours preceding Aug. 21. For 48 hours she had been vomiting almost constantly. Aug. 21 had severe diaphragmatic pain, slight air hunger and drowsiness. Aug. 23, more deeply comatose. Difficult to swallow. Note that urinary acid, diacetic acid, and ammonia excretion very small, indicating retention. Aug. 24, 25, 26, 27 patient given 140+ grams carbohydrate, chiefly levulose, daily. Comatose symptoms less severe. Note marked acid retention. Aug. 28 to Sept. 2. Note the very small acid and ammonia excretion compared with the low carbon dioxide tension, and that the ferric chloride test was practically negative on Aug. 28, 29, although patient was quite comatose. Urine not examined Aug. 30, 31.

In carrying out the test the following apparatus and reagents are required: (*a*) the Fredericia gas tube, (*b*) a large glass cylinder of sufficient capacity to hold the gas tube (a stock battery jar 21 x 30 c.mm. is admirably suited for the purpose) (*c*) an ordinary 100 c.c. laboratory wash bottle filled with (*d*) a 5 per cent. solution of sodium hydrate and a 1 per cent. solution of acetic or a saturate solution of boric acid.

Before making the test, the battery jar or cylinder should be filled with water at the temperature of the room; greater uniformity of readings may be had if water at a temperature of 20° C. or 68° F. be used. The purpose of the water is to cool to a constant temperature the gas or lung air of the patient after it has been collected in the tube. This is very important, because the volume of gas varies inversely with its temperature. Each variation of 1° in temperature will cause a variation of 0.4 per cent. in the volume of the carbonic acid.

The person whose lung air is to be examined should sit quietly in a chair and breathe in a natural manner for several minutes. Observations should be made in either a sitting or lying position, preferably the former, as readings vary slightly with the posture of the body. At the end of a normal expiration the mouthpiece of the apparatus (A) is put in the patient's mouth. The stop cocks should be arranged as in Fig. 1. The patient is instructed to expel through the tube as much as possible of the air remaining in his lung, without first talking, coughing, inhaling, or exhaling air.

*Fredericia: A Clinical Method for the Determination of Carbonic Acid Expansion in Lung Air. *Berl. klin. Wochenschr.*, July 6, 1914, pp. 1268-1271.

Most people will thus expel during such an expiration approximately 1500 c.c. of air of which at least 1000 c.c. is alveolar air. Inasmuch as the apparatus contains only about 130 c.c. it will be

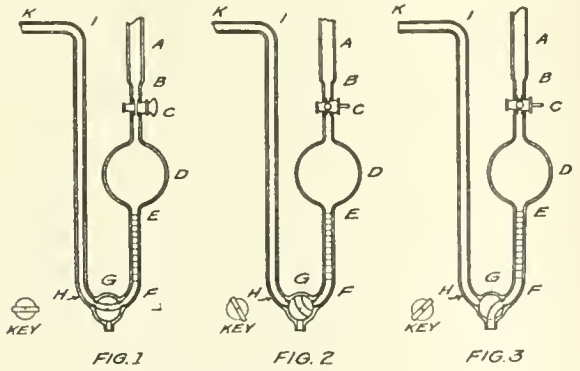


FIG. 1—Showing Fredericia apparatus and the position of the stop cocks at different stages of the test.

seen that the air which is recovered at the end of the expiration will be a representative sample of the air from the lung alveoli. Immediately after the close of this forced expiration and before removal of the instrument from the patient's mouth, stop cock *C* must be closed and remain closed until the end of the test. Stop cock *G*, however, must remain for the present in the same position as in Fig. 1.

The apparatus* is now immersed for from 3 to 5 minutes in the water in the glass jar. The water must extend over stop cock *C*, but must not reach tube *K*. The gas is thus cooled and contracts. For this reason a small amount of air enters the tube at *K* but it does not reach that portion of the tube containing the air to be examined so the result is not affected. The apparatus is then removed and the sodium hydrate solution in the wash bottle is forced into the tube at *K* until the column of liquid in *HK* is on a level with the top of the bulb in the other arm. Stop cock *G* is then closed as in Fig. 2. A small amount of the fluid will have entered the bulb portion of the tube. The apparatus is then tipped, turned, and gently shaken so as to bring the sodium hydrate solution in contact with all parts of the bulb portion, and the carbonic acid contained therein which it absorbs. Stop cock *G* is then opened again as in Fig. 1 so as to allow more sodium hydrate to enter the bulb arm, the stop cock is then closed and the process of shaking repeated. This operation is repeated several times until the sodium hydrate solution will absorb no more gas, which is readily told when the liquid ceases to rise in the bulb arm. The apparatus is once more immersed in the jar of water to restore the gas to a constant

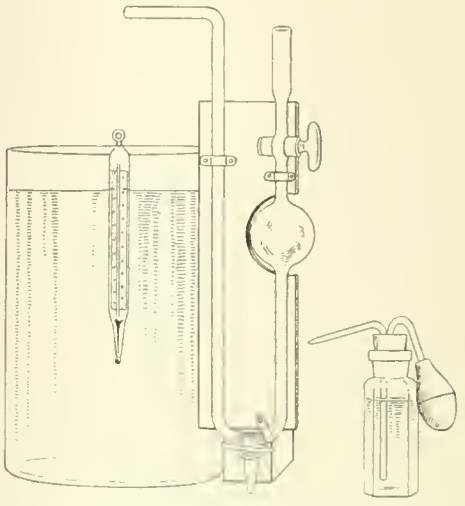
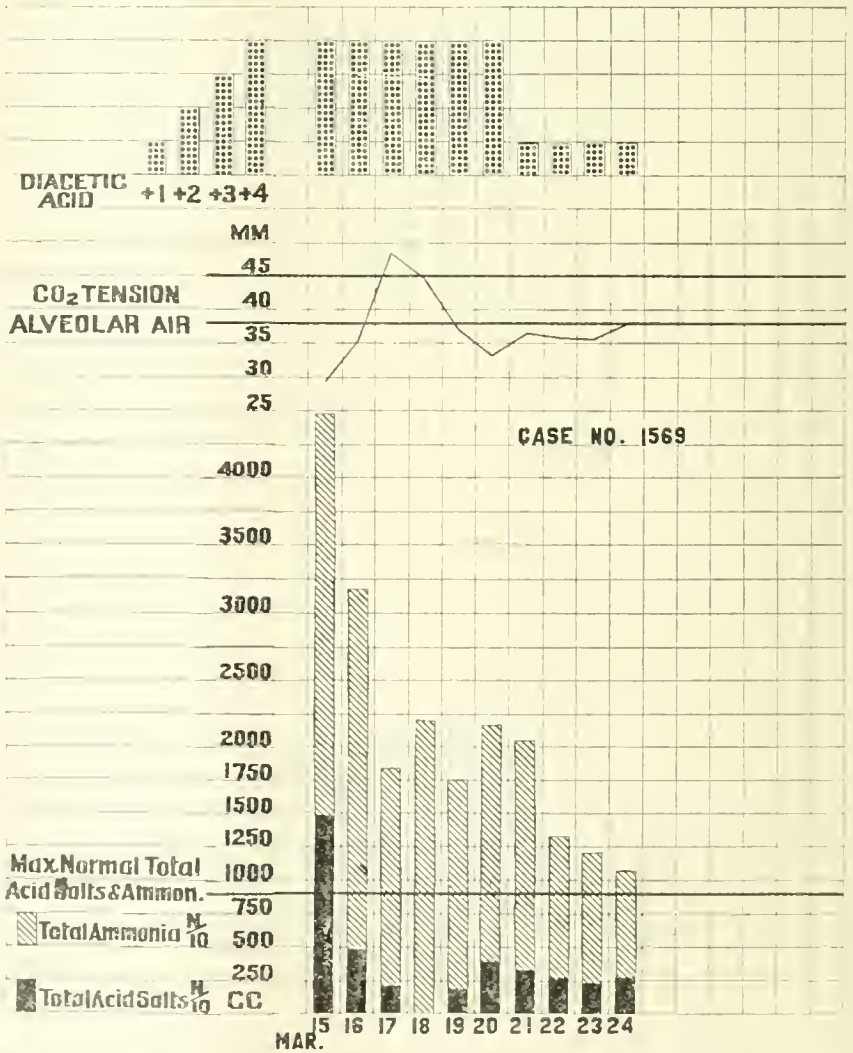


FIG. 2—Showing Fredericia tube and other apparatus needed for the lung air test

temperature and it should be left therein for at least three minutes. It should then be quickly re-

*Apparatus made by Emil Greiver Company, New York City.



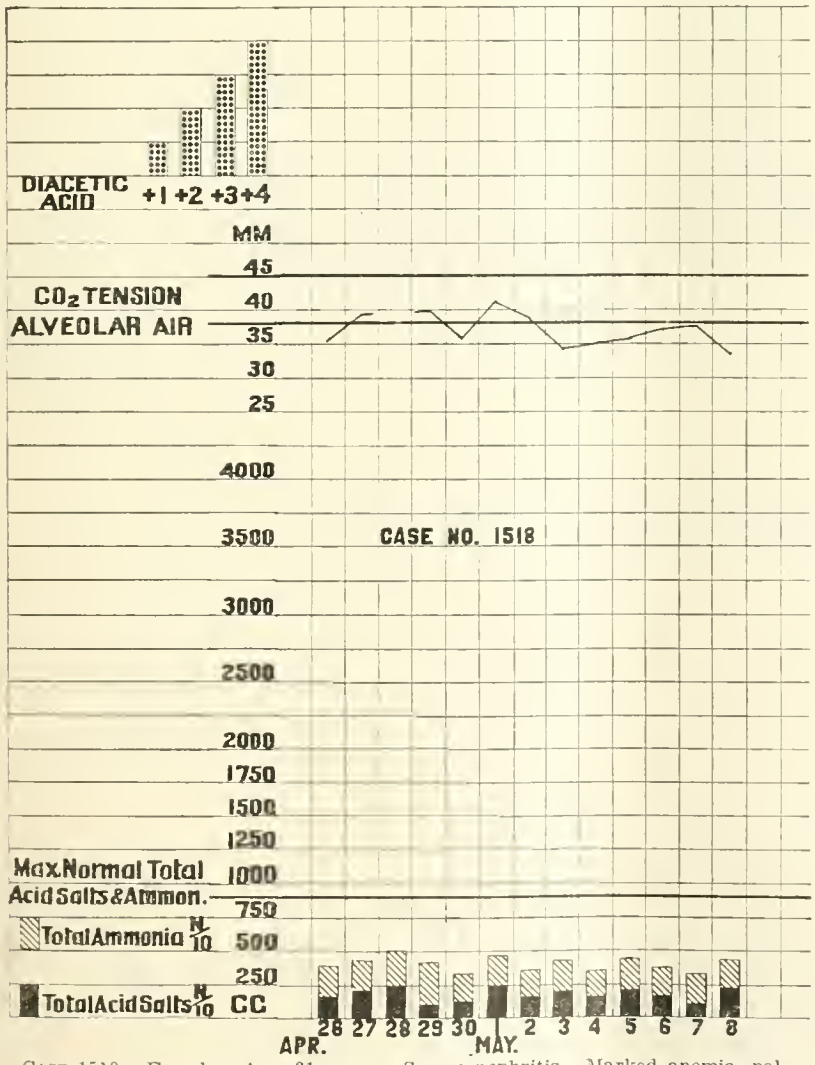
CASE 1569. Female. Age, 31 years. Acidosis of severe acute diabetes. Recovery. Before admission to hospital patient had vomited frequently for 48 hours. On March 15 had severe diaphragmatic pain, air hunger, and drowsiness. Loss of fluids from body probably was chief cause of severe symptoms. Note the greatly increased excretion of urinary acid and ammonia on March 15 and 16, brought about by the administration of large amounts of fluid and alkali, and the beneficial effect of this evidenced by the rise in the carbon dioxide tension.

moved and stop cock *G* so turned as to drain tube *HK*, or as shown in Fig. 3. In this way the liquid in *HK* should be brought down to the same level as in the bulb arm. The apparatus should again be immersed in water for a minute or two, and the leveling process repeated if the column in *HK* is higher than in the bulb arm. The apparatus should then be returned to the glass jar and the height of the column of liquid in the bulb should be read, the observer looking through the jar. The height of this column represents, in cubic centimeters or per cent., the amount of carbonic acid that was abstracted from 100 c.c. of alveolar air at a temperature of 20° C. It has been established that the percentage of carbonic acid in the alveolar air closely approximates that in the arterial blood.

The percentage of gas dissolved in a liquid depends not on the amount present but upon the barometric pressure, hence it is necessary to determine the pressure of that portion of the alveolar air which was carbonic acid gas. If a given per cent. of the lung air is carbonic acid then that per cent. of the barometric pressure represents the tension of the carbonic acid gas. If a sample of lung air contained 5 per cent. of gas and the barometer at the time read 29.0 in. or 760 mm., then the tension of the gas would be 0.05 of 760 mm. or 38 mm. less a slight correction for water vapor. The table on page 229, prepared by Dr. Edgar Stillman in which is shown the tension of different percentages of carbonic acid gas at various barometric pressures, will facilitate the test.

Certain precautions should be exercised in making the lung air test. The apparatus should be clean and dry, because water absorbs its own volume of carbon dioxide. The apparatus should be inserted in the mouth at the end of a normal expiration. If the patient takes a full breath before making the test, as beginners are apt to do, the alveolar air will be diluted by the deeply inspired air and the carbon dioxide output will be appreciably reduced. This is illustrated in Table No. 1.

Explanation of Charts.—These are records of cases exhibiting severe acidosis. They are plotted so that the daily excretion of diacetic acid, total urine acid, and total ammonia, may be compared with the carbon dioxide tension of the lung air. Of these methods the carbon dioxide tension is the most reliable index of acidosis. This is plotted in millimeters of mercury barometric pressure. The commonly accepted normal limits are from 38 to 45 mm. Diacetic acid is estimated by the usual approximative quantitative, ferric chloride method, in which varying intensities of the test are represented by from one to four plus marks. The total urine acid and ammonia are both plotted in terms of decinormal alkali, as will be seen by the key. These two excretory products are additive, therefore one is superimposed on the other. Together they afford a very reliable measure of titratable urine acid excretion. The normal individual rarely excretes more than the equivalent of 900 c.c. of decinormal alkali daily.



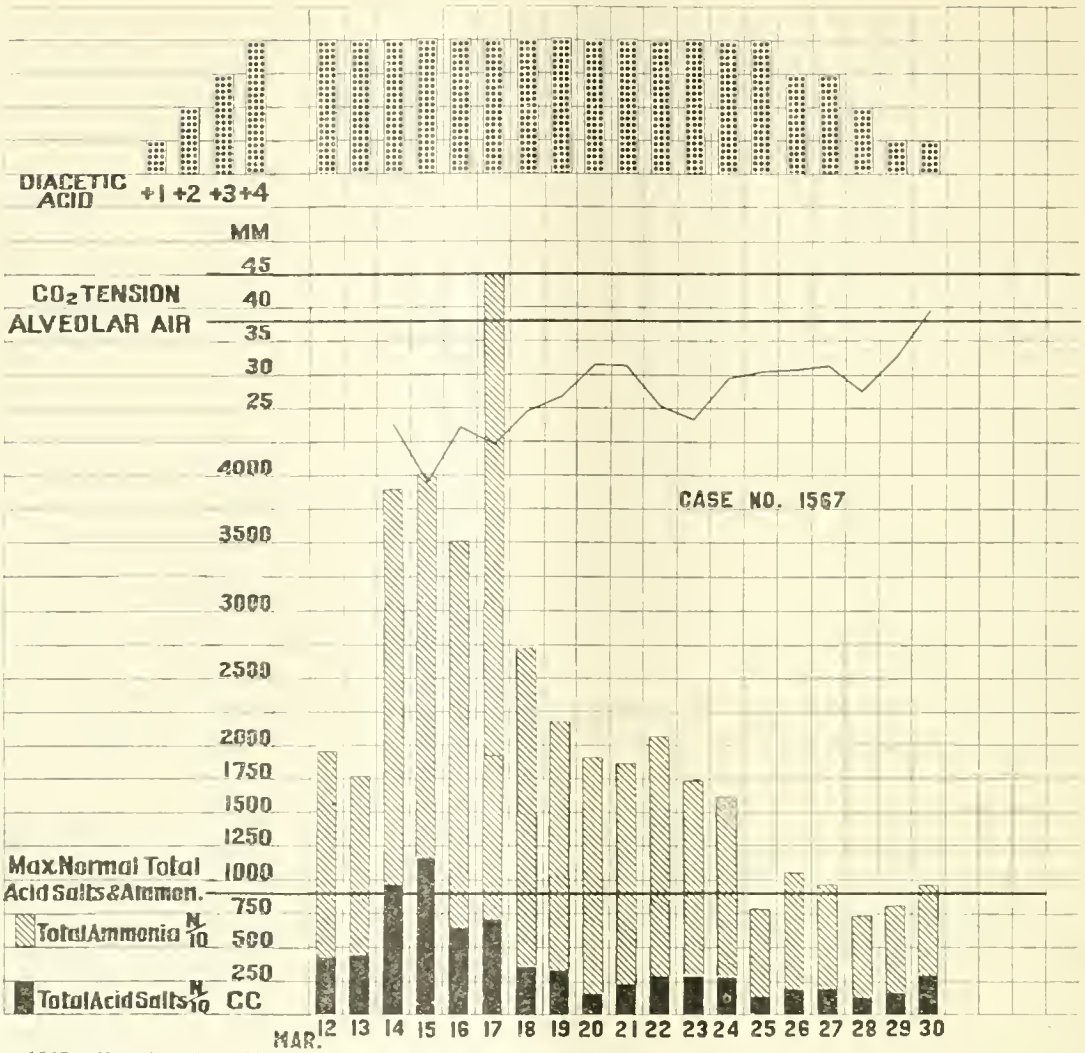
CASE 1518.—Female. Age, 21 years. Severe nephritis. Marked anemia, pallor, and general edema. Kidney function, three phenol-sulphonephthalein, two hour tests. (1) 11 per cent., (2) 20 per cent., (3) 13 per cent. Chloride retention. Systolic blood pressure ranges between 155 and 180 mm. No dyspnea except on exertion. Note the low urinary acid output and slight evidence of acidosis in the carbon dioxide tension.

It is not the purpose of the author to discuss the treatment of the terminal stages of diabetes, but rather to present the measurable phenomena of severe acidosis, and a comparison of the best practical methods of study.

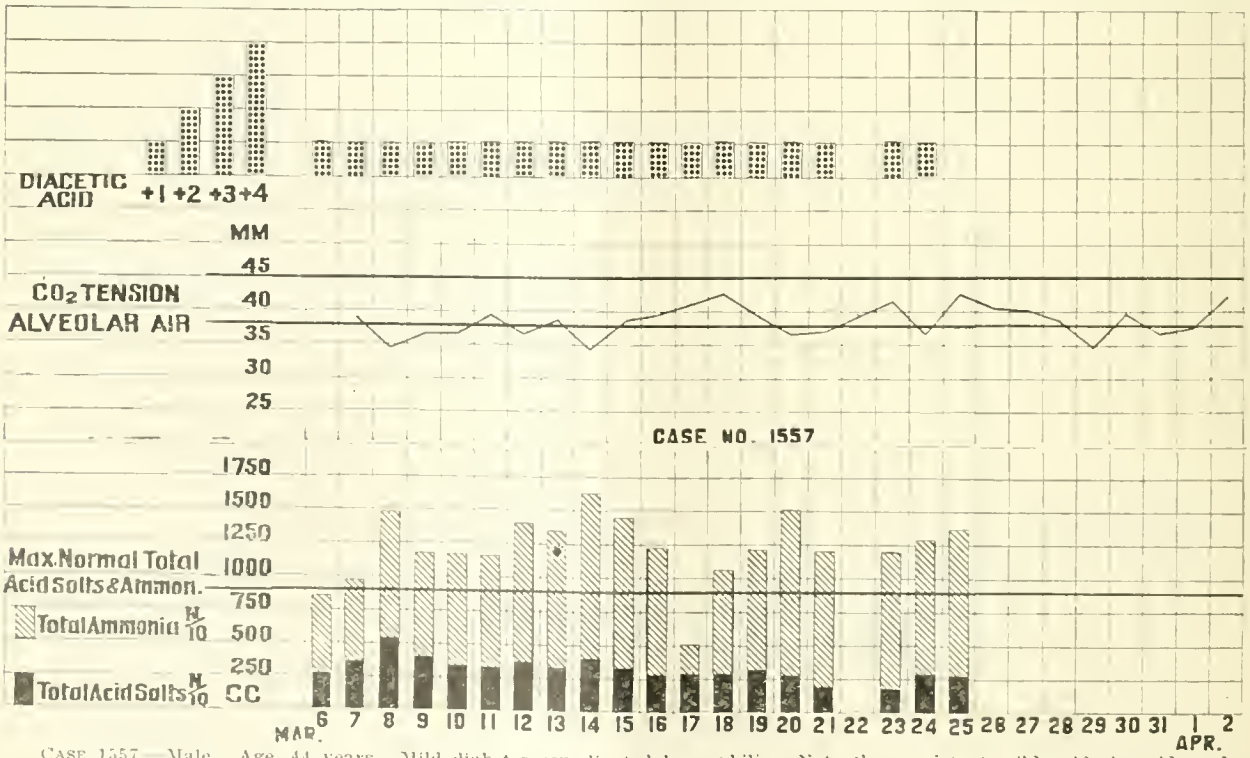
CASE 1641.—Female, Age, 60 years. Patient was found unconscious by family physician. Coma of acidosis was suspected. A lung air test was made in the manner above described and 5.2 per cent. of carbon dioxide or 36.8 mm. tension was obtained. This tended to exclude coma of acidosis. Later it was discovered that patient was unconscious from overdoses of veronal.

CASE 1587.—Female. Age, 44 years. Gastrojejunostomy. Persistent vomiting. For 12 days patient did not receive or tolerate more than 200 calories of food daily. For 48 hours semi-comatose. Compulsory lung air test made. The carbon dioxide equaled 2.3 per cent., or 17.4 mm. tension. Patient died in coma, due probably to acidosis of starvation and exhaustion.

CASE 1568.—Female, Age, 35 years. Primipara, 8 months pregnant. Intense headache and vomiting. Patient conscious. Lung air test made in usual manner. Carbon dioxide equaled 4.4 per cent., or 32.4 mm. tension, suggesting severe acidosis of eclampsia. Two hours later there followed the severe convulsions of puerperal eclampsia. Uterus emptied. Recov-



Case 1567.—Female. Age, 20 years. Severe diabetes complicated by acute appendicitis and marked lipoidemia. Patient exhibited all the early stages of coma, as vomiting, diaphragmatic pain, air hunger, and drowsiness, from March 13 to March 18. Note the striking relationship of excessive urinary acid and ammonia output with the low carbon dioxide tension of lung air; also that the ordinary ferric chloride test affords only a crude index of the severity of acidosis.



Case 1557.—Male. Age, 44 years. Mild diabetes complicated by syphilis. Note the persistent mild acidosis evidenced by the constant presence of diacetic acid in the urine and by the slightly excessive urinary acid and ammonia output. It will be observed that these all become normal when antisyphilitic treatment was begun on March 26.

ery of both mother and child. One week later lung air carbon dioxide was 5.6%, or 40.7 mm. tension.

TABLE FOR THE CONVERSION OF THE PERCENTAGES OF CARBONIC ACID GAS IN THE LUNG AIR INTO TERMS OF BAROMETRIC PRESSURE OR TENSION

Percentage Carbonic Acid Gas	730 Mm. 28.7 In.	740 Mm 29.1 In.	750 Mm. 29.5 In.	760 Mm. 29.8 In.	770 Mm. 30.3 In.	780 Mm. 30.7 In.	790 Mm. 31.1 In.
3 0	20 9	21 2	21 5	21 8	22.2	22 4	22 8
3.1	21.6	21 9	22 2	22.6	22.8	23 2	23 5
3.2	22.2	22 6	23.0	23.2	23.6	23.9	24 2
3.3	23.0	23 4	23 7	24 0	24 3	24 7	25 0
3.4	23.7	24 0	24 4	24 7	25.1	25 4	25 8
3.5	24 4	24 8	25.1	25.4	25.8	26 2	26 6
3.6	25.0	25.4	25.8	26.2	26 6	26 9	27 3
3.7	25.8	26.2	26.5	26 9	27.3	27 6	28 0
3.8	26.5	26 8	27.2	27 6	28 0	28 4	28 8
3.9	27.2	27.6	28.0	28 4	28 8	29 2	29 6
4 0	27.8	28 2	28.7	29 1	29 5	29 9	30 3
4.1	28.6	29.0	29 4	29.8	30 2	30 6	31 1
4.2	29.2	29.7	30.1	30.6	31 0	31 4	31 8
4.3	30.0	30.4	30.8	31.3	31 7	32 2	32 6
4.4	30.6	31.1	31.5	32.0	32 4	32.9	33 4
4 5	31.4	31.8	32 2	32.7	33 2	33 6	34 1
4.6	32.0	32.5	33.0	33 5	33.9	34 4	34 9
4 7	32.8	33 2	33.7	34 2	34 6	35 2	35 6
4.8	33 4	33.9	34 4	34.9	35.4	35 9	36 4
4.9	34 1	34 6	35.2	35 6	36.2	36.6	37 1
5 0	34 8	35.3	35 9	36 4	36.9	37 4	37 9
5.1	35.5	36 0	36.5	37.1	37 6	38 1	38 7
5 2	36.2	36.7	37 2	37.7	38 3	38 8	39 3
5.3	36.9	37 5	38 0	38 5	39 1	39 6	40 2
5.4	37.6	38 2	38.7	39 3	39 8	40.4	40 9
5.5	38.3	38 9	39 3	40 0	40 5	41 1	41 7
5.6	39.0	39.6	40.1	40.7	41.3	41 8	42 4
5.7	39.7	40.2	40 8	41.4	42 0	42 6	43 2
5.8	40.4	41.0	41 5	42 1	42 7	43 3	43 9
5.9	41.1	41 7	42 3	42 9	43 5	44 1	44 7
6.0	41.8	42 4	43 0	43.6	44 2	44 9	45 5
6.1	42.5	43 1	43 7	44 3	45.0	45 6	46 2
6.2	43 2	43 8	44 4	45 1	45 7	46.3	47 0
6 3	43 9	44 5	45 1	45 8	46 4	47 0	47 7
6.4	44 6	45 2	45 9	46 5	47 1	47 8	48 8
6.5	45 3	46 0	46 6	47 3	48 0	48.6	49 3
6.6	45 9	46.6	47.3	48 0	48 6	49 3	50 0
6.7	46.6	47 4	48 0	48.7	49.4	50 1	50 8
6 8	47.3	48 0	48.7	49 4	50 1	50 8	51 5
6 9	48 0	48 8	49 5	50.1	50 9	51 6	52 3

Summary and Conclusions.—The tests described in this paper can be carried out by any well trained physician. They are simple, require very little time, are fairly accurate, and afford information of much value in cases of severe metabolic disturbance.

TABLE NO. 1.

Comparing the carbon dioxide in the lung air after a normal expiration with the exhalation following a forced inspiration.

Subject	CO_2 After Normal Expiration.		CO_2 After Forced Inspiration.	
	Per Cent.	Tension.	Per Cent.	Tension.
A	7 2	54 7	5 9	42 6
A	7 2	54 7	6 0	43 6
A	7 2	54 7	5 9	42 6
B	7 2	54 7	6 2	44 6
C	7 2	52 2	5 9	42 9

TABLE NO. 2.

Showing the percentage of carbon dioxide and barometric tension of the lung air in a series of normal individuals.

Subject	Age	First Observation		Second Observation	
		Per Cent.	Tension.	Per Cent.	Tension.
Girl	8	6 0	44 0	5 1	37 1
Boy	5½	5 9	42 5	6 0	44 0
Girl	4	5 4	39 8	5 0	36 4
Man	32	6 2	45 5		
Man	28	6 4	47 1		
Woman	28	5 4	39 3		

Comments.—It will be observed that the carbon dioxide tension of the lung air of normal individuals may vary from 36 to 60 mm. Readings in children are practically the same as in adults.

The measure of the urinary acid and ammonia excretion may throw light on the acid production, elimination, or retention by the body. If the urinary acid output is high, production must be high. If low, there may be retention or defective elimination by the kidneys.

TABLE NO. 3.

Showing the effect on the carbon dioxide output of the lung air of compulsory breathing through the tube in a series of normal individuals.

Subject	Normal.		One Minute.		Two Minutes.	
	Per Cent	Tension.	Per Cent.	Tension.	Per Cent.	Tension.
Man (41 yrs.)	8 0	60 8	6 3	45.8	7 8	59 2
Man (41 yrs.)	7.1	53.9	5 5	40 0	7 0	53 2
Woman (28 yrs.)	5 4	39 3	6 3	45 2	5 6	40 7
Girl (6 yrs.)	5 1	37 1			5 3	38 5
Woman (40 yrs.)	7 2	52 2	6 7	48 7	7 5	57 0

Conditions of test.—Subject sitting quietly in chair, air tube in mouth with lips closed tightly about it. Nose pinched shut. Sample of air taken at end of exhalation at end of time limit.

Comments.—It will be observed that when compared with the normal output, the lung air obtained in the Fredericia tube at the end of 1 minute's compulsory breathing contains less carbon dioxide, but that at the end of 2 minutes the readings are practically the same. Therefore the Fredericia used in this way affords a fairly accurate measure of the carbon dioxide tension. This method may be useful when dealing with patients who cannot or will not assist in performing the test in the normal or previously described manner. Thus in stuporous or comatose patients a fairly accurate reading may be obtained by forcibly holding the apparatus in the patient's mouth, at the same time pinching the nose and compelling him to breathe through the tube for two minutes. The following cases seen in consultation illustrate the usefulness of the test when employed this way:

If acid production is high, and there is good elimination, the carbon dioxide tension of the lung air may be high, indicating that the body is protecting itself by kidney elimination alone. If the carbon dioxide tension is low with high urinary acid elimination, it suggests a more profound acidosis for which the body is trying to compensate by lung ventilation. If urinary acid elimination is low and the carbon dioxide tension is also low, increased acid production and retention are suggested and an acidosis and coma of grave prognosis are likely to follow.

The ordinary tests for diacetic acid are of much less value to the clinician than are the urinary acid and ammonia determinations taken in conjunction with the carbon dioxide tension of the lung air. In the experience of the writer these tests are of greater value in diabetes than in other metabolic disturbances or diseases.

In the preparation of this paper the studies of Higgins, Peabody, Henderson, Stillman, and Fredericia have been freely used.

CONNECTICUT, A STUDENT OF TUBERCULOSIS.*

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SOME years ago, as a member of the State Tuberculosis Commission, I wrote a rather widely circulated paper on "Connecticut, a Doctor of Consumptives." In that paper I told of Connecticut's method of treating the three hundred patients in her three tuberculosis santaoria. Since then Connecticut's practice as a tuberculosis specialist has increased considerably. She now has four tuberculosis sanatoria and every day she treats more than five hundred tuberculous patients. If she could afford it she would have even more patients. We who have had charge of this practice of hers have long recognized that although in giv-

*Read before the Meriden Medical Society, April 27, 1916, and in part before the Stamford Medical Society, February 19, 1916.

ing to these five hundred patients the modern hygienic dietetic treatment of the disease we were doing justice to the patients, we were not doing entire justice to Connecticut. Why not? Because justice to Connecticut demanded that we not only treat these patients but that we study them to such purpose that in the future there should be less tuberculosis in Connecticut.

We realized that, like the rest of the world, we were unable to answer many of the important questions that hover like Zeppelins over our present theory of tuberculosis. Of course, many of the enthusiastic leaders of the anti-tuberculosis campaign deny the importance of the questions and profess to see no threatening shadows or shapes in the clouds that pass over the trenches of the anti-tuberculosis armies. But most physicians, and even the laymen who have given the subject proper study, realize that tuberculosis is still a mysterious disease, and that we must conquer the mystery before we will be able to conquer the disease.

Now where could there be better opportunities for attacking both the mystery and the disease than in our State sanatoria? In these sanatoria are more than five hundred patients, in all stages of the disease, drawn from the million or so of people who look to Heaven from the comparatively few square miles of Connecticut. In these sanatoria are good physicians and nurses, good microscopes, and a sufficient, if small, laboratory equipment.

"Then why not do some scientific research work?" That is the question we have been asking the superintendents of the various sanatoria for some years. "You know the great need of this research work. You have the ability, have you not? You have the material and the instruments. And we promise you public recognition of any good work that you may do."

Several of the physicians responded to our appeal by making a few rather desultory and incomplete experiments, but nothing satisfactory was accomplished until 1915.

In March of last year the commission voted to hold a medical conference once a month at one of the State sanatoria, and to require the medical staff of the sanatorium at which the conference was held to be ready at the conference to present to the commission and to the physicians of the other sanatoria some interesting new work or some studies of the especially interesting cases in the institution. It is only a year since this rule went into effect, but it has already worked wonders. The superintendents and their assistant physicians have taken up the idea with the heartiest enthusiasm. A rivalry, keen but friendly, has developed between the four institutions for the credit of having the best conference. I must confess that I have been astonished at the fine quality of many of the papers and demonstrations. Some of the conferences were good enough to command the time and attention of the best doctors anywhere. Here are a few of the topics. Of course, I will not go into enough details to spoil the publication value of the original work.

1. At the Hartford Sanatorium, Dr. Wagner gave interesting *x*-ray demonstrations of many of the difficult cases, and thus brought up for discussion the whole subject of *x*-ray diagnosis in tuberculosis. He also applied the luetin test to 160 patients in the sanatorium. He found that an astonishingly large proportion of the patients gave a positive reaction, but the results, as was brought out in a sharp general discussion, were largely nullified because of the fact that most of the patients had received iodine medication within a few days or weeks of the test. Nevertheless, his report of the reactions and his searchings of the patients' bodies and histories for stigmata of syphilis were very stimulating and did much to increase the interest of all of us in the question of the frequent coincidence of the two diseases, syphilis and tuberculosis.

At the Hartford Sanatorium, Dr. Strobel presented a most interesting study of the possible relation of the pneumococcus to hemoptysis in pulmonary tuberculosis. He isolated from the bloody sputum of all of a short series of cases of pulmonary hemorrhage a typical pneumococcus which was pathogenic to rabbits. He is still at work on this problem.

2. At the Norwich Sanatorium, Dr. Campbell and Dr. Lynch have demonstrated that the preliminary injection of guinea pigs with a very slightly virulent type of the human tubercle bacillus, did not interfere in any way with the action of a highly pathogenic strain of human tubercle bacilli injected after some months into these same guinea pigs. They died at exactly the same time as the controls.

Dr. Lynch also presented a study of the bacterial findings in the mouths of fifty consumptives in the later stages of the disease. In only four of the cases could he demonstrate tubercle bacilli in the wipings or washings of the teeth, gums, tongue, tonsils, or pharynx. These four cases were all in extremis and were all dead within ten days of the examinations. Other subjects presented at the Norwich Sanatorium conference were: "The Source of the Infection in Tuberculosis," by Dr. Campbell, and "The Pre-Bacillary Forms of the Tubercle Bacillus," by Dr. Lynch.

3. At the Meriden Sanatorium, Dr. Dinnan has carried out two interesting bits of work. One concerned the question of heliotherapy. Of course, everybody knows that sunlight properly applied benefits patients suffering from bone or glandular tuberculosis, but the question of whether the continued exposure of the skin of all the body to the direct rays of the sun benefits cases of pulmonary tuberculosis has not been satisfactorily answered. Dr. Dinnan's work has not answered it; but of the six second-stage cases that formed his class last summer five showed marked improvement, three have gone back to work with the disease arrested, and one has died. His reports at two of the conferences included full reports of blood counts and blood pressure, and hemoglobin indices, as well as the ordinary sputum and urine and temperature and pulse and respiration records.

His other investigation related to blood pressure before, during and after hemorrhage in cases of pulmonary tuberculosis. His findings have been the surprising and important ones: (1) That hemorrhage from tuberculous lungs is never due to high blood pressure: but (2) that the bleeding consumptives have lower blood pressure than the average consumptive, and (3) that blood pressure for the hemorrhage case, just before the hemorrhage, is lower than the normal of that case; that (4) the blood pressure rises during the hemorrhage, and (5) that the blood pressure remains high for a

short time after the hemorrhage and then slowly falls to what it was before the hemorrhage. Dr. Dinnan is still working on this problem. His conclusions in this matter, considered in connection with Dr. Strobel's finding of a pathogenic pneumococcus in the sputum of all his bleeding consumptives, open up a wide field for speculation and study.

Because of my desire not to offend Dr. Dinnan's well-known modest disposition, and because I understand that most of you have seen the cases that composed the class in heliotherapy last year and are more or less familiar with his studies on the blood of the tuberculous, I will not dwell on his work at any greater length. That such work is important I need not tell you. I need not tell any doctor.

I will spend a little more time on the work done at the Shelton Sanatorium. You probably know less about the Shelton Sanatorium than about any in the State. I want to introduce you to it.

4. At the Shelton Sanatorium, Dr. Stockwell's best work has been on streptothricosis. A most difficult problem of sanatorium management is one that perhaps you would consider easy. It is none other than the problem of diagnosis. Has the patient tuberculosis? Of course, most of the patients that come to the State sanatoria have not only the physical signs of tuberculosis, but they also have easily demonstrable tubercle bacilli in their sputum; yet I think it is safe to say that in every tuberculosis sanatorium everywhere a varying percentage of the inmates have no tubercle bacilli in their sputum. They may have areas of consolidation or softening, or even cavitation in the lungs, and yet the most diligent search will fail to reveal a single tubercle basillus. Even guinea-pig inoculation may be negative. In these cases the various tuberculin tests may give unsatisfactory or contradictory evidence.

The State sanatoria are maintained for the benefit of residents of the State who have tuberculosis, and not for the benefit of persons who have not tuberculosis, even if they have suppurating cavities in their lungs. Nor are the sanatoria preventoria. A patient must have tuberculosis to be legally admissible. But when a patient with the physical signs of consumption has been sent to a sanatorium with a diagnosis of tuberculosis made by a physician of good repute, or by the staff of one of the best hospitals in the State, the sanatorium physician who takes it upon himself to pronounce that patient non-tuberculous must be very sure of his ground. The easy and ordinary way is to keep the patient and say nothing. Dr. Stockwell's way has been to study the patient and report his findings.

At the conference held at the Shelton Sanatorium he has already demonstrated twelve cases of streptothricosis, and in nine of the twelve cases there were no tubercle bacilli. All of these cases were severe progressive cases; they were all hemorrhage cases. The little granules of the fungus were shown at the conferences in the sputum of all twelve cases. The streptothrix was displayed in pure culture on glycerin and glycerin-agar. Under the microscope hanging drops of the live organism were shown, as well as many stained smears of the pure cultures, and of the streptothrical sputum. Then the twelve patients were exhibited and examined, and their treatment explained. Their treatment consisted in the administration of the iodides up to tolerance, usually 30 or 40 drops of the saturated solution three times a day. One patient received 70 grains three times a day. Remember, these were hemorrhage cases, and yet they received these heroic doses of the iodides. Now as to the results: Two died; one left without treatment; one remains unimproved; six have gone home without any symptoms left of their former serious lung trouble, and one has gone home improved but with some activity left in the lung lesion. One remains at the sanatorium slightly improved. And all of these cases were doing badly when Dr. Stockwell began his intensive study of them.

In order to persuade you that the subject is of importance to you as well as to us, let me relate briefly the history of one of these cases, the last one mentioned above, the one that remains at the sanatorium slightly improved. The patient, a husky man of middle age, had an attack of pleurisy in September, 1913. Several ribs were resected in November, 1913. A sinus persisted. In March, 1914, his left knee began to swell. At one of the best hospitals in the State various measures were adopted to cure the supposedly tuberculous knee; even a resection was tried. Nothing helped. Finally, in September, 1914, the leg was amputated above the knee. In January 1915, an abscess developed in the right hip. The surgeons in the hospital threw up their hands and notified the patient and his friends that the hospital could do no more for him, and that, as he had tuberculosis of the lungs and of the bones, the proper place for him was at one of the State tuberculosis sanatoria; therefore he was brought to the Shelton Sanatorium.

Routine examinations of sputum showed no tubercle bacilli in his sputum. After a while Dr. Stockwell's attention was directed to this fact. He immediately found the streptothrical granules, not only in the man's sputum, but also from the pus in the discharging sinuses in his hip and chest. The iodides have stopped the progress of the disease. The patient has gained in weight. The streptothrix cannot now be found in either sputum or pus. He has no more hemorrhages, but his bones are badly hurt; he has lost a leg. His future usefulness to himself or the community is very doubtful. It is distressing to observe his pathetic cheerfulness and to consider how different his circumstances would be to-day if any one of the many eminent physicians and surgeons who treated him during the last two years had known as much about streptothricosis as Dr. Stockwell knows now.

Here is another investigation pursued at this sanatorium and reported at a recent Shelton conference by the first assistant, Dr. Stilphen. It concerned the von Pirquet test. You all know the common judgment on the von Pirquet test: "It is of the greatest value in very young children, but it is of less and less value as the child grows older, and it is of no value in adults, because practically all adults have had tuberculosis at some time, and the positive reactions that practically all adults give to the von Pirquet test are of no assistance to us in determining whether the patient has now active tuberculosis."

Well, here is what they learned on that subject at Shelton, and how they learned it. They applied the test to all the patients in the sanatorium, one hundred and thirty-three in number. They applied the test to every patient at first with two kinds of Mulford's tuberculin, one made from human tubercle bacilli and one from bovine tubercle bacilli. They were so surprised with the results

that they wrote to Alexander for bovine and human tuberculin, and explained to Alexander that it was for a very important series of tests. They received special guarantees as to the quality of the tuberculin sent to them. They then went over all the patients again with the new bovine and new human tuberculin. And to their consternation the results with the second test were practically the same as with the first. Here are their results: Of the 133 patients tested, only 61 reacted. Of the 16 incipient cases tested, 10 were positive and 6 negative. Of these 10 positive incipient cases, 2 were positive only to human tuberculin, 2 only to bovine tuberculin, and 6 to both human and bovine.

Of the 55 moderately advanced cases tested, 26 were positive and 29 negative. Of these 26 positive moderately advanced cases 6 reacted only to human tuberculin, 5 only to bovine tuberculin, and 15 reacted to both bovine and human tuberculin.

Of the 58 advanced cases tested, 23 were positive and 35 negative. Of the 23 positive advanced cases, 3 reacted only to human tuberculin, 4 only to bovine tuberculin, and 16 to both human and bovine tuberculin. Of 4 cases of surgical tuberculosis tested, 2 were positive and 2 negative. Of the 2 positive cases of surgical tuberculosis, 1 reacted only to bovine.

It was only last December that Craig's article on the complement fixation test in tuberculosis appeared in the *American Journal of the Medical Sciences*. Those of you who have mastered the technique of the Wassermann test, and who have read Craig's article, will realize with what a love of work Dr. Stockwell and his assistants must be possessed when I tell you that at the conference held at Shelton last March Dr. Stockwell reported his findings in 31 cases, 26 tests and 5 controls. All his controls were negative, and 24 of his tests surely positive. His two negative tests were his first two experiments, and were probably negative because of poor antigen. Some of his tests gave a positive complement fixation test, although the patient had been negative to the von Pirquet test. This splendid result has been accomplished during the winter in spite of the fact that at the time of the appearance of Craig's article neither Dr. Stockwell nor his assistants had more than a reading acquaintance with complements, antigens or amboceptors. Isn't that interesting and important?

The medical staffs of all the sanatoria are studying the questions of the relation of typhoid to tuberculosis and some other fascinating problems that I am not at liberty to discuss to-night. At all of the sanatoria there is new interest in the patients and all that concerns tuberculosis. That is the cheerful verdict of doctors, nurses and patients.

In conclusion may I not fairly claim that Connecticut, as represented by those in charge of her State tuberculosis sanatoria, has begun a really serious and unusual and valuable study of the great problem of tuberculosis? If you consider the claim a fair one, I would ask you to show your sympathy with it by keeping in touch with us, by visiting the sanatoria, by giving us the benefits of any constructive criticisms that may occur to you as the results of your visits, by informing your people and your representatives in the Legislature of the importance to the present and future generations of Connecticut's dual role of Doctor and Student of Tuberculosis.

212 Orange Street.

COMPLEMENT-FIXATION IN PULMONARY TUBERCULOSIS.*

SOME CLINICAL OBSERVATIONS.

By ALFRED MEYER, M.D.,

NEW YORK.

Numerous reports have appeared during the last few years upon the value of complement-fixation in the diagnosis (or exclusion) of tuberculosis, especially the pulmonary form. The conclusions reached by various authors all seem to agree that there is *some* value in the test, both in confirming the existence of tuberculosis, either active or inactive, and in excluding it if the reaction is negative. There is, however, very considerable variation in the percentages of reliable results obtained in both positive and negative cases. This does not necessarily indicate the unreliability of the method, because it must be remembered that the different laboratory workers have employed different antigens, and for purpose of comparison the method used in all cases must be identical down to the minutest detail. At the same time, the widest publicity possible must be given to that method which seems to offer the highest percentage of reliable results so that the work may be repeated on the largest possible scale by many independent observers.

The object of this communication is (1) to give a short summary of work done on my cases this winter by Dr. H. R. Miller of New York with a new antigen; (2) to compare the results with similar work done by others, and (3) to illustrate the practical value by a few detailed clinical histories. The serological work was done by Dr. Miller at the Bacteriological Laboratory of the College of Physicians and Surgeons, Columbia University, New York City. Up to the present time he has examined the sera of a thousand cases obtained from many different sources. The material reported upon here was furnished by me from my service at the Bedford Sanitarium of the Montefiore Home, from my tuberculosis and general services at Mt. Sinai Hospital, and from cases in my private practice.

The method used by Dr. Miller was recently described by him as follows:

"The bacilli which so far have been used for the production of the antigen have been of the human type, some of them isolated by Miller, some of them obtained from Prof. Theobald Smith, some from the laboratory of Prof. William H. Park, and some from the laboratory of Parke, Davis & Co. They have been grown mainly on the gentian violet medium of Petroff, and on Miller's modification of this medium; also on Petroff's potato broth. It is at present the impression of the writer that the medium on which the bacilli are grown plays no great part in determining the usefulness of the antigen. It seems, however, to be important that a number of different strains should be used—that is, that the antigen should be polyvalent—and the use of relatively young cultures is advisable. So far, in most of the reactions, unheated bacteria have been used.† Inasmuch as the method of production, under these circumstances, is fraught with a not inconsiderable element of danger, we have recently begun to use bacteria heated to 60° for a half hour, and in the one series so carried out no

*Read at the Twelfth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis, Washington, May 11, 1916.

†In a few of these cases the sputum was found positive only subsequent to the serological test.

TABLE I

Case	Age	Clinical Diagnosis	Voo Pirq.	X-Ray	Comp. Fix.	Remarks
M. A.	34	Doubtful pulm. tuberculosis	Pos.	Thickened left pleura	+++ 10 wks. later neg.	
H. B.	20	Pulmonary tuberculosis		Typical tuberculosis bilat.	Feb. ++++ April	Always afebrile. 8 sp. exam. Wass. neg.
L. D.		Bilat. apic. tuberculosis	Pos.	Infilt. both apices.	+++	Afebrile.
J. F.		Slight rt. apic. tuberculosis			++++	30 sputa, 3 laryngeal.
G. F.		Consolidation rt. upper lobe	Sl. pos. and neg.	Tumor?	Feb. 12 ++++	Wass. neg. 16 sputa. (More
				Aneurysm?	Feb. 24 ++++ April 25 neg.	details in text.)
D. G.	19	Pulmonary tuberculosis rt. cavity		Rt. tuberculosis	+++	19 sputa. Guniea-pig inoc no tuberculosis. Febrile.
J. G.	56	Slight old mitral stenosis; pleural thickening		Rt. apic. tuberculosis. Pleural thickening	+	Recurrent hemoptyses.
A. H.		Doubtful tuberculosis	±	No definite evidence	+	Afebrile; probably arrested case.
H. I.	64	Doubtful tuberculosis	±	Bilat. chron. apic. tuberculosis	++	Afebrile; recurrent sl. hemopt. 5 yrs.
					++++ (same date)	
D. M.	50	Pulmonary tuberculosis suspect for 8 yrs.	Neg.		++	Subfebrile.
J. S.	15	Hodgkins?		Old lesion l. apex. Bron. nodes, large	+	Path. ex. gland; tuberculosis adenitis.
R. S.	31	Bilateral apical tuberculosis		Marked bilat. fibrosis	+	31 sputa. Febrile many weeks. Guinea-pig neg.
S. S.		Doubtful tuberculosis		Sl. dense rt. apex; peribron. infiltration	++	Admits lues; Wassermann posit.
A. U.		Doubtful tuberculosis	Pos.	Sl. infilt. left apex.	+++	9 sputa.
I. W.		Doubtful tuberculosis	Pos.	Pulm. cavity	+	Afebrile. Only 3 sputa obtainable.

*In a few of these cases the sputum was found positive only subsequent to the serological test.

deteriorating effect of the heating was apparent. These problems of detail, as well as many others, are being thoroughly investigated.

"Twenty mgm. of the moist tubercle-bacillus mass was weighed out, placed in a conical 15 c.c. centrifuge tube, and to it are added 90 mgm. of table salt. With a glass rod filed to roughness at the end, this paste is ground by hand for about one hour. Distilled water is then added to isotonicity; that is, 10 c.c. to the quantities above described. That is the antigen. Just before using, it is shaken up and the heavier particles are allowed to settle in the course of a few minutes. Except for the removal of these larger elements, the suspension is used as a whole without centrifugation and without filtration.

"The antigen so prepared has hardly ever been found anti-complementary in quantities as large as 1 c.c., and has given fixation with positive sera (the sera used in quantities of 0.1 c.c.) in amounts as low as 0.02 c.c. The titrations as well as the reactions have been done with one-half the original Wassermann quantities, using a sensitization of two units of amboceptor and two units of complement. So far we have used the anti-sheep rabbit hemolytic system. As a routine, the 37° one-hour water-bath incubation has been employed. A number of parallel series have been done by the four-hour ice-box method, but since this seems to make little difference in the results, the time-saving 37° method was decided upon as a routine procedure. The antigen appears to be quite stable. We have used with satisfaction antigens as old as six or seven weeks kept on ice."

Summary.—Of forty-eight cases with positive sputum, all but two reacted positively, equivalent to 96 per cent.* This result is even more favorable than appears on the surface, for one of the two exceptions (A. W.) had had negative sputum for seven months (eighteen examinations), had gained 33 lbs., and was in all probability an arrested case. The other exception (H. S.) was also in all probability an arrested case, having been afebrile for a year, and having gained nearly 18 lbs.

*This applies to all my cases.

TABLE II.

Case	Age	Clinical Diagnosis.	Von Pirq.	X-Ray.	Remarks
A. B.		Chr. bronch.; polycythemia	Pos.	Infil. both upper lobes	Afebrile; 5 sputa.
A. B.	20	Pleurisy with effus.	Neg.		Guinea-pig negative.
P. C.	36	Lues. Indefinite apical signs			Wassermann ++++
M. E.	50	Diabetes	±		Reaction apex, percussion neg.
A. E.	50	Chr. nephritis	Sl. +		Febrile
J. F.		Pleuro-pneumonia with serous effus.	±		Temp. 106 deg.
A. H.	42	Pyopneumothorax	Neg.		Guinea-pig neg.
			Neg.		Operation; death.
M. J.	43	Duodenal ulcer, healed tuberculosis			Suspect tuberculosis 14 years before.
M. K.	37	Spontaneous pneumothorax (right)		Probably old left apical lesion. rt. pneumothorax	Afebrile, Wass. neg., P. S0-92, R-20-24.
L. K.		Infiltration both apices, pleurisy both bases			7 sputa neg. Always afebrile; gained 23 lbs. in 9 wks.
J. L.	21	Sexual neurastbenic	Pos.	Negative	
O. L.		Post-pneumonic pleurisy	Neg.	Infiltration rt. base	Afebrile.
I. L.		Chronic nephritis and uremia	±		6 sputa neg. one antiformin. Death.
F. P.	17	Mitral lesion, well compensated. Tuberculosis suspect.	Neg.	Calcareous bronch. lymph nodes	Afebrile.
L. R.	49	Maligoant tumor testicle.			Confirmed by operation.
J. R.	43	Pulm. abscess; rapid cavity formation	Neg.	Neoplasm?	Wassermann neg. Sputa (14) neg. Once, 2-acid fast bacilli. WBC 29,000.
M. S.	28	Phthisiophobia; slight nephritis		Negative	6 sputa negative; 1 antiformin.
I. S.	34	Old pneumonia; pleural adhesions	Neg.	Shadow left base; cause uncertain	Afebrile. Wassermann negative.
A. S.	40	Carcinoma of stomach.			Wassermann negative.
S. W.	38	Chr. nephritis; chr. endocarditis; lues	Neg.		Wassermann++++
S. S. W.	41	Old pleurisy; healed tuberculosis		Peribronch. infiltration; calcareous bron. nodes; slight infiltration apices.	Question of permitting marriage
R. Z.	19	Doubtful pulm. tuberculosis	Pos.	Dense, irreg. shadows around hilus and in 4th r't interspace. Great number dilated bronchi.	Repeated hemoptyses.

It is necessary to go a little more into detail with regard to fifteen strongly suspect cases with negative sputum that reacted positively. The sputum in these cases had been examined from three to thirty times, some with antiformin.

The group of cases in Table I, not proven bacteriologically, represents a very common type for which clinicians are seeking additional reliable aid for a correct conclusion; and this need applies both to cases in which the interpretation of undoubted physical signs is uncertain, and to suspect cases without any physical signs at all, or is needed to corroborate exclusive skiagraphic findings, or to act as substitute for skiagraphic evidence if this is not available. Everyone of the above cases, with the exception of S. S., justified the positive complement-fixation test, either from the clinical or skiagraphic point of view, equivalent to 93 per cent. S. S. had a positive Wassermann, and although he had *x*-ray findings that might have justified including him among the proven tuberculosis cases, it was thought wise to exclude him for reasons which will appear later under my remarks on syphilis.

The case of G. F. is of especial interest because of the original *x*-ray diagnosis, the Von Pirquet findings and the change from two four-plusses to negative. It must be stated, however, that he had had a tuberculin injection of 0.005 with marked febrile reaction on Feb. 2, ten and twenty-two days respectively before his two positive complement-fixation reactions. As has been shown by Citron, tuberculin injections may cause the appearance of antibodies in the serum, which soon disappear. The subsequent course of this case, clinically and skiagraphically, indicated that his condition was one of chronic fibrosis with bronchiectases, and the suspicion is confirmed that the first and second positive complement-fixation reactions were due to the tuberculin injection, and that he had no active tuberculosis.

In two of the cases (M. A. and H. B.) a decrease in complement binding corresponded strikingly with clinical improvement. I leave it an open question whether there is any relationship between these two facts, and therefore of its prognostic significance. This can only be decided after the accumulation of a very large number of observations.

I wish to report also twenty-two cases of various diseases with negative reaction.

An analysis of Table II shows that in at least 15 cases out of the 22, equalling 68 per cent., the negative complement-fixation agreed with the clinical findings.

Of the remaining seven, M. J., L. K., F. P. and S. S. W., if ever tuberculous, were apparently healed cases; hence we may reasonably include them among the cases in which a negative complement-fixation reaction is reliable, which increases the percentage to 86. In three cases, however, M. K., J. R. and R. Z., the serological findings are not absolutely acceptable. M. K. and J. R. are sufficiently explained in the table.

The case R. Z. was a young girl of nineteen whose first hemoptysis had occured nine years before, after falling down stairs (traumatic tuberculosis, so-called?); again, hemoptyses four years before and two weeks before admission to my service at Mt. Sinai Hospital. According to her story, all these hemoptyses had been very large. While under my observation she had fresh hemorrhages on eight different days, as much as 11 ounces on one day, and totaling about 23 ounces, finally necessitating the induction of an artificial pneumothorax on the right side. The selection of the side for lung compression was somewhat difficult because there had been a complete absence of physical signs, with the exception of very slight crepitation on that side in the axillary region, and at that time radiography was not advisable because of the hemoptyses. From that date on, now five months ago, there has been no recurrence of bleeding, and she is much improved in general health; she has no cough, no expectoration, has gained a great deal in weight, and a guinea-pig inoculation with the blood proved negative, so I am still in a quandary as to the nature of her case.

In discussing tuberculosis complement-fixation in his recent work on "Pulmonary Tuberculosis," Fishberg says: "Most writers obtain positive reaction in patients with syphilis." On the other hand, Craig (*Am. Jr. Med. Sci.*, Dec., 1915) has reported that out of 150 syphilitics examined, only two cases gave positive tuberculosis complement-fixation, and in these two the symptoms of a coincident tuberculous infection were present. My own series shows two cases of syphilis, P. C. and S. W. (Table II), each with Wassermann four plus and each with negative tuberculosis complement-fixation. On the other hand, S. S. (Table I), a doubtful tuberculosis, admittedly luetic, had a positive complement-fixation, but also a positive Wassermann and *x*-ray findings that might be interpreted as confirmative of either or both of these diseases.

In a verbal communication, Dr. Miller tells me that he has examined fifty-four other cases with positive Wassermann and they were all negative for tuberculosis with his antigen, with the exception of one case, which was positive, and proved to be complicated by tuberculous peritonitis. This evidence strongly supports the view that with this antigen there is no confusion between the two tests, but that a positive tuberculosis complement-fixation in a luetic is simply proof of the coexistence of the two diseases.

The limited time at my disposal precluded my going extensively into the literature of the subject. Radcliffe (*Jour. Hygiene*, Cambridge, 1915, XV) had 89 per cent. positive results in 568 cases in all stages of pulmonary tuberculosis. In 11 cases other than tuberculous, mostly malignant growth, all were negative; in 20 suspect cases with negative sputa, 75 per cent. were positive; 45 apparently normal individuals, examined on 204 occasions, were invariably negative.

Craig (*loc. cit.*) found 96 per cent. of positive reactions in active tuberculosis and 66 per cent. in inactive. The test was negative in normal individuals, and also in patients suffering from other diseases.

Baldwin, of Saranac Lake, in a private communication, reports 56 per cent. positive in 32 suspicious cases and 90 per cent. positive in 10 known first stage; 25 per cent. positive in 32 healed cases, from four months to ten years. He also makes the remarkable statement that there were 30 per cent. positive in 20 supposedly healthy persons who had been long exposed to tuberculosis.

In conclusion, I would say that in my judgment the evidence offered by my cases, examined with Miller's antigen, compares most favorably with the results obtained elsewhere with other antigen; that it is in all probability no exaggeration to say that the method equals in value the Wassermann test for syphilis. It is most important that complement-

fixation tests, with Dr. Miller's antigen, be made on as large a scale as possible in sanatoria and, so far as practicable, in private life.

785 Madison Avenue.

SYPHILIS OF THE BLADDER.*

By JAMES PEDERSEN, M.D.,

NEW YORK.

The progressive pace set during the past twelve years by laboratory research workers, leading to precision in the diagnosis of syphilis in all its stages and to greater efficiency in its treatment, has been fully equalled only lately by the avidity with which practitioners have seized upon the thereby attained solution of many problems in medicine and surgery. An example of testimony to this fact is Dr. Barker's paper, presented at the New York Academy of Medicine's recent symposium on syphilis. It recalls to mind the keen clinician who, less than a generation ago, predicted that most ills of mankind could be traced to syphilis recently acquired or remotely inherited, and makes of him a seeming prophet, at that time without honor both within or without his own country. We are rapidly coming to *know* how much more general and occult is syphilis than was ever suspected.

The induction of Dr. Barker's paper, read on that occasion, contains an interesting chronological compilation of the research attainments and their dependent clinical facts. These attainments and facts are to-day so essential to precision in medicine and surgery that, closely summarized, it is permissible to repeat them here. Most of them fall within the past decade.

1. The discovery of *Treponema pallidum* as the cause of syphilis, followed later by success in growing the organism in pure culture.

2. The discovery that many animals are susceptible to syphilis, not only by transmission, but also by inoculation from pure culture.

3. The discovery of simple, easy methods of demonstrating the organism obtained from all sorts of syphilitic lesions, the chancre, the secondary eruptions, and gummata; the walls of aortic aneurysms, the brain in general paresis, and the cord in tabes; the organs in children dead of congenital syphilis, and the placentas of mothers of syphilitic children.

4. The discovery of the Wassermann reaction, applicable alike to the blood serum and the cerebrospinal fluid, and, through its clinical use, the proof that unsuspected syphilis is more widely spread than has been estimated; that the majority of cases supposedly well-treated before the Wassermann reaction control was known, still harbor infection; that many of the wives and children of supposedly cured luetics are infected, even though they show no symptoms; that the reason why a syphilitic child of a syphilitic father can be nursed by the mother without giving the disease to the mother (Colles' law) is that the mother is already infected (the child having been infected by placental transmission from the mother rather than by direct inheritance from the father); and that the reason why the apparently healthy child of luetic parents seems to be immune from infection, say, from an infected wet nurse (Profeta's law), lies in the fact that the child is already infected.

5. The advent of salvarsan, and by its use the proof that in many cases syphilis can be cured in reality and the Wassermann reaction be made negative permanently; that this cure is much more certain by intensive treatment in the early stages than by any form or measure of treatment late in the disease.

6. That the disease does not bequeath an immunity, and that reinfection can and does occur.

For the development of the infrequent topic this paper is to present, we have an extended thesis by Durœux (Paris, 1913), obviously covering all the cases recorded down to that date; certain references to works on cystoscopy; cases from the recent literature in this country; and five cases from my own observation.

From the Durœux thesis, it is apparent that syphilis of the bladder, as a lesion, either is rare or has been frequently overlooked or incorrectly diagnosticated. On the other hand, the thesis teaches us not to be surprised at the failure of the cystoscopists to identify the pathologic condition heretofore, for the reasons now to be described.

The forms under which secondary syphilis of the bladder appear are very similar to, often practically identical with, those non-specific and formerly commoner lesions—namely, simple hyperemia, simple ulcer, and papillary growths. To differentiate, the classical hyperemia of bladder syphilis is said to appear as discrete reddish spots, like macules, sometimes referred to a roseola of bladder; it may be symptomless. The characteristic ulcer is like the specific ulcer on any mucous membrane—more or less elevated on an area of edematous and injected mucous membrane, the edges definite, prominent, and firm, the base grayish with necrotic or hemorrhagic debris. They are usually multiple in clusters, rarely disseminated, and often grouped about or adjacent to one or both ureter mouths. When so situated, they may readily be mistaken for tubercular ulcers, especially if the appropriate symptoms of tuberculous cystitis be present—frequency of urination, more or less urgency, pain, tenesmus, and hematuria. The papillary growths of secondary syphilis have no features recognizable by cystoscopy that will differentiate them from the ordinary papillomata nor from the villous growth surmounting a malignant base.

The tertiary lesion of bladder syphilis—the gumma—is equally difficult of diagnosis by inspection. There is nothing about it to suggest syphilis. Whether ulcerated or not, it resembles either an infiltrating or a salient malignant growth.

By cystoscopy alone, therefore, the diagnosis of bladder syphilis—no matter what the stage—cannot be made. It must be supported by at least one of the corroborating essentials—the history, the Wassermann reaction, syphilitic signs elsewhere in the patient, the somewhat despised treatment test. Removing through the operating cystoscope a section of an ulcer margin or of a growth for the microscope, is no longer allowed by the best authorities. It is liable to promote dissemination and metastasis. The difficulties surrounding the cystoscopic diagnosis of bladder syphilis give that most available examination a regrettably negative value, in view of the fact and all our evidence would show that the incidence of bladder syphilis preponderates in the tertiary stage, when corroboration is least ascertainable.

Durœux's thesis points out this deficiency and displays the scepticism of the literature. He recites that Fournier, in 1899, ignored the subject in his first edition; that Guyon, as late as 1903, in

*Read before the Medical Association of the Greater City of New York, April 17, 1916.

his fourth edition, denied the existence of syphilis of the bladder; that in 1906 Nogues doubted all the alleged cases reported up to that time; and that Desnos and Minet, in 1909, did not accept syphilitic ulcer of the bladder. Kaposi is mentioned as alluding to rare but indisputable gummatous ulcers and cicatrices in the post-mortem bladder; while Caspar and other authorities on cystoscopic diagnosis are silent, non-committal, or unconvinced. The only French authors conceding syphilis of the bladder (though they refer to only rare tertiary lesions) are Legueu (Treatise on Urology, 1910), and Hallapeau and Fouquet (Treatise on Syphilis, 1911). Proksch, in his great bibliography, accepts as clearly authentic only some of the occasional post-mortem ulcerations of the bladder, reported as specific.

A glimpse into still earlier history is interesting. According to Durœux, the earliest mention of bladder syphilis was made by Morgagni in 1767, in the form of a specimen corroborated by lesions in the glans, epiglottis, and tongue. The next record is a specimen presented by Follin in 1849. Ricord, in 1851, described in great detail and illustrated two cases, proven later by autopsy. Close upon him follow Virchow and Vigal de Cassis. Beginning with 1899, the observers and cases begin to count up, though very slowly. Matzenauer (1900) seems to be the first who used cystoscopy in these cases.

Of the twenty-six tertiary cases thus brought together by Durœux, the incidence of the chief features was as follows (expressed in percentage):

	Cystitis		50
	Hematuria		35
	Lesions elsewhere		62
	History	positive	54
		negative	8
Of the lesions in the bladder	Papillomata		16
	Ulcer	single	16
		multiple	23
	Gummata		27
	Undefined		4
	Wassermann reaction (positive)		8

Of the fourteen secondary cases collected by him, two are incompletely reported post-mortem cases (Fenwick, 1; Neumann, 1) and one is the case of a four year old child who died of syphilis contracted from a wet nurse. The lesions were chancre of the mouth, a skin eruption, and ulcers of the pharynx, urethra and bladder.

Three cases by Pereschiwkin and five by Frank (1909) seem to have been put on record to negative the claim made by Nitze in 1907 that there existed no cystoscopic picture of a syphilitic bladder. The eight cases of these two observers seem not to have been reported in detail. Asch's one case (1911) had developed sharp cystitis eighteen months after a vulvar "abscess," with adenopathy, and twelve months after a gonococcus infection. Multiple bladder ulcers were found. One other case gave a positive history and had a bladder ulcer.

Counting the case of the four year old child, the only other satisfactory report in this group of fourteen cases is that made by Durœux with Levy-Bing (1912). Making cystoscopy a part of the routine examination of 100 luetics, they discovered ten small vesical ulcers in a patient without symptoms of cystitis, but having confirmatory syphilitic signs and a positive Wassermann.

Examining recent works, we find the French well in the lead with both plates and text, practically all based on the cases collected by Durœux.

The Germans are a close second, through Frank of Berlin, who exhibited a series of illustrations from two cases at the German Neurological Congress in 1909.

The English come third, with Thomson-Walker's good description of syphilis of the bladder, though he quotes only Asch, apparently not knowing of the French thesis.

Our country follows in a minor fourth place; our recent books either make no mention of the subject or allude to it only casually. In our journals, where we make a better showing, the following cases are found:

The one reported by Rush (Mobile), in 1913, is interestingly suggestive. The patient, 66 years old, had contracted syphilis when 24, and it had been thoroughly treated. He had had symptoms of cystitis for many years and presented a notably enlarged prostate. The case had been variously diagnosticated as Bright's disease, carcinoma of the rectum involving the prostate, senile enlargement of the prostate, and vesicle calculus. The existing nephritis was held to bar prostatectomy. Owing to hemorrhage, cystoscopy was impossible. Wassermann reaction, weakly positive. After the second intravenous salvarsan, all his symptoms began to improve and the Wassermann became negative. Then twenty-six injections of salvarsan were given, resulting in an almost total disappearance of the symptoms and a marked reduction in the prostate. The fact that the cystitis had long antedated the prostatic obstruction, appears as ground for the inference that a gumma of the prostate and bladder was the pathologic condition.

Simons (1913) reported a twenty-four year old man who, denying syphilis, presented vesical symptoms suggestive of tuberculosis. Cystoscopy showed clean cut ulcers posterior to the trigone. Local treatment aggravated the symptoms. The Noguchi test was then found positive, and intramuscular injections of mercury promptly affected a cure. Eventually the blood became negative and the bladder normal.

Buerger, the same year, described two cases of ulcer of the bladder; Simons later commented that the second case may have been syphilitic, as the ulcer healed under mercurial treatment, although the Wassermann was negative.

Hunner (Baltimore, 1915) enumerated eight cases of chronic ulcers of the bladder, neither tuberculous nor malignant. Five were treated by excision. The other three did not improve under non-operative treatment. He does not seem to have suspected syphilis, and Cones calls attention to the fact that syphilis was not excluded.

Finally, Schapira (1915) described a case of probable re-infection, the first infection occurring in 1907, the second in 1912. In 1914, within four or five months after five injections of salvarsan, when the Wassermann was negative, bladder symptoms developed. The cystoscope showed a congested trigone, two ulcers recognized as syphilitic, and a gumma. Another administration of salvarsan acted as a provocative; the Wassermann became strongly positive. Under continued treatment, complete recovery occurred.

The cases from my own experience are as follows:

Case I.—A married man, 71 years old, in moderately good general condition, with two apparently healthy children, aged 13 and 11 years respectively. (The patient did not marry until his 56th year.) Undoubted syphilis in his 21st year. Mouth medication for only one mouth. Ten years thereafter, he began to have so-called "liver attacks." These seem to have recurred frequently, with increasing severity, finally

culminating in a grave condition in 1905. He was seen by a gastroenterologist, who soon changed his tentative diagnosis of carcinoma to syphilis of the liver. Six weeks of intensive treatment effected a cure.

At this time (1905) there appeared the first bladder symptoms usual to any 66 year old man—painless frequency of urination. Later on, hematuria was added. Two trifling attacks in the course of the intervening five years were followed by sudden, almost profuse, hematuria, with clots sufficient to cause intermittent retention. He had been obliged to use a catheter off and on for a week before he was referred for treatment.

The clots and rapid oozing made cystoscopy difficult; but a growth (taken to be a probable malignant neoplasm) was made out, apparently involving a large area of the bladder base and the lateral walls to a small extent. Cystoscopy was protested until after antisyphilitic treatment had been tried. This was carried out in the hospital and forced. Though favored by rest in bed, the bleeding only slowly abated; but by the end of the month a clear view of the bladder lesion was had and the patient could go about almost at will without greatly increasing the then minimal oozing.

The lesion is correctly described as a "fleshy" or compact growth, with a few moderately villous formations and an unusual amount of necrosis. By continuous sloughing, the growth gradually decreased in size until, nine months later, only a small mass with a narrow villous margin was left near the right ureter mouth. Posterior to the trigone, one area, originally hidden if not involved, now presented a reddish-brown, finely striated appearance, such as might be formed by a recent scar in the mucous membrane of a partially distended bladder.

It is admitted that the course of this case during the second half of the two years and nine months the patient was under observation, creates the suspicion of an underlying or resultant true neoplasm, as opposed to an unconditioned gumma; the necrosis ceased, nevertheless the tumor did not disappear wholly, and the tendency to hemorrhage after over-exertion was ever present, though slight. Occasionally considerable bleeding occurred. To offset the suspicion, however, is the fact that constant treatment was not possible, owing to the patient's distance from the city and other contingencies. He died in December, 1912, of an extensive erysipelas.

An interesting and not wholly irrelevant query would be whether this patient's practically neglected syphilis, contracted when he was twenty-one, was still communicable at fifty-six when he married, and whether it had anything to do with a chronic joint trouble for which his wife was under the care of an orthopedic surgeon. To further complicate the matter, is his history of several attacks of urethritis, prior to marriage.

Case II.—March 11, 1915. A man, aged 34, married, came to the Post-Graduate Clinic, complaining of hematuria, apparently the result of traumatism. He had been accustomed to pass a more or less flexible bougie at intervals, to dilate urethral strictures that dated from boyhood. Their cause could not be ascertained. Cystoscopy showed thickening and diffuse congestion of the mucous membrane (the usual picture of a long-standing, chronic cystitis), and, in addition, a marked but flattened infiltration of the right anterior wall, with an open lesion posteriorly, supposed at that time to be the wound made by the patient's bougie. The infiltration was so marked and circumscribed that malignancy was suspected.

The patient now called attention to a reddened, semi-fluctuating swelling, occupying the right supra-spinous fossa. When cut down upon, it proved to be neither an abscess nor an infected lipoma, but a full-fledged gumma, in spite of a negative history and a negative Wassermann. The fossa was cleaned out and drained. Under intramuscular injections, it healed well, though not without further necrosis and suppuration. Within four weeks after treatment was begun, cystoscopy showed a general improvement in the bladder.

The patient so appreciated his improvement that he disappeared, only to report again at the end of nine months that hematuria had returned. Cystoscopy (about four weeks ago) revealed much less chronic "cystitis," the first infiltration about half the original size, a peculiar tesselated appearance of the membranous urethra posterior to the trigone—due apparently to the contraction of superficial scars—but no discoverable ulcer to account for the hematuria. The man is again under antisyphilitic treatment.

Case III.—June 23, 1915. A robust looking woman, 44 years of age, married. Her only child, now 25 years old, developed an eruption soon after birth that was diagnosticated congenital syphilis. He was treated successfully.

Apparently this patient, the mother, had good, if not perfect health, throughout and down to her thirty-seventh year, when frequent and painful urination developed. Hematuria, with clots, supervened. The bladder was variously treated by many physicians the world over; repeated cystoscopic examinations disclosed "ulcers." Finally, in January, 1915, while in Paris, the diagnosis was made. Intramuscular injections every two days resulted favorably at once, and she continued in fair comfort for nearly five months, though the treatment had not been concluded.

When she came under our observation, she was again urinating every fifteen minutes during the day and every half hour at night. The urine was turbid and slightly blood-stained. Gross hematuria had not occurred since the treatment in Paris. Cystoscopy, with only two ounces of fluid in the bladder (its maximum capacity at that time), (no anesthesia) revealed an almost general thickening of the mucous membrane, with here and there areas of sharply defined congestion set with ulcers to which mucus-like pellicles were more or less adherent. From approximately the left ureter mouth, a narrow ridge—its free edge marked by a linear ulcer—curved upward across the vault of the bladder, gradually narrowing, and vanished into the wall at the corresponding landmark on the right side. The ridge would probably have been less salient had full distention of the bladder been possible. No bleeding point was seen, nor did the urethra bleed, though it was very sensitive. Under intramuscular injections, she improved rapidly. My notes state that within ten days she was retaining her urine three hours. The unfortunate woman had suffered so long and patiently that, as she demurred, I did not insist upon a control cystoscopy when she was about to leave the city.

Though the following case is chargeable with a positive history and positive Wassermann reaction, the bladder factors therein were so minor and ceased so promptly under the intensive treatment given that only a summary will be necessary.

Case IV.—A 62 year old man, with a prostate surprisingly small and soft for his age, and with only a drachm of *clear* residual urine, complained of frequency and an urgency so great that he was liable to incontinence during sleep. He could not always wake up promptly enough to control the urinary impulse. Under antisyphilitic treatment alone, improvement set in at once and progressed. His day intervals now are normal; during the night he urinates but once. The assumption is that his lesion was a specific hyperemia of the bladder. His rapid improvement precluded the necessity for a confirmatory cystoscopy.

Case V.—November 16, 1911. A married woman, 30 years of age. Never pregnant. Two gonococcus infections by her husband; the first when twenty, the second when twenty-six. Apparently the distressing frequency and pain of urination date from the first urethritis. She has never been free from these bladder symptoms since. Undoubtedly, they are aggravated by the colon bacillus infection present. Cystoscopy, negative. Urethra deeply congested. Eight months later, however, an ulcer and punctate spots were discovered in the bladder.

Intermittent treatment based on those diagnoses and continued over a long period gave considerable relief at times, but only temporarily. Two urinations at night and a three-hour interval during the day was the best result obtained. In addition to local measures, the treatment included two courses of colon bacillus vaccine (autogenous and stock), and finally removal of the infected (right) kidney (May 22, 1913). At this time there was stricture of the right ureter and an ulcer at its mouth. The first pelvic examination, made early in the course, excluded any abnormality, but the second disclosed a marked retroversion. This is said

to have been corrected by her physician. No benefit resulted.

Last November, after she had been absent for nearly eighteen months, the Wassermann was found ++; the Schwartze, negative. Her family physician is carrying out the antisyphilitic treatment. Both he and the patient report that she has less pain and frequency, as a rule. She now urinates only once during the night.

Though the last two cases may not be accepted as conculsive, they nevertheless present a reasonable, if not a strong, probability, on the basis of which they are believed to have a place under the title of this paper. In any event, Case IV serves to point out that bladder hyperemia may be related to syphilis in the same way that it is to several other conditions; and Case V helps fix the fact of occult syphilis as a contributing cause in some highly complex cases.

The conclusions to be deduced are these:

1. Syphilis of the bladder is an entity often overlooked or not recognized.

2. It may manifest itself in one or more of several possible pathologic lesions, only one of which—the punctate hyperemia in multiple spots, the so-called "macule"—is pathognomonic.

3. The other lesions, having the same general appearances of benign or non-malignant lesions not due to syphilis, cannot be differentiated cystoscopically; some corroboration is necessary to the diagnosis.

4. Suspected, recognized and treated, the prognosis seems uniformly good.

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DRUG ADDICTS AND THEIR TREATMENT.

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Within the last few months a number of very elaborate papers have appeared concerning drug taking and the methods of treatment. These papers indicate an increasing interest, and show that the profession has at last awakened to the responsibility of being better able to treat and counsel such cases than the empirics who have largely occupied this field.

In July, 1915, there were forty-one homes, sanatoriums and institutions for the treatment of drug addicts. A very large number of them were obviously empirical, from the fact that they advertised new and secret drugs. They claimed to have discovered some process, unknown to the regular profession. Four of these concerns used remedies that had been found in foreign countries, and they evidently had the monopoly of the importation of these drugs. Others claimed not only the discovery of new drugs, but combinations of drugs, never made before, and new methods of using them that would produce most unusual effects.

Evidently a great many persons are treated in these various institutions from the fact of their number and variety. The profession recognizes this very clearly by the increasing number of victims coming for help who have tried these various advertised cures and relapsed, and their condition is more serious than ever before. Hence the profession is greatly concerned to know what to do, and how to treat these poor victims, who are in a large proportion of cases members of good families and among the patrons who are quite able to pay for medical attention. In consequence of this, during the last few months a number of papers have appeared from writers who supposed they had attained a degree of certainty in their methods of treatment. An outline of what may be termed the general principles which are to be followed in the care and treatment of these addicts will give a little wider view of the problem that is becoming more urgent every day.

Hospital treatment is found in most cases to be the first essential. The patient must leave his surroundings and home life and go where all these conditions can be directed and controlled. The first object is to remove the drug, and this can best be done in exact surroundings and conditions of living. The after-treatment may be conducted at home, under the care of the family physician, but at first the patient is far too weak and neurasthenic to be able to take care of himself in any particular way. In the hospital the physician will determine what plans to follow, whether the withdrawal of the drug will be rapid or slow, and how far the patient will cooperate in the treatment. In some instances a rapid withdrawal is called for. In others a long, slow removal gives a chance for building up the mental and physical conditions of the patient. The theory that shock will follow from the rapid removal is not sustained; no matter what quantity the patient may be taking it can be reduced greatly without the patient being conscious of it. Below that many symptoms will develop, mostly of a mental character, that require treatment. Experience shows that substitutes of the narcotic family are not only dangerous, but oftentimes worse than the original.

The claims of irregulars that the original drug has been removed and they are cured, and the fact that preparations of belladonna, hyoscyamus, and other drugs are being substituted, are absurd and misleading. The removal of the substitutes provokes the return to the original drug, or something equivalent to it. The various theories of shock, depression, and functional disorders are largely mental, and are overcome by natural methods and the recuperative powers of nature.

The condition of the morphine addict is an assemblage of toxemias and autointoxications, obsessions, delusions, and various forms of functional and transient paralysis. These are most readily removed by eliminative measures through the bowels and skin, together with hydropathic appliances of every description.

Fatigue, weariness, and morbid consciousness or absence of consciousness of his real condition are always present. The arterial tension is extremely variable, rising and falling alternately from conditions unknown, associated with unstable heart's action and extreme susceptibility to a great variety of conditions that seem to be governed by surroundings. Irritation of every description is registered by the tension. Drugs and spirits or anything that will relieve this irritation is most grateful, and sought for. Tobacco, coffee, tea, and tinctures, patent drugs or anything containing alcohol seem to be very suitable for the occasion, and yet all are dangerous and complicate the real condition.

The short cures in which excessive purgation, bathing, rubbing, and drinking large quantities of water give very pronounced hints of the actual requirements. The supposed shock from withdrawal does not appear, and the patient is buoyed up with hope that the drug will never be resumed again, because there is no possible desire for it. This is accomplished by the sudden overwhelming appeal

to the organism, which is certain to be followed by reaction.

The week or two weeks' treatment in which the patient is put to sleep by another drug, on the supposition that the substitute can be dropped and the original craving will be gone, depends on so many unknown conditions as to be practically unreliable. The mental state of the patient, who on awaking from the chemical stupor realizes that he has escaped the former drug, becomes a literal obsession that overcomes a great variety of symptoms for a time, but sooner or later there is reaction, and the hope of permanent recovery goes down in relapse. He has nothing permanent on which to build, except the fleeting suggestion of cure, which the organism is unable to sustain.

The fatigue, pains, and aches which are overcome by morphine must be treated, as also the conditions of the brain and organism that call for relief and appeal for help. The withdrawal of the drug which gives this help is only a small part of the treatment. The very unusual histories of cases reported give the best evidence of this. Thus in one instance a morphine addict went to the mountains, under the care of a physician, and drank immense quantities of water every day. He lived on a grain diet, took a hot bath every morning, and lived practically out of doors. The doctor, who had great faith in medicines, gave at short intervals a solution of skull-cap. In a short time the patient gave up the morphine voluntarily, and in a few weeks was discharged cured. The doctor attributed the cure to this particular drug. In another instance a chronic addict was put on a spare diet of grains; he walked four times a day a mile or more to drink large quantities of mild mineral water. He recovered and the mineral water was given credit for the cure. A third instance reported was of a woman who had been addicted to morphine two years. She lived a life of great ease, without any purpose or object. Suddenly she was called to Colorado to take charge of her brother who was dying from consumption. She went up to a mountain shack and was forced to do a great deal of nursing, preparing of foods, carrying of water, and other duties that she had never done before. She gradually gave up the use of the drug and substituted hypophosphites which her brother was using, and in this way she remained for nearly a year, actively engaged in this mountain cottage, and returned entirely restored. The doctor reported the case as one restored from hypophosphites. These three are examples, of the removal of causes which were unknown at the time, but really were the largest contributors to the continuance of the drug addiction.

Whenever the states of irritation, exhaustion, and depression are removed, the desire for the drug dies out. This gives a most significant hint of what the cure of drug addictions really means. Treating symptoms complicates the case, and is far from being scientific. Elaborate details of what means or measures remove the discomfort and psychical symptoms, which follow when the drug is taken away, of themselves are of very little value.

The theory that opium produces a toxin which circulating through the blood increases the demand for it, and that of the products of acids that intensify the present conditions, sound very learned, but somehow they do not go back to the original causes. A great many cases have been reported where the removal of some sharp irritating cause, such as a spicula of bone pressing on a nerve, a neuralemma from a contused nerve, a depressed bone of the skull, a tapeworm, or a great variety of active sources of irritation, has been followed by the giving up of opium in any of its forms.

It is not uncommon in the general practice of physicians to find persons who are taking opium or its alkaloids secretly, with or without any particular cause. The ordinary physician is satisfied with the patient's statement, as to why he began the drug, and beyond this there is a range of moral causes which the physician acquiesces in. It would seem absurd to concentrate all efforts on the removal of the drug and neglect the causes. It is simplicity itself for one to go here and there for two or three weeks and have the drug removed by substitute methods of all sorts and kinds, and then come out buoyed up with the faith that he has escaped and will never more relapse.

The family physician who has charge of these cases soon discovers a great variety of complicating symptoms which did not appear before. The patient apparently is free from the drug, but other symptoms break out of a more aggravating character—insomnia, periods of restlessness, of excitement, or unusual elation or depression.

If he is in business circles he will complain of exhaustion that is most unusual and does not yield to the ordinary remedies. He will have symptoms of so-called rheumatism, muscular stiffness, neuritic pains, and his digestion will be impaired. His eyesight will be weakened and a great variety of other general and local symptoms will appear. The original causes have not been touched. In addition, there have been drug complications and drug injuries which are more or less traceable. Thus the person treated with hyoscine and belladonna compounds will develop a class of symptoms that seem to have some connection with these drugs. The delirium and delusion from hyoscine leave some vestige and conditions that linger long after the drug has been taken. The defective eyesight that calls for readjustment of glasses, where belladonna has been given freely in the treatment, suggests drug injury. In cases where bromides have been given for a long period, there are degrees of dullness and loss of energy that give the same intimation. All these are hints that the condition treated in the withdrawal stage by narcotic drugs is full of peril and possible future disturbances.

When the physician discovers the use of morphine in his patient a very active study should be made to find the original cause and the contributing conditions. A reckless physician may give morphine to a toxemic case for some little time as the most simple way of removing the symptoms. Later the patient continues the drug. The fact that the morphine was given for toxic conditions, and that it produces a toxic state, outlines the treatment clearly.

In the nerve-exhausted, care-distracted men and women, who find relief in morphine, another set of suggestive causes indicate the methods of treatment. There is often a common-sense viewpoint which is not recognized; most of the modern writers give great emphasis to the withdrawal of the drug and consider the after-treatment a matter of small moment.

The psychical treatment, which considers the effects of mind on the body and the influence of surroundings and occupations, opens the widest road for practical results. The frequent relapse of such

persons with the loss of faith in the patient and of confidence in the physician in his permanent restoration, all come from the absence of exact psychical and physical study and treatment.

The drug-taker is always aged physically, and is subject to a great variety of conditions, which can be removed as positively as any other disorder. He may have inherited defects, and he certainly has acquired some of them, but with proper means and study, they can be overcome, and to a large extent removed.

I have found in my long experience that a form of re-education and mental change, or to use a larger term, reclamation, which signifies a complete change in mind and body and a new consciousness of how to live. I have noted many persons who were cured, in the sense of never using the drug again and living many years a useful life. I have seen instances where it would seem that the drug addiction was self-limited and after a time would die out in ordinary favorable conditions. Its very intimate association with alcohol of course complicates and increases the degeneration, but even here, there is not unfrequently seen a recuperative power that is startling.

The so-called incurable cases are in persons who use any sort of drugs or spirits that have narcotic effects, going from one to another as circumstances demand, but even these persons are curable by ways and means that seem astonishing at present.

One such person is recorded in medical literature as having made a permanent recovery from the use of alcohol, a second recovery from opium, a third from chloral, and a fourth from cocaine. The physicians who treated this man, spoke very positively of the effects of certain drugs or combinations of drugs and believed their means and methods to be responsible for the cure. In all probability each one of these physicians was not aware of the patient's cures in other institutions. He was a man of some property and prominence and moved about from place to place and was secretive to the last degree. After the last cure, he was killed in an accident, or he might have furnished other details for the literature on this subject. Experience brings out one fact as basic of all others. The patient should go under the care of a scientific physician; scientific in the sense of being careful, conscientious, and exact in his work and a student in the sense of studying each case by itself, and not according to the theories or traditions of others.

The patient should be made to understand that the removal of the drug is by no means the whole treatment, that there are other very serious derangements that must be found and corrected, and that his full cooperation is required covering a long period of time. He must recognize that the use of morphine is only a blundering effort to cover up his real condition. He resembles the ostrich who in times of danger buries his head in the sand.

The continuous use of morphine not only covers up the pain signals but creates other centers of distress and so adds to the degeneration and decay, or rather aging of the patient to an extent beyond any possible conception. The patient's viewpoint is a very dangerous one and in many instances it is practically an insane one, meaning by this a perversion and reversion of natural reasoning and thought, and an absence of correct judgment of cause and effect. Many of the morphine addicts show a degree of mental vigor in other respects, but concerning themselves and the use of the drug they are practically dements, full of delusions and illusions, and are utterly unable to judge correctly of what should be done. The more intellectual the patient, the more dangerous and subtle the delusions are.

When the patient realizes this thoroughly and puts himself implicitly under the care of a wise physician, the beginning of a permanent cure is made. The physician should then have no difficulty in studying the case and determining the causes and exact conditions present; then applying the best means and methods for their removal. All this is along the line of every day practice and training. There are no specifics or mysterious drugs with unknown effects and nothing in the nature of a miracle here. The patient's conception of what he wants is one thing, which is very likely to differ widely from that of the physician, but through it all, there must be a degree of confidence and positive deference to medical judgment and skill.

Details of how this can be done and the exact means to be used can only be stated in the most general terms, because no two cases are alike. The presence of toxemias and autointoxications is universal to all cases, and therefore suggests the first question of treatment; then follow all degrees of physical and psychical palsies which require their special distinctive treatment.

Eliminative measures, which include appeals to the skin, bowels, and kidneys through baths, cathartics, massage, and various other measures depending on the history and habits of the patient, are necessary. Baths in mineral water seem to supply a most practical demand. Of these the soda, salt and gas baths are the best. Where the skin is very inactive a mineral bath in hot water is useful. Where the skin has been very active and perspiration marked, salt baths and acid baths are excellent. The hydropathic measures must be determined from the previous habits of the patient, his occupation and diet, in the same way that cathartics given should be studied and adapted to the person. The next question is that of nutrition and sleep. The previous history and present conditions will usually furnish the best hints of what measures are practical. Then occupation, exercise, and regular habits of living are to be treated in the same exact way.

Psychically the patient's consideration of his own condition and his reasoning as to what he needs and what is lacking often give most important clues for restorative measures. The study of the patient's mentality is as important as his physical condition. If he has lost faith and courage and becomes pessimistic where he was the opposite before, this is a physical hint of importance. If he has suffered from injuries, shocks, and mental changes that profoundly influenced his nervous system, they are distinct conditions to be overcome. The chronic addict always exhibits mental lowering and defects of ordinary reasoning that are of course incident to the continuous anesthesia of the drug. These are questions for study, quite as important as the exact dosage necessary to keep him comfortable.

Stretching out from this point there is a great unknown field of symptoms, dating from distinct causes which should be understood and treated with as much exactness as the pain symptoms for which the drug is taken. As to what drugs may be given or depended upon for relief, there can be no absolute certainty of uniform effects. There are many drugs called tonics and alteratives that serve a good purpose, and there are many mild narcotics of

the vegetable class that are extremely useful and in some instances have a decided value, but all this must depend on the condition of the patient and the good judgment of the physician.

There is always a degree of complexity in the symptoms and a certain sudden shifting of mental and functional activities of the patient that require the highest kind of skill to meet and overcome. The attempt to do this by drugs alone is crude and usually a failure. It should be understood that the effects of long addiction to narcotic drugs have very seriously impaired the adjusting centers of the brain and its capacity to accommodate itself normally to the exigencies of the present, hence there is a degree of degeneration and impairment that must be recognized and provided for.

While the removal of the drug is the important part of the treatment it often uncovers a great variety of symptoms which are really worse than slavery to the narcotic. The specialist can treat the former most practically, but he rarely has the opportunity to carry on the after-treatment other than by advice and counsel, and in this the family physician has a larger field for the exercise of his best skill and judgment.

The central fact should never be forgotten that drug addictions are distinct neuroses and psychoses, amenable to treatment and curable to an unknown extent. Preventive measures here are pronounced and physicians recognize susceptiblities and often exercise judgment in preventing the development of these nueroses by discretion in the use of opium.

When the addiction is fairly formed the complexity of the symptoms and general control of the case present so many obstacles in the treatment that physicians hesitate, and not unfrequently permit such cases to fall into the hands of irregulars. Later when they relapse and come back for active treatment, the difficulties increase and in the absence of text-books and authorities telling exactly what to do, there is more or less confusion. All this reflects on the training of the physician and the disposition to accept theories and traditions from unknown sources and to neglect the same exact scientific study and treatment of such cases as are given in other departments of medicine.

Another fact should be emphasized. Physicians should discourage patients from expecting help from irregular and mysterious sources and depending on specifics and specific treatment. Here as in every other department of medicine, it is cause and effect and a study of the exact laws and conditions which control the growth, development, and termination of narcotic addictions.

Medical colleges should make the study of these neuroses a part of their training. Post-graduate schools would find instruction in this department welcomed by an increasing number of physicians. It is obvious that the treatment of drug and spirit addicts, now largely in the hands of quacks, must be brought into the range of scientific studies, the demand for which is apparent in every section of the country.

Treatment of Syphilis at the Providence City Hospital.—H. P. B. Jordan states that 606 and 914 have practically the same therapeutic value and that too much reliance is put upon these drugs by the laity. All patients should receive mercury treatment after 606 treatment as efficiently as they did before the introduction of the latter, and in latent and tertiary cases a good course of mercury should be given before salvarsan.—*Providence Medical Journal.*

PAINLESS AND SHOCKLESS CHILDBIRTH.

TWILIGHT SLEEP.

By M. W. KAPP, M.D.,

SAN JOSÉ, CAL.

In the Medical Record for November 14, 1914, I gave a short report of my success with a new method of modifying the pains of parturition. I beg space for a more extended report after another year of experience with the method.

Fear is one of the greatest inhibitors of normal functioning. Fear retards mental, physical, and spiritual development. How can a mother develop mentally and physically and give the correct development to a child in utero when her mind is filled with thought of fear of the distress of the pregnant state and the agony of the accouching chamber. For ages, from the depths of their agony have parturient mothers said, "For God's sake, doctor, do something to relieve me." We can now answer that appeal.

Very recently, within a few days of each other, I had three primiparous cases and in each one, before I left the house after the confinement, the woman planned for the next baby as coolly as if the having of babies was a mere joyful occasion. I considered that the best compliment for my method that I could have.

When we can make womankind *know* that the pains of parturition can be made bearable and even easy then we shall be laying the foundation of a new consciousness where fear does not enter and motherhood will be glorified anew. I used to dread my confinement cases, but do not dread them now, for I feel master of the conditions. When an expectant mother comes to me now and engages me for her confinement I can assure her that her pains will be bearable and that she will receive her baby in her arms joyously. The very fact that I can tell her truthfully that she will not have the severe pains lulls her fears and puts her in a better attitude to take the pains.

I have seen many a woman enter the pangs of labor with dread and fear and when I proved to her that the pains could be and were modified so the agony was eliminated then she would bless me and put forth her best effort and assist gladly in the expulsion of the child.

Probably the first case where I used my present method will illustrate what I have had told me dozens of times. I was confining a quadripara. I had confined her twice before and she was no shirker and her pains were very hard at each confinement. As the head was entering the upper brim of the pelvis she would be almost in a frenzy with each pain. She would not bear down. She begged piteously for me to do something to relieve her. It was too early to give her chloroform and besides I did not like to give her chloroform as she had a history of very severe hemorrhage at each confinement. I was almost desperate for I knew her so well that I knew her pains were all that she said they were. Why I gave her what I did I do not know only that there was some vague impulse for me to try it. I gave her hypodermically 1/12 gram heroin hydrochloride. In about fifteen minutes she turned to me and said, "Now I can bear down. My! what a relief." She then took hold of the straps and the way she could bear down and the manner that she hustled that child into the outer world was a revelation to me. And this time there

was no hemmorrhage though that may have been due to the fact that for a week previously to the confinement I had given her ten drops of adrenalin chloride twice a day.

After the baby was born the mother turned to me and said, "Doctor, give that hypodermic to every woman having a baby. It's the greatest blessing that I have ever known."

The above case occurred in August, 1911. I used the drug in practically all my cases for three years when I went to New York City for post graduate work and to study the Freiburg method of "twilight sleep." I at once saw the uselessness of that method for the general practitioner, though a study of it has helped me to modify and perfect my methods of procedure.

In my opinion amnesia is not the most desired object to be attained in confinement. Analgesia is the desideratum. With drugs that produce amnesia the patient does not use her voluntary forces to assist in the expulsion of the child. With a condition of analgesia the patient can employ all the forces that nature has given her to hasten the progress. A mother has all the joy of knowing when her child is born. And it is a joy when the pains have not outweighed all else.

My method is a practical one adapted to use in the humblest home as well as in the most elaborately furnished home or hospital. Heroin intelligently used is the best aid yet found for general use. Heroin does not bring babies without the help of the mother and the doctor. Heroin is a blessing if used with brains. Some people seem to think, when you offer them an aid in parturition, that it will be something vague or mysterious that relieves the mother of all effort or responsibility. I explain to the prospective mother that the laws of nature demand that the child be born through the efforts of her voluntary and involuntary forces. I aim to help her use her natural forces by using a simple analgesic that does not destroy the involuntary forces and by its mild anodyne effect allow her to increase her voluntary effort and thus make labor less in length of time and *very much less* as to suffering and pain.

When I am called to a case in labor and the woman is a multipara, I satisfy myself that the pains are real labor pains and strong enough, I give a heroin at once as labor is usually short and the mother has known from previous experiences what the real pains are. In a primipara I always wait until the pains become severe enough that the prospective mother may know what real pains are like. I do not care what stage of labor the patient is in—the pain is my guide for the giving of the heroin.

I then wait for the effect and while doing so attend to the asepsis and preparation of the patient if that has not been attended to before. I watch to see if the effectiveness of the pains lessened or changed in any way. In from 10 to 20 minutes the patient often complains of a dizziness or a slight feeling of intoxication, and almost always a sleepy feeling. Right there is one of the most important moments of your work. Explain in a very firm manner that now the hurting pains will be lessened and it is the time for her to make all the progress that she can by using all her expelling forces that she can summon. Teach her to take deep breaths and hold them firmly while pulling on the straps, and keep doing so as long as she feels the contraction of the uterus. The primipara often needs some coaching in the matter.

The patient may become sleepy and shirk the effort, if you do not insist on her doing her part, and thus prolong labor. I have had a few cases that I had to cure of the laziness by letting the heroin wear off and letting the pains come back with all their force. When I gave them heroin again they were more than ready to do their part. As I said before, some patients think when you offer them help that you must do all.

Remember that heroin produces analgesia and does not retard labor nor hasten labor itself. Get all the parturient forces to work and when you have once taught the patient to use those forces correctly then you can sit calmly by and watch the progress of the case. If dilatation is not far advanced I usually go and make calls if it is in the day time. At night I often lie down and rest. I come back to the case as often as my judgment tells me. If dilatation is nearly complete and labor well advanced I do not leave the case.

The effect of one injection of 1/12 grain heroin hydrochloride will usually last from two to three hours; I have had it last more than three hours. I have had cases that needed another injection in half an hour. When the head is dilating the vulva and perineum I aim to have all the effect of the heroin that the patient can stand without retarding the pains. A few times I have been so eager to produce perfect analgesia that I gave so much heroin that it retarded the pains. One-third or one-half ampule of pituitrin will start the pains if they become retarded. For a long time I was very positive that heroin did not stop the action of pituitary extract. Several of my friends told me that it did. They had given the latter frequently after heroin and other quieting drugs, and had found it of no assistance. A short time ago I had a few cases that I had well under control with heroin, and I wanted to hasten matters and I got no results even with a full dose of pituitary extracts. I was puzzled for a time, but on investigating I found that my druggist had given me another make. I sent for some of the old kind that I had used at first and I have been able to prove that it *will* work when I am having the patient under the full dose or heroin and does it properly. A few cases to illustrate my method:

Mrs. R., primipara, called me at 5 A.M., reported that membrane had ruptured, but that she had no pains. I told her to go to bed and call me when the pains started. At 7 A.M. she phoned that the pains had started. I saw her at 9 A.M. The pains were regular but not severe. Os rigid no dilatation (just such a case as I used to insert rubber bags). I told them to call again when the pains became more severe, and left to make other calls. At 11 A.M. I was called, and at that time found the pains very severe, and every 4 and 5 minutes in frequency. I gave ½ gr. heroin hydrochloride hypodermically. An examination revealed the os softening slightly. Again I made calls until 1:30 P.M., when I received word that the pains were severe again. I found the os as large as a 25-cent piece and softening very nicely. I gave another ½ gr. heroin and went to my office. At 4 P.M. I was called again. I found the os nearly dilated. I gave another ½ gr. heroin and instructed the patient to use her full parturition forces. She responded intelligently and labor progressed normally. At 6 P.M. gave 1/24 gr. heroin, and at 6:30 P.M. I delivered the child without laceration, either in the cervix or in the perineum. As I was leaving the patient I congratulated her upon standing the pains so well. She laughed and said, "Doctor, that was no pain at all. I am ready to have another baby at any time if that is all there is to it," yet she complained bitterly of the pains before I gave the heroin.

Mrs. W. By all the data and examinations she was nine and a half months parturient; she would have

slight pains almost every day but they were not lasting. I had confined her twice before—each time very slow but normal labors. Examination showed os soft and slightly dilated. I decided to induce labor. I gave 1/3 ampule pituitary; within fifteen minutes pains started vigorously every three or four minutes. When the pains became very severe I gave her 1/12 gr. heroin, which in this instance increased the frequency of the pain, but the analgesia effect was perfect. The patient was delivered in an hour and a half, absolutely normal, and with but very slight sense of pain.

Just after writing the above notes I was called to Mrs. C. Tripara; the membranes had been ruptured for two days. She had very slight pains once an hour or less often. I gave ½ ampule pituitary. Pains became hard and regular within ten minutes. After two hours the pains died down again. I then gave another ½ ampule pituitrin. Labor then progressed normally, and at the end of another two hours the os was fully dilated and the head passing down into the bony pelvis. As the head was passing the lower brim of the pelvis the patient began to complain of the pain. I gave her the usual 1/12 heroin and soon had perfect analgesia. The pains seemed of good quality but the progress was a little slow, so I gave another ½ ampule pituitary, and in fifteen minutes I delivered normally a 7½-pound child without laceration, and without the least outcry from the patient.

Mrs. S., primipara, had albuminuria for two weeks; some swelling of the feet and legs. No head symptoms. Pains off and on all night. At 7 A.M. I called and found the os slightly dilated. Pains not severe. Went away and came back again at 9 A.M. When the pains were very severe and dilatation was about two-thirds complete, I gave the usual 1/12 heroin hypodermically. In fifteen minutes she said she was dizzy but the pains did not hurt badly. I explained to her how to use her breath control and pull on the strap. She made very fine progress until the head engaged in the lower brim of the pelvis. I tried for an hour to make her deliver the child, but she could not. I put on the instruments and delivered the child at 12 M. had a very slight laceration of the fourchette. I gave her the first dose of heroin, 1/12, at 9 A.M. The next one at 10:30, another at 11 and another at 11:30. The last one slowed the pain some, but I had decided to use the instruments and wanted as perfect an analgesia as I could have. At the very last I gave a few whiffs of chloroform.

I have repeatedly delivered with forceps and used no chloroform, depending upon the analgesia from the heroin and had no outcry from the patient either. I rarely have to give an anesthetic to do repair work on the perineum if I have good analgesia at delivery from the heroin. The beauty of instrument delivery under the heroin analgesia is that the patient can and does assist in the expulsion of the child.

While writing the above sentences I was called in a hurry to a confinement case. Found the patient a primipara, yelling like a Comanche Indian on the warpath—with each pain. I gave 1/12 heroin at once. The head was just beginning to dilate the vulva. In fifteen minutes the patient took the pains without an outcry, and in twenty-five minutes I delivered an 8½-pound baby. Had a very slight laceration that required three stitches. Took the stitches without an anesthetic. The patient laughed when we had finished and said, "Those last pains were nothing at all compared with the pains I had when you came." I had given the hypodermic without an explanation, as the patient was a "Scientist," but her "healer" had not arrived to take care of the case and evidently absent treatments were not sufficient for the pains thereof.

If there is inertia of the uterus, quieting medicines will be of no use. I have made some good cases of inertia cases by using pituitary extract and when the pains got severe using small doses of heroin. I have never had a severe case of oligopnea where I used heroin. Last month I had a slight case of oligopnea, but in a few minutes the child cried lustily. I have had but one case of hemorrhage where I use heroin and that was instantly controlled. I have had ample opportunity to observe confinement cases where no drugs are used, as I am frequently called by members of two religious sects that forbid the use of drugs during confinement, and all the work must be done without anesthetics or any analgesics.

My observations have convinced me that oligopnea is most often produced by the head lying low in the pelvis for too long a period. The worst case that I ever had was in a Japanese woman where the Japanese midwife failed to deliver and I was called to deliver the child after the head had been low in the pelvis for several hours. I delivered without drugs of any kind and yet I worked a half hour before I could get the child to breathe well. My labor cases are shortened by the use of heroin for the mother uses better expulsive forces and dilatation takes place easier when under the use of this drug.

The shock after confinement is vastly less where heroin is used. In fact, shock is almost absent where the analgesia has been good. Patients rarely feel exhausted. I have given heroin in cases of valvular trouble of the heart, in albuminuria cases, in normal and abnormal cases. I have not had one bad result that I could trace to the drug.

PORTER BUILDING.

Medicolegal Notes.

Undertaking to Cure Incurable Disease.—The Oklahoma State Board of Medical Examiners revoked a license for being guilty of unprofessional conduct in undertaking, for a fee, to cure an incurable disease. On appeal, the Oklahoma Supreme Court held that the words "incurable disease," in the second clause of section 6905 Rev. Law, 1910, defining "unprofessional conduct" of a physician as "the obtaining of any fee, or the assurance that an incurable disease can be permanently cured," mean any disease which has reached an incurable stage in the patient afflicted therewith, according to the then general state of knowledge of the medical profession. A document was introduced in evidence headed, "Absolute Guarantee," in which the defendant agreed to refund all moneys paid by the patient should the latter fail to receive a complete cure by the treatment, and the patient agreed to follow the defendant's directions through a period sufficient as deemed by the defendant to effect a complete cure; failing his following the directions so given, the agreement to become null and void. The defendant claimed this was not a guaranty of cure, but only a guaranty to refund the fee in the event the treatment proved unsuccessful. The court considered this contract to be a mere subterfuge, probably drawn to protect the defendant in such proceedings; and that it in effect held out to the patient an assurance of a permanent cure.—Freeman v. State Board (Okla.) 154 Pac. 56.

Drugless Practitioners.—In a California court the argument was made that because the law includes such subjects as histology, elementary chemistry, toxicology, physiology, elementary bacteriology, and pathology in the examinations to be taken by applicants for certificates to practice as drugless healers, it is unfair, because these are standard courses of study in the preparation of physicians and surgeons, but are not needed in the art of those who intend to alleviate human suffering by manual and mechanical means only. The answer of the court was that to the Legislature is committed the duty of determining the amount and quality of scientific education necessary for the individual to possess before he may hold himself out to practice the healing art; but, while it was not for the court to substitute its discretion and judgment for those of the Legislature, the wisdom of some of these requirements for practice would strongly appeal to it, if it did possess a broader power than is given to it. For example, the importance of a study of toxicology is evident to every one. Without it the drugless practitioner might apply his manipulations to one suffering from the effects of a poison, and might continue his efforts until time for the successful administration of an antidote had passed. —People v. Ratledge (Cal.) 156 Pac. 455.

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MORTALITY FROM ALCOHOL.

ANY estimate of how many deaths in a given community are due to alcohol must necessarily be open to question, in fact, the result must be taken after all as merely a guess, more or less shrewd according as the guesser is more or less clever. It is obvious that we must look elsewhere than on the death certificate for the information sought, for rare indeed is the occurrence of the word alcohol on one of these. Replacing it are more euphemistic names and ones less likely to involve the physician in unpleasant scenes with relatives or even possible libel suits. Even in the lowest class of patients there is a hesitancy about ascribing the death to alcoholism for it is just this class of patients which might sue a hospital or a physician with means, having everything to gain and nothing to lose.

Of course one way of guessing at an estimate of this sort is by ascertaining in what percentage of cases of a given disease alcohol is supposed to be a factor by clinicians. Then the number of deaths caused by that disease can be ascertained and it may be assumed that the same percentage of these deaths was due directly or indirectly to alcohol. This is the method adopted by Dr. Norman Porritt[1] in estimating the number of deaths in England and Wales during the year 1913, due directly or indirectly to the abuse of alcohol, which he places at 77,416. Conclusions arrived at in such a way are hardly worth putting on paper, but they will no doubt be widely quoted by the propagandists, in fact, have already appeared in one of their handbooks.

Among other diseases Dr. Porritt assumes that alcohol must have contributed to a varying proportion of the deaths due to cirrhosis of the liver, heart diseases, cancer, tuberculosis, and epilepsy. Without discussing any of these here except the last named, it may be said that we now speak of epilepsies rather than of epilepsy and that the old disease entity known as classical epilepsy is gradually shrinking to a comparatively small number of cases. There is absolutely no connection between alcoholism and idiopathic epilepsies.

The fundamental error in dealing with the problem of alcohol is the conception of it as a habit-forming drug, the abolition of which would mean the automatic regeneration of all inebriates. As a matter of fact, the inebriate is not normal and, deprived of his alcohol, would drift to some eleemosynary institution. This has been proved by the experience of prohibition States. We must not expect, however, to find any scientific view of the subject taken by publications such as the one in which Dr. Porritt's article appears, but instead the brandishing of such imposing arrays of figures as he has marshaled by not too critical calculations. The suggestion he makes that death certificates should be made confidential is one which admits of a wide discussion, but, while it might enlarge the number of reports of death due to alcoholism, it would still in all probability be far from accurate in this regard.

[1] The Alliance Year Book and Temperance Reformers' Handbook for 1916. Manchester: United Kingdom Alliance.

THE HOME TREATMENT OF TUBERCULOSIS.

ONE of the best results to be achieved by the campaign for the prevention of tuberculosis is the improvement in the sanitary conditions especially in such homes as are the most likely to have tuberculosis developed in them. With this in view there has in fact been everywhere created a demand for better, more cleanly, better ventilated, and better lighted homes. This demand has been making steady progress and the reduction of the new case incidence can well be attributed in large measure to this improvement of the home. But not so much in the prevention of the spread of one case to another has the improvement shown its strongest point, as in the creation of an atmosphere which reduces to a minimum the likelihood of the incipient cases rapidly passing on and through the other and final stages. It has the effect in curing a great many of the incipient unrecognized cases. Since Virchow enunciated his dictum of the universality of tuberculosis the fact has been brought home that many of the transient cases of influenza, common colds, attacks of bronchitis, and even "run-down" conditions are merely the evidences of the presence of mild transitory infections with the tubercle bacillus; and that the little extra care enforced during this period in the shape of rest, freedom from all forms of dissipation, good food, and the like soon overcomes these cases of mild, though masked, tubercle infection.

Because of the home conditions the treatment of the poor for tuberculosis has heretofore been an especially difficult problem. To treat them in uncleanly, congested, unventilated, and unlighted homes was out of the question; the private sanatorium was out of the question because of the very economic conditions which brought on the tuberculosis; and to wait for the public sanatoria to make room meant for most of them the arrival of their turn some time after death. In tuberculosis, even if nowhere else, does money mean life; for even if a sanatorium is attained the worry regarding the means to pay for this form of extravagance quite overbalances any good that might have been obtained through this form of treatment. The exiling of tuberculous patients to distant wilds and distant climes, away from every encouraging influence, and to be a burden upon strange communities, is a crime no longer countenanced by the pro-

fession or by the public at large. The superstition that a mad scramble to the farthest point away from home gave the surest and the most speedy hope of cure has no foundation in fact. On the contrary, it can be the greatest factor for harm. The overcrowding of certain communities having reputations as health resorts has a depressing influence on everyone. Healthy influences and the presence of healthy people seem to be among the best stimulants to the recovery from illness.

Whether from necessity or from other causes, medical men are fast seeing the possibilities of treatment with better results in nearby sanatoria, in domestic camps, or in the homes of the patients. The conversion of a previously insanitary home into a suitable one for treatment is not always an easy task, but with persistence and co-operation it can be done. The possibilities of the home treatment have been well illustrated by the results obtained by the Home Hospital established by the New York Association for Improving the Condition of the Poor. Their figures for cures are better than those of the best sanatoria. For the poor, the home hospital idea has decidedly the advantage over other methods because it adds to the well-being of the patients by permitting them to be near their dear ones, and often by giving them an opportunity to take advantage of any light occupation, when not contraindicated by their condition. Besides, one successful case of home treatment carrying out all the required hygienic demands of the disease is a factor of no mean proportion in furthering this campaign for the prevention of tuberculosis.

The addition of the day camp to the home treatment of tuberculosis has been a great improvement in such instances especially where home conditions could not be made acceptable. And when the night camp idea for patients in the incipient stage, who must do some form of work for their support, is added to the home idea in the treatment of tuberculosis, the results will nearly approach the ideal. When cases are diagnosed early the physician is now in position to advise against exile or expensive sanatorium treatment, and to assure a cure by home treatment of greater speed, more substantiality, and longer duration than he could hope for in any other way. There is no doubt that with proper home surroundings modelled especially for this purpose, with care exercised against infecting others, with the influence of home and friends, with proper food at the lowest cost, and with the addition of the day and night camps, cure and rehabilitation of the tuberculous by the home method may be obtained. And, particularly, the method encourages the maintenance of the highest sanitary ideals in the home after cure; where each case by the example set is rather a help to the community than a menace.

MISTAKES REVEALED BY THE PATHOLOGIST.

It has been conceded that the publication of diagnostic and therapeutic mistakes has much more teaching value than the narration of cures which may not have been cures at all but simple recoveries. The view has even been hazarded that a periodical devoted to mistakes would prove a huge success. This conception comes at once into violent clash with the principle that confession of failure is a weakness, and that prestige of the individual and profession would be irrevocably lowered by such a course. Upon such a foundation all the "antis" and others who are at odds with the profession would hasten to build. It is also evident that ordinary medical literature contains an abundance of data in reference to mistakes, introduced in their proper connection. No case could be properly reported without due mention of errors, timely recognition of which often leads to a successful outcome of the case; while proven neglect in recognition leads many to profit by the mistake of one. To raise the subject of errors to a special discipline is at least uncalled for.

The occasional publication of a series of errors upon a background of successes such as appears from the pen of Baetz in the *Journal of Tropical Medicine and Hygiene* for June 15, 1916, is always pertinent. The author covers five years of autopsy work, and arranges his material, with the exception of infections and neoplasms, by organs. Under the head of neoplasms, disseminated sarcoma was overlooked in four cases, masked respectively as dysentery, Pott's disease, syphilis of the liver, and congenital heart disease with visceral congestion. Under the head of renal disease we find that uremic eclampsia due to chronic diffuse nephritis masqueraded as epilepsy. A diagnosis of uremia ending in fatal coma was correctly made, but certain severe pains had received no explanation until autopsy revealed that the kidney mischief had all been due to an impacted calculus. A diagnosis of pyonephrosis was correct as far as it went but autopsy showed that the patient had but one kidney. In another correct diagnosis of chronic nephritis, it was found that the principal pathological condition was abdominal tuberculosis. Perforated duodenal ulcer with rupture passed in one case for lead colic, apparently a full fledged technical error. Another ulcer was overlooked in the presence of notable advanced cardiorenal disease.

It is hardly necessary to multiply these instances. The patients were negroes living in an environment of tropical diseases. The errors were seldom of the sort which cause death. The chief lesson to be drawn from them is not that of diagnostic fallibility, but of the great value of autopsies in all complex cases. These would greatly benefit the public if only they were made mandatory under a greater variety of conditions than that of sudden death.

The Infectivity of Poliomyelitis.

The epidemic of poliomyelitis which is now present in New York City and neighborhood is exciting undue alarm in consequence, no doubt, of the widespread publicity which has been given to it. To judge from the almost hysterical quarantine measures instituted in various localities—in staid old Connecticut of all places—one would think it as contagious as smallpox among the unvaccinated, or as yellow fever two decades ago. To quiet the ap-

prehensions of these timorous health officers the publication of authoritative articles, such as one appearing in *Public Health Reports* for July 14, 1916, is commendable. Dr. Wade H. Frost, past-assistant surgeon, U. S. P. H. S., writes here of the infectivity of infantile paralysis, summarizing in part as follows: "The rapid spread of epidemics over wide areas, their spontaneous decline after only a small proportion of the inhabitants have been attacked, and above all the preponderating incidence in young children, have not been satisfactorily explained by any hypothesis other than that the infective agent during epidemics is widespread, reaching a large proportion of the population, but only occasionally finding a susceptible individual, usually a young person, in whom it produces characteristic morbid effects. Assuming this rare susceptibility, the well-established facts collected by epidemiological students are compatible with the evidence of laboratory experiments that the disease is directly transmissible from person to person." On the whole, perhaps, this is the most reasonable manner of regarding the infectious nature of poliomyelitis. Only a comparatively few persons are susceptible and these are, with few exceptions, children, the susceptibility being generally greatest in the first half decade of life, thereafter progressively diminishing until in adult life there is a very general immunity to natural infection.

Autotherapy.

The general principles of autotherapy, as first described in the Medical Record, are formulated by Dr. Charles H. Duncan as follows: "When the pathological exudate, or the end product, or a dilution of the same, of any localized (and possibly nonlocalized) infectious disease is filtered with a Berkefeld filter and the filtrate injected hypodermically, or placed in healthy tissues, antibodies specifically corresponding to the disease, will tend to be developed." A corollary of this general rule is: "In extra-alimentary and extra-pulmonary diseases, if the crude pathological end products are placed in the mouth specific resistance to the disease will tend to be developed." This method is reviewed at length in a recent issue of the *Southern Medical Journal* by Passed Assistant Surgeon John C. Parham, U. S. Navy, who points out that in many cases of infection and especially in some types of skin infection autogenous filtrates act almost magically. Parham is of the opinion, judging chiefly from his own experience in treating cases of infection by autotherapy, that in surgical as well as in medical fields its range of application is wide, and, what is to the point, it is effective. It is obvious that the secretion of a wound upon which an antiseptic or germicide, such as bichloride, phenol, etc., had been used would be unsuitable. However, he believes that the day of these agents so generally employed in surgical practice is on the wane, and that the almost universal use of salt solution, salt solution and sodium citrate, or Wright's solution will supplant them. These solutions, not being antiseptics or germicides, are not contraindicated where the employment of autotherapy is anticipated. If by means of autotherapy active immunity can be acquired in cases of infection, then there can be little doubt that as a method of treatment it will quickly make headway, although there are still many points in connection with the method which require further study and elucidation.

Vincent's Method of Prophylaxis and Infantile Paralysis.

Vincent of angina fame once published a thorough method of disinfection of the upper air and food passages which has been used extensively in the prophylaxis of cerebrospinal meningitis, grip, anginas, etc. Quite recently Coulomb applied it to 600 soldiers, each of whom rinsed his mouth and gargled his throat with iodized water or Labarraque's solution 50 to 1,000. Under a couple of days' use the daily number of anginas reported fell to zero. When cerebrospinal meningitis was epidemic and all other methods had failed to arrest the outbreak, that of Vincent was applied intensively with great success. The particular antiseptic used is apparently less essential than the manner of using. Three times a day after meals a preliminary douching of the entire mucosa with 10 per cent. hydrogen peroxide was carried out. The tonsils and pharynx were afterwards painted with iodine 10 parts, potassium iodide 10 parts, and glycerin 300 parts. Further, three times a day each soldier inhaled the following: Iodine 20 gm., guaiacol 2 gm., thymic acid 0.25 gm., alcohol (60 per cent.) up to 200. The inhalation should last two minutes. At a later period the disease reappeared, and 107 suspects were isolated, 15 of whom were found to be meningococcus carriers. Vincent's method was used for four consecutive days and after two days of intermission the throats of all the men were found sterile, while not a case of meningitis had developed. These data are taken from an article by Lefas in *La Presse Médicale*, June 29. There is no mention of acute anterior poliomyelitis, but it would seem that the article ought to be timely in connection with the present local epidemic of the latter. The combination of douching, brush application, and inhalation should sterilize all ports of entry. On account of the tender age of most of the victims the method would perhaps have to be modified.

News of the Week

The Poliomyelitis Epidemic.—There has been little change in the epidemic of infantile paralysis in New York and vicinity during the past week, except that the number of new cases in Brooklyn where the epidemic began is decreasing, showing apparently that the susceptible material in that region is nearly exhausted. Health Commissioner Emerson has called a conference of pathologists and bacteriologists for Thursday of this week to study the epidemic and suggest possible measures for its control. Those invited are: Drs. Victor C. Vaughan, University of Michigan; Milton J. Rosenau, Harvard; Dr. J. W. Jobling, Vanderbilt University; Paul A. Lewis, University of Pennsylvania; John Howland, Johns Hopkins University; C. C. Bass, Tulane University; Theobald Smith, Princeton; John F. Anderson, New Brunswick, N. J.; Richard M. Pearce, University of Pennsylvania; Francis W. Peabody, Peter Brent Bingham Hospital, Boston; Ludwig Hektoen, University of Chicago; John G. Adami, McGill Medical College, and the following from New York City: Drs. Simon Flexner, Hideyo Noguchi, Hans Zinsser, George Baehr, Francis Carter Wood, William J. Elser, William H. Park, and C. H. Lavinder and Wade A. Frost of the United States Public Health Service. The total number of cases up to August 2 was 4,123 and of deaths, 898.

An Experiment in Tuberculosis Control.—The National Association for the Study and Prevention of Tuberculosis is about to institute an experiment on a large scale for the control of tuberculosis. It is proposed to select a town of from four to ten thousand inhabitants and then to discover with the aid of the local physicians, through careful medical examinations every case of tuberculosis, every individual who has been exposed directly to the disease, and particularly all children up to sixteen who have had close relations with persons ill with tuberculosis during their lifetime. It is proposed that every known case of tuberculosis and every exposed case of whatever nature should be under some sort of supervision during a three-year period, either in the home, in an open air school, in a tuberculosis clinic, or in a hospital or sanatorium. In this way and by keeping in close contact with all new families and new babies born into the community the committee hopes to be able to prevent the spread of tuberculosis, to stop the development of any new cases in the community, and to determine the absolute and relative worth of the various methods usually employed in fighting the disease.

Anthrax in Western New York.—A meeting of representatives of the dairy industry of Erie County and officials of the State Agricultural Department was held recently in Buffalo to discuss methods to check the outbreak of anthrax among herds in several of the towns of Erie County. About thirty authentic cases of the disease have been found. The animals were slaughtered and buried in quicklime. One farm hand is known to have contracted the disease.

A Large Sanatorium Planned for Hot Springs.—It is announced from Hot Springs, Ark., that capital is being raised in New York for the erection of a large sanatorium at that place. The building and grounds will occupy ten acres and will cost $9,000,000.

Trouble in a Pittsburgh Hospital.—A disagreement between the medical staff and the superintendent of the Presbyterian Hospital in Pittsburgh has resulted in the resignation of three of the attending physicians. The superintendent also resigned, but her resignation was not accepted by the trustees, who passed a resolution of confidence in her and satisfaction with her work. The medical men assert that the management of the hospital was more anxious to make money for the institution than to help the sick poor, and that the wards were filled with pay patients to the exclusion of those who could not pay. The trustees declare that these charges are unfounded.

More Hospitals Needed in France.—William P. Hollingworth, Vice-President of the American War Relief Clearing House for France and Her Allies, who recently returned to this country, reports that there is an urgent need for more hospital and ambulance groups for the French Army manned by American volunteer drivers. The French Government has shown high appreciation of what has been already done in this direction. The work of relieving the refugees and the distribution of hospital supplies undertaken by the War Relief Clearing House has reached enormous proportions. About 40,000 cases of clothing and supplies have been shipped to France and distributed through the Clearing House in Paris, besides many thousands of dollars in money.

Dr. Straw Honored.—Dr. A. Gale Straw, a member of the Harvard medical unit on active service at the front in the European war, has been promoted from the rank of captain to that of major for efficient service.

Dr. Albert Neisser, Professor of Dermatology at the University of Breslau, and discoverer of the gonococcus, died on July 30 in his sixty-second year.

Milk for German Babies.—The State Department at Washington has received a cable from Dr. Taylor of the American Embassy in Berlin, stating that the report published in New York that the babies in Germany are suffering for lack of milk is not true. He has made a special investigation throughout Germany, at the request of our Government, and finds that, instead of a diminution, there has been an actual increase in the milk supply. As further proof that the babies are not starving it is stated that the infant death rate in Germany is now lower than it was before the war.

Praise for American Red Cross Nurses.—Mr. William Warfield, formerly an attaché of the American Embassy in Petrograd, and now chargé d'affaires for the United States in Sofia, Bulgaria, has written to Miss Jane A. Delano, chairman of the National Committee on Red Cross Nursing Service, as follows: "While acting as an attaché of the Embassy in Petrograd, specially assigned to war relief work, I had occasion, as you know, to see a great deal of the members of the American Red Cross units in Russia. It gives me great pleasure to take advantage of this opportunity to say that the nurses attached to these units have been the greatest credit to the organization and to the country they represent. Their professional efficiency is not only unquestioned, but has excited a great deal of comment in medical circles, having been mentioned to me frequently by the Russian surgeons. Personally, by their devotion to duty and their splendid organization and discipline, these ladies have been a credit to American womanhood and its ideals. I do not hesitate to say that they have had an influence for good quite apart from mere professional services."

Lecturers on Dentistry for Medical Students.—Announcement is made of a special series of lectures on dental subjects to the students of Columbia's Medical Department during the coming year. The course of lectures will aim to furnish the medical student with a knowledge of the fundamental principles in the proper care of the teeth and will emphasize the close relation between the diseases of the body and defective teeth. The lectures will be given by Drs. Arthur Merritt, Leuman M. Waugh, W. B. Dunning, H. S. Vaughan, and Henry S. Dunning.

New Naval Surgeons.—At the recent examination the following named medical men successfully passed for appointment as assistant surgeons in the Medical Reserve Corps, with a view to subsequent examination for appointment in the Medical Corps of the Navy: Drs. James A. Halpin, Washington, D. C.; William D. Heaton, Wahoo, Neb.; Aubrey M. Larsen, Salt Lake City, Utah; Lincoln Humphreys, Argenta, Ark.; Theo. Edward Cox, Cleveland, Ohio; Arthur W. Hoaglund, Minneapolis, Minn.; Carroll H. Francis, Camden, N. J., and Harold L. Jensen, San Francisco, Cal.

American Electrotherapeutic Association.—The next annual meeting of this association will be held at the Hotel Martinique, New York City, on September 12-14, under the presidency of Dr. Jefferson D. Gibson of Denver. The secretary is Dr. Byron S. Price, 65 Central Park West, New York.

The Northwestern Medical Society of Nebraska

held its annual meeting in Canyon Park, Long Pine, on July 18, at which time the following officers were elected: *President*, Dr. G. O. Remy, Ainsworth; *Vice-President*, Dr. E. T. Wilson, O'Neill; *Secretary*, Dr. J. M. Tische, Wood Lake; *Treasurer*, Dr. Thomas J. Lawson, Long Pine. Wood Lake was selected as the place for holding the next meeting, the last Tuesday in October.

The Montana Medical Association held its annual meeting on July 12 and 13 at Miles City, electing the following officers: *President*, Dr. J. A. Donovan, Butte; *First Vice-President*, Dr. Arthur Morrow, Kalispell; *Second Vice-President*, Dr. R. H. Beach, Glendive; *Third Vice-President*, Dr. Arthur Jones, Butte; *Secretary-Treasurer*, Dr. E. J. Balsam, Billings. The next annual meeting will be held at Kalispell.

The Study of Inebriety.—A Research Foundation has recently been organized at Hartford, Conn., for the purpose of making an exact scientific study of the causes of alcoholism and inebriety. It will be endowed and become a permanent work. Preliminary studies have already begun, and practising physicians from all parts of the country are appealed to for the records and histories of cases which will be compiled and tabulated for the purpose of determining the laws which control and govern them. Dr. T. D. Crothers of Hartford writes that this is the first scientific effort to take up the subjects of alcoholism and inebriety and determine the causes which produce them outside of alcohol. Science has shown that these conditions are governed by exact physical and psychical laws, which if known and understood would indicate the most practical means and measures of relief. The Foundation will be practically a laboratory or clearing house, where persons can come for examination, counsel, and advice. To a large class of persons who want something more than pledges, appeals, or sanatorium treatment this will open a new field of means and measures for relief that will be most welcome. Among the questions, an answer to which will be sought, are the following: Why are certain periods of life more favorable for the outbreak of the craze for alcohol than others? Why does the desire to drink break out suddenly in diverse conditions and then subside from causes inadequate to explain the change? What is the explanation of the exact periodicity of these drink excesses that are as certain as the rise and fall of the tide? What are the causes in surroundings and conditions of living that provoke these paroxysms? Why do men drink after injuries, diseases, shocks, losses, disappointments, business reverses, and great successes in life? What degenerations are transmitted from the parents to the children that create susceptibility or immunity to the effects of alcohol? Why are some persons able to drink in so-called moderation for years and why do others quickly become diseased and die? Why do some men drink in early life, then abstain, and in middle or later life turn to alcohol again and drink until death? Why are some persons susceptible to the contagion of surroundings and companions, while others are immune? What physical and psychical causes produce the drink craze?

Obituary Notes.—Dr. William McKelvy of Denver died July 13 at the age of 62 years. He was a graduate of the medical department of the University of Pennsylvania in the class of 1875 and practised in Breckenridge, Colo., from 1880 to 1900, when he removed to Denver.

Dr. E. W. Dean of Hiram, Ga., died in Atlanta on July 4. He was a graduate of the Medical Department of the University of Georgia in the class of 1883.

Dr. David William Edgar of Ames, Iowa, died suddenly in Marshaltown on July 8 at the age of 71 years. He was born in Wisconsin and was graduated from Rush Medical College, Chicago, in 1874. He practised at various times in Monroe and Dayton, Wis., and Gowrie and Fonda, Iowa. On account of heart trouble he retired in 1911 and went to Ames to live.

Dr. Roscoe Smith of Auburn, Me., died on July 8, after a month's illness, at the age of 80 years. He was born in Peru, Me., and was graduated from the Harvard School in 1869. He practised for many years in Turner, retiring in 1889, and subsequently removing to Auburn.

Dr. Louis Augustus Woodbury of Groveland, Mass., died July 17 at the age of 72 years. He was born in Salem and was graduated from the Harvard Medical School in 1872. He was a member of the Harvard Alumini Association, the Haverhill Medical Club, the Massachusetts Medical Society, and the American Medical Association. He retired from practice about five years ago.

Dr. James Smiley Bush, Jr., of Colquitt, Ga., died in Albuquerque, N. M., on July 13, at the age of 31 years. He was born in Colquitt and was graduated from the Atlanta College of Physicians and Surgeons in 1912. He was obliged to give up practice about a year ago on account of ill-health.

Dr. Thomas C. Elmendorf of Port Chester, N. Y., died recently at his home in that place at the age of 64 years. He was a graduate of the New York Homeopathic Medical School and Hospital in the class of 1875.

Dr. James F. Heady of Glendale, Ohio, died on July 24, after a long illness, at the age of 64 years. He was born at Vevay, Ind., and was graduated from the Miami Medical College, Cincinnati, in 1878. After an interne service in the Cincinnati General Hospital he began practice in Glendale.

Dr. Thomas Alphonzo Kenefick of New York and Newport, R. I., died at the home of his brother in Lawrence, Mass., on July 30. He was born in 1858 and was graduated from the Medical Department of Columbia University in 1885. He was a member of the Rhode Island Medical Society, of the Medical Societies of the County and State of New York, of the American Medical Association, and of the New York Academy of Medicine.

Dr. Herman G. Tarter of Chilhowie, Va., died at the residence of his father, Dr. J. E. Tarter of Wytheville, on July 15, at the age of 31 years. He was a graduate of the Medical College of Virginia in Richmond in the class of 1911.

Dr. Price Emerson Murray of Atlanta died July 20 at the age of 63 years. He was a graduate of the Atlanta Medical College in the class of 1886.

Dr. William Lovett of Norman Park, Ga., died after a brief illness on July 21, at the age of 34 years. He was born in Sparks, Ga., and was a graduate of the Atlanta College of Physicians and Surgeons in the class of 1913.

Dr. Adolfo Lamar of Havana, Cuba, died in New York City last week, from disease of the heart, at the age of 47 years. He was a native of Havana and a graduate in medicine of the University in that city.

Correspondence.

MERCURIC SUCCINIMIDE IN POLIOMYELITIS.

To the Editor of the Medical Record:

Sir:—Owing to the continued and virulent epidemic of infantile paralysis in New York, a condition that demands the use in the treatment of the disease of any method which has the remotest possibility of being of value, I venture to suggest that the method advocated by me since 1910 for the treatment of many of the acute infectious diseases, namely, deep intramuscular injections of large doses of mercuric succinimide, should be tried.

Barton Lisle Wright, M.D.,
Surgeon, U. S. Navy.

U. S. S. Delaware.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HONORS FOR MEDICAL SERVICE IN THE FIELD—STRANGULATION OF THE UTERUS BY TORSION—FIBROMA—SUPRACERVICAL HYSTERECTOMY.

London, July 8, 1916.

Among the recent honors for services in the field the C. B. has been conferred on Col. F. W. G. Gordon-Hall, M. B., A. M. S., and Lieut.-Col. R. J. W. Mawhinery, R.A.M.C. and the C.M.G. on Major A. C. Valadier, A.M.S. The distinguished service order is awarded to Major Robert Tilbury Brown and Lieut.-Col. A. E. Conquer Keble, and the Military Cross to Corporal Morton Peto and J. Swinburn Townley. The Commander-in-Chief, East African Force, Lieut.-Gen. the Hon. J. C. Smuts, has transmitted a list of officers recommended for services in the field, a considerable proportion being in the Royal Army Medical Corps, the South African, and the Indian Medical Services.

There is a shortage of medical recruits for the army which is expected to continue for some time and perhaps increase. Under the new act calling-up notices are not being sent to men who have two or more children. This will apply to 178 officers, of whom 93 are on the panel. It is said that of these 31 are entitled to exemption, but it is hoped that they will remain and that others who have so far kept off will come forward to help in the present emergency.

The act came into operation on the 24th ult. and makes every medical man under 41 years old a soldier unless he has enrolled with the Central Medical War Committee. An appeal by the authorities for more men even up to 45, has been readily responded to and it is expected that a further appeal will be made—probably up to 50 or even 55, and it is certain that many of that age are capable of effective service. There has been some hesitation on the part of practitioners on account of the inadequate statement as to what was to be the duties undertaken. A physician is not willing to be put over a surgical ward and vice versa, and the Central War Committee should see that every one they induce to come to their help should be assigned to the work with which they are most familiar.

At the Obstetrical Section (R. M. S.) Mr. J. D. Malcolm showed a case of strangulation of the uterus by torsion of the body on the cervix. A frail lady of 70, married but never pregnant, was seized with pelvic pain after dinner. Next morning took breakfast as usual, but could not get up as the pain increased and vomiting came on. Temperature by evening reached 101° F. Seen by three doctors late that night, a hard, round, pelvic tumor about 4 inches in diameter was felt in the median position. Behind this was an irregularly oval mass about 3½ inches from above downward by 1½ inches from side to side, uneven in consistence, but most of it fairly soft. Below was a soft short cervix uteri. The rectum was firmly compressed, but slightly movable as a part of the pelvic mass. A fibroma had existed before menstruation ceased and it seemed as if something had twisted, but the condition behind the hard tumor was a puzzle. The abdomen being opened a fibroma was seen attached to the left anterior upper part of the uterus. This and the uterine body had revolved a full turn on the cervix; the lower end of the body was tightly twisted, the parts above being of a deep, blue-black color, and although it was only 28 hours from pain being felt and only 16 hours after it became severe, there was a distinctly offensive odor. Supracervical hysterectomy was performed; the left ovary and tube were raised by the new growth above the constriction and they were removed; the right were below it and were not taken away. The recovery was slow but otherwise good. The specimen was exhibited, the uterus body was obviously enlarged by congestion, was soft from age and the softness with its attenuation permitted the strangulation by torsion. Dr. Cuthbert Lockyer was glad the case was brought forward, as it demonstrated a rare condition which presented great difficulties in diagnosis. As to the torsion, it was known that a twist of the corpus on the cervix through as much as 90° could occur without producing symptoms suggesting the condition. In eight cases of torsion recorded by Kelly and Cullen not one set up special symptoms, and in one of them the corpus was rotated through 180°. The torsion usually is through the isthmus which gradually atrophies and forms a sort of pedicle for the body above it. This pedicle may become severed from the cervix, as shown in a case of Bastinelli of Rome. Dr. Lockyer referred to five recorded cases of acute torsion, the causation of which is still a subject of speculation.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

"SEE ALASKA FIRST."

St. Michael, July 6, 1916.

This letter is written with the view of inviting the attention of the professional man who is thinking of a trip to the fact that Alaska offers some very interesting features for the professional man and its scenery stands in a class by itself. The transportation companies have so perfected their means of travel that a trip through Alaska is now a luxury instead of a hardship as in former times.

The average person of the United States knows very little of the vastness of this territory which in square miles is said to equal New York, New Jersey, Pennsylvania, Illinois, Indiana, Ohio, Michigan, Wisconsin, North and South Dakota, and all of New England combined. If a map of the territory was superimposed upon that of the United States—drawn to the same scale—it would extend from Charleston, S. C., to San Francisco. This vast country extends from about 55° to about 71° North latitude, or more than 4° north of the Arctic circle, and with this vastness is a great diversity of climate, scenery, flora and fauna.

The climate of Southeastern Alaska is much like that of Oregon while the climate of Northwestern Alaska more nearly resembles that of northern Montana, but even in this comparison the extremely short days in winter and the extremely long days in summer mark quite a contrast. In summer this truly is "The Land of the Midnight Sun." The winters are pleasant, but as the only means of transportation is by the dog sled, winter is a poor time to visit Alaska; but with the advent of summer the geese, duck, swan, crane, and many varieties of smaller birds return by the millions and there is probably no place where more game can be seen to the square mile than in Alaska from May until October. The flora too is interesting. The surface snow and ice disappear and the fields that are at first bleak and barren looking, soon take on a very picturesque appearance with wild flowers of every color and many varieties.

The glaciers, rivers, plains, seas, islands, volcanoes, mountains, tundras, forests, fishing, hunting, and mining (especially for gold) will keep the average tourist's attention from the time he first sights southeastern Alaska until he passes through the Unimak pass of the Aleutian Islands, on his homeward journey. But for the professional man there is still more of interest! The Eskimo, as the native is called who lives on the coast, and the Indian, who lives in the interior, offer a vast field for medical study. On account of the climatic conditions, isolation, and environment, the native has acquired many habits that are unknown within the United States. Of the many interesting things that these people offer, the following seem most strange: Their method of burial in improvised boxes above ground, covered with logs on which are fastened the belongings of the deceased, their method of dress, what they eat, their houses, their methods of transportation in summer (kyack) and winter (malamute dogs and sleds), the council house (kashim), the "medicine man" and a talk with him and possibly seeing him "make medicine" (treatment of the sick by song and dance), or possibly the witnessing of some festivity as "The Feast to the Dead."

When a doctor visits a native village for the first time he will most probably say or think "My! I had no idea that these people were in such great need of medical and surgical treatment! What a vast field this offers for some missionary or other kind of benevolent society." "How dirty they are," will probably will one of the first remarks made. The doctor will be struck with the large number of persons who present evidences of tuberculosis both pulmonary and of the spine, also with the large number of cases of skin diseases, the large number of persons who live in each house (which house is usually of one room), and the large percentage of children. If possible, he should go into some of these houses and try to see some of the natives at meal time. It is not customary to knock, but to walk right in and say "wah-kah" meaning "How do you do?" He will almost always find the women or squaws at work, but will very rarely find the men doing anything.

Some of the most interesting things that the doctor will see in southeastern Alaska are the totem poles which are records of family deeds and achievements and vary from small sticks to enormous poles. Some of the most interesting things that he will see in northwestern Alaska are the beautiful and useful things that the natives carve from walrus ivory and mastodon ivory. In fact he can get almost anything he desires made of this material, and if the time will permit can have it made to order. Of course Alaska is noted for its furs; mink, martin, otter, swan's down, eider down, lynx, red fox, white fox, cross fox, ermine, and beaver are on the market and handled by the fur traders and merchants. The price will be about the same as paid in the United States but one will have a greater selection to choose from. All furs seem high this season.

In making out an itinerary I would suggest the following: Purchase a round trip season ticket from your home to Seattle, arriving in Seattle about two days before the ship is scheduled to sail. Procure a round trip ticket to St. Michael reading through the Inside Passage and down the Yukon river to St. Michael, from St. Michael to Seattle via Nome. This will give an ocean trip to Skagway through the beautiful inside passage. Take the train at Skagway for Whitehorse (Canada) over a railroad that stands in a class by itself, and connect with a river boat for Dawson and Tanana and change for St. Michael. This gives a river voyage of about 2,000 miles touching at many points and usually long enough for passengers to go ashore and see what is to be seen.

It is estimated that the trip above outlined will take about thirty days and cost approximately $270 including transportation, meals, and berth, but $400 should be allowed for the trip to cover the cost of incidentals and for the purchase of interesting and useful souvenirs. This is the complete trip, but there are many shorter trips, in fact any point along the line may be used as the turning point and thus shorten the time for the busy professional man. There are good accommodations for ladies and children and nurses. The summer temperature varies from about 50° to 68° Fahr. and along with the ocean trip it is thought that such a trip will prove to be helpful to children suffering from intestinal troubles as well as possibly many others.

The professional men of Alaska are cosmopolitan, interesting, and cordial and I believe will be pleased to devote a portion of their spare time to meet our professional brothers and to show them points of local interest. One need have no hesitancy in introducing oneself and feeling sure of a welcome in the office of any physician who practises in Alaska.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 20, 1916.

1. David Williams Cheever. (Memorial Address). George W. Gay and J. Collins Warren.
2. James Clarke White. (Memorial Address.) Abner Post and Frederick C. Shattuck.
3. Epidemic Poliomyelitis. The Symptomatology and Diagnosis in the Acute Stage. Francis R. Fraser.
4. Anatomic Form and Posture, Important Factors in the Treatment of Pulmonary Tuberculosis. Joel E. Goldthwait.
5. The Teaching of Therapeutics as a Branch of Applied Physiology. F. H. McCrudden.
6. Exfoliative Dermatitis Following Neosalvarsan Injections. Rene Bine.
7. A Review of 127 Clinical Cases of Ataxia Paraplegia. G. H. Bigelow.

3. Epidemic Poliomyelitis; The Symptomatology and Diagnosis in the Acute Stages.—Francis R. Fraser states that in the preparalytic period and in abortive cases the diagnosis of poliomyelitis depends, to a great extent, on the presence of an epidemic and association with other cases. Under these circumstances, a history of sudden onset, with fever, gastrointestinal symptoms,

and perhaps pain, would indicate a careful examination for signs of stiffness of the neck and back. If any suspicion of a meningitic lesion is entertained, lumbar puncture must be performed, when the condition of the spinal fluid will clear the diagnosis in most cases. The differentiation from a gastrointestinal upset is most difficult, but in gastrointestinal disorders the spinal fluid is normal. Other common infectious diseases commence similarly, but in them the pain and hyperesthesia are usually absent. Skin lesions in poliomyelitis have been described, but are not constant in character, and are present in only a small number of cases. Acute rickets is easily mistaken for poliomyelitis because of the fever, the prostration, and the tenderness. The spinal fluid, however, is negative, and in poliomyelitis pronounced enlargement of the liver is not found. Tuberculosis of the hip can be differentiated by the history of onset. Acute rheumatic arthritis may commence acutely, and the fever, pain, and disinclination to move, be very similar; but the tenderness is localized to the articular structures, and in poliomyelitis there is no swelling of the periarticular structures and no synovial effusion. Meningitis due to the meningococcus, the pneumococcus, the influenza bacillus, to streptococci and staphylococci, give a spinal fluid with increased cell count, due to polymorphonuclears, and the causal organism can be found in the smears and can be cultivated. In tuberculous meningitis and syphilitic meningopyelitis, the spinal fluid is very similar to that of poliomyelitis, and the clinical findings do not differentiate it until the case has been watched for a few days. A positive Wassermann in the blood is not sufficient to differentiate syphilitic meningitis, as it may be found in acute poliomyelitis, as in other acute infections. Even when evidence of paralysis, or of involvement of the motor system, is found, the diagnosis may not be clear. Acute poliomyelitis is probably more often mistaken for cerebrospinal meningitis than for any other disease, especially as paralysis may occur in both; but the rash, the photophobia, and characters of the spinal fluid, should differentiate them.

4. **Anatomic Form and Posture Important Factors in the Treatment of Pulmonary Tuberculosis.** — Joel E. Goldthwait calls attention to the different anatomic types that exist, and to the fact that each type has its own more or less definite potential of disease, and of these the congenital visceroptotic, the carnivorous, the hyper-onto-morph, is commonly tuberculous. This type, during development, acquires habits of carriage in which the ribs are lowered and the chest is used in the position of full expiration. In this position, thoracic breathing must be very imperfect and full expansion of the chest rarely occurs. The writer describes several defective anatomical types, and shows how they interfere with the mechanism of breathing and the function of the heart. From these he draws the practical suggestion that if we are to do the best we can to insure health we must see that the body is so used that the rhythm of respiration, both as it refers to the thoracic and the diaphragmatic movement, is as nearly normal as possible. With the facts thus brought out, the use of a back brace for a case of pulmonary tuberculosis may seem unusual, but is not irrational. In the treatment of tuberculous patients, the importance of posture must be borne in mind at all times, and particularly as the patients are put out in the open to get the fresh air. If improperly propped up in bed, obviously little air can get in to the individual, and this is also true of some of the reclining chairs which are used in our sanatoria, especially the canvas steamer chair. If such chairs are used, their harmful features should be appreciated, and corrected. The simple use of a board placed at the back of a canvas steamer chair makes the chair much less objectionable. The aim in treating these patients should be to make the full excursion of the chest in inspiration and expiration possible with the least effort.

5. **The Teaching of Therapeutics as a Branch of Applied Physiology.**—F. H. McCrudden expresses the opinion that the teaching of therapeutics is one of the weakest points in the training of the medical student. He thinks that a division of medical science dealing with the aims and methods of therapeutics, and filling in the gap between physiology, chemistry, physics, pharmacology, and the other fundamental sciences which underlie the methods of treatment, on the one hand, and the actual details of treating individual patients from day to day, on the other, should be recognized, and a course on this subject should be added to the medical curriculum. This instruction should aim to give the student a point of view regarding these purposes and principles of treatment, so that these details may be contemplated not as a vast number of empirical and unrelated elements, but as mutually dependent parts of a whole. It should continue the emphasis on scientific habits of thought, which is one of the objects of instruction in physiology and other fundamental branches of medical science, and bring out the fact that therapeutics is not an empirical art, but an applied science. The writer emphasizes the importance of impressing students early in their medical career with an optimistic and hopeful attitude toward the result of treatment. The less optimistic attitude of many physicians is due not to the poor results of treatment, but to discouragement at the difficulties of having treatment carried out in private practice, a distinction that should be brought home to the student. For an understanding of rational therapeutics a study of the treatment of chronic disease forms the best basis.

7. **A Review of 127 Clinical Cases of Ataxia Paraplegia.**—G. H. Bigelow bases this study on the records of the Neurological Clinic of the Massachusetts General Hospital, from 1903 to 1915. He finds that of these 127 cases of ataxia paraplegia, 70 per cent. were males, whereas in the whole Out-Patient Department approximately 58 per cent. are males. In 83 cases, a possible etiology was established. This was as follows: Syphilis, 43; following accident, 10; following acute infections, 6; hemiplegia, 5; alcoholism, 5; malformations or irregularities of the spine, 3; hypertension, 3; chronic disease, 2 (gout and sepsis); exhaustion, 2; anemia, lead poisoning, neurotic family history, exposure, heredity, tumor, pellagra, each 1. In 44 cases no possible etiology could be found. Of the 47 syphilitic cases, only 7 showed positive laboratory findings. The essayist concludes that, contrary to the observations of several other authorities, it would seem from an analysis of these cases that syphilis is an important etiological factor in ataxia paraplegia.

New York Medical Journal.

July 22, 1916.

1. The Diagnosis and Treatment of Acute Anterior Poliomyelitis in the Preparalytic and Postparalytic Stages. M. N. Neustaedter.
2. Diagnosis and Treatment. Adam H. Wright.
3. An Analysis of Certain Neurotic Symptoms. C. P. Oberndorf.
4. Percussion in Early Tuberculosis. Julius Schneyer.
5. Syphilis of the Larynx. Joseph Weinstein.
6. Intraperitoneal Adhesions. R. J. Behan and W. A. Nealon.
7. Laboratory Aids in the Diagnosis of Poliomyelitis. Josephine B. Neal.

4. **Percussion in Early Tuberculosis.**—Julius Schneyer says that there is no doubt that some change of resonance to gentle percussion accompanies very early

lesions in the apex; indeed, it is his experience that some alteration to skilled percussion can be found in every diagnosticable lesion, and that diagnosis can rarely be made without it. He concludes that impairment of resonance in one apex can be discovered by the softest percussion, having in mind the possibility of hypersonance on the opposite side. Reinforcement by expiratory percussion may be tried in doubtful cases. These cases are often overlooked or missed if ordinary percussion is used. The degree of impairment may be determined by increasing the weight or force of percussion in order to see if it still persists, or at what point it stops. The most important evidence for diagnosis is the finding whether there is any impairment at the other "seats of election" for tuberculous deposits, for instance, in the opposite side or at the apices of the lower lobes. Topographical percussion may supply us with the following information: *a*, Equal resonant areas and of normal extent are evidences of normal lungs. The areas of normal measurement, but one being displaced, is a condition described by Kroenig under the name of "physiological heterotopia." It was this condition which led Kroenig to discover his outer boundary. *b*. There may be a blurring of one or the other, or both margins of the resonant area, with or without some general loss of resonance, a condition very suggestive of early tuberculosis. *c*. A difference of the areas and especially in the width of the "isthmus" may be due either to expansion of one side, or retraction of the other, or both conditions may be present. Auscultatory percussion, as practised by the writer, has proved of notable value for the confirmation of the findings by gentle percussion in outlining Kroenig's areas, or mapping out the respiratory excursion of the lung borders, especially when external noise prevents appreciation of the delicate shades of difference in sounds by gentle percussion. The diminution of the respiratory excursion of the lower border of one lung is an early sign of tuberculosis, emphysema, old age, pleurisy, pain, inability to breathe, or other conditions interfering with the free movement of the lung in the pleural space without active disease having been excluded. As a measure of the extent of pleurisy in any case of phthisis, in order to decide as to the advisability of artificial pneumothorax, the measurement of the degree of movement or expansion of the lung is of notable value.

6. **Intraperitoneal Adhesions.**—R. J. Behan and W. A. Nealon present the results of a study made to determine the cause of the intraabdominal formation of adhesions and the manner of their prevention. They have made observations to determine if alcohol, glycerin, denudation, infection (mild or severe), or toxins or bacteria passing out from the intestines, can form adhesions. They have also made studies to determine if petrolatum applied over raw areas will retard adhesive formation; whether wool fat, an organic fat alone, or mixed with some inert or soluble substance as boric acid, inhibits adhesion formation, and whether olive oil or Russian oil prevents or hinders adhesive formation. In the course of their investigations it became apparent that something more than traumatism was necessary to the production of adhesions between two adjacent peritoneal surfaces. This additional factor may be infection of a mild type. The previous methods of preventing adhesions apparently did not take sufficiently into consideration either the possibility or the presence of this infection; and also discounted another important factor, namely, that in using olive oil or mineral oil, such as petroleum, a foreign substance was being introduced into the peritoneal cavity, the reaction to which would be the throwing out of an exudate with fibrin deposit and subsequent adhesive formations. In the hope of deriving some information along these lines experiments were performed with wool fat and boric acid as an antiseptic to counteract any mild infection which should occur in the abraded peritoneal cavity. The results of these experiments on animals were so encouraging that these observers decided to try wool fat boric acid paste in the human abdomen. Thus far they have used it in fifteen cases with good results. Up to the present time none of these patients have complained of symptoms which could be traced to adhesions, though sufficient time has not elapsed to determine whether the tendency to adhesive formation has been entirely obliterated. In all of these cases there has been a postoperative elevation of temperature. The pulse as a rule does not increase in rapidity. The patient complains of but little postoperative pain. It has become the writer's routine practice to use this preparation in all cases in which there is a possibility of postoperative adhesive formation.

7. **Laboratory Aids in the Diagnosis of Poliomyelitis.**—Josephine B. Neal. (See MEDICAL RECORD, July 22, 1916, page 169.)

Journal of the American Medical Association.

July 22, 1916.

1. Epilepsy, with Special Reference to Treatment. Francis X. Dercum.
2. The Preparation of the Patient for Operation. Walter B. Lancaster.
3. The Transplantation of Ductless Glands, with Reference to Permanence and Function. O. T. Manley and David Marine.
4. Amino Acid Nitrogen in the Systemic Blood of Children in Health and Disease. C. J. V. Pettibone and F. W. Schlutz.
5. Strabismus Produced by Operation for Strabismus: A Consideration of Causes Producing Deformities Following Strabismus Operations, with Suggestion for Corrective Operative Procedures. Frank C. Todd.
6. A New Shortening Technique, with Report of Forty-Two Operations. Roderic O'Connor.
7. Linitis Plastica: With Report of Case. Gilbert M. Barrett.
8. The Effect of Activity on the Histological Structure of Nerve Cells. R. A. Kocher.
9. The Nature, Manner of Conveyance, and Means of Prevention of Infantile Paralysis. Simon Flexner.

1. **Epilepsy, with Special Reference to Treatment.**—Francis X. Dercum says that after we review the facts that have been hastily summarized, one fact stands forth with striking prominence, namely, that epilepsy is not a specific clinical entity. Under the caption of epilepsy are included many symptom groups which differ widely as to their origin and pathology. A specific treatment of epilepsy is obviously out of the question, and the first step must be an intensive study of each individual case. The first indication in the treatment is that the organism shall lead as physiological a life as is compatible with its structure. To attain this end, a life without physical or mental strain, close to nature, in camp or on the farm, should be adopted by the epileptic. This, indeed, is the principle applied in the various epileptic colonies. In addition, three points should be borne in mind: 1. The diet should be so modified that in this organism, already toxic, as little strain as possible be placed on the liver, the thyroid and other defensive glands. For this reason the red meats are to be partaken of sparingly. The carbohydrates also are to be diminished. To take the latter in large amount is to hamper the oxidation of the tissues, an oxidation which for the obvious reason of the autotoxicity of the patient should be maintained at as high a level as possible. In the diet, emphasis should be laid on the white meats, the succulent vegetables and milk; eggs also may be permitted. Stimulants of all kinds are, of course, to be excluded. 2. The various avenues of elimination should be kept freely open. If the diet does not of itself counteract the constipation frequently present, a moderate dose of a simple saline or laxative water may

be given daily. The patient should drink water freely between meals to promote the action of the kidneys, and should take a lukewarm sponge bath daily to promote the action of the skin. The bath should not be such as to promote an active reaction, but merely to favor elimination. 3. Resort to medicines must, of course, be had in many cases to influence or control the seizures. Experience teaches that chief reliance must be placed on the bromids. Regarding their efficient administration, however, one important point must be borne in mind, namely, the principle of sodium chloride withdrawal introduced by Richet and Toulouse. If table salt is withheld, the bromids instead of being eliminated are retained and are effective in much smaller dose. The writer has been in the habit for many years past of administering the bromids in the form of sodium bromide, at the same time instituting as rigid a withdrawal of the sodium chloride as possible. He says there can be no doubt that under these circumstances the sodium bromide takes the place, in a measure, of the sodium chloride in the tissues. If, in a case so treated, the sodium bromide be discontinued and sodium chloride resumed, the bromide is rapidly eliminated in the urine. In a given number of instances, the physiological level of the patient may be distinctly raised by the administration from time to time of small doses of thyroid extract; say from an eighth to a quarter of a grain three times daily, seldom more. Thyroid in small doses, long continued, stimulates the chain of glands of internal secretion, increases oxidation and promotes metabolism generally.

3. **The Transplantation of Ductless Glands, with Special Reference to Permanence and Function.**—O. T. Manley and David Marine say that in the course of their work during the past three years, they studied the transplantation of ovary, suprarenal (cortex and medulla), spleen, parathyroid, and thyroid of rabbits. Because the thyroid has several advantages such as accessibility, wide range of morphological changes, and its specific iodin reaction, the following summary is based for the most part on their experiments with the thyroid gland: Concerning autografts we have been able to confirm the conclusions of others that thyroid when transplanted shows all the evidence of growth, function, and permanence, and to the same degree, as does the non-transplanted thyroid. This work also shows that specific nerves, whether secretory or regulatory, are not necessary for the control of growth or of function in the case of the thyroid. Concerning the behavior of thyroid homograft, it seems established that both the host and the tissue used for the grafts modify their duration. These two factors may be quite independent, antagonistic to, or helpful to each other. In the case of the thyroid this reaction may be modified by iodine. Lastly, the future of tissue transplantation as a therapeutic means rests on a solution of the problem of the homograft, and it is also certain that whatever headway is made in overcoming the obstacles to homografting will to an equal degree be applicable to the solution of the tumor problem.

4. **Amino Acid Nitrogen in the Systemic Blood of Children in Health and Disease.**—C. J. V. Pettibone and F. W. Schlutz. (See MEDICAL RECORD, June 24, 1916, page 1156.)

6. **A New Shortening Technique.**—Roderic O'Connor tells of the development of the method, gives the technique in details and makes a report on 42 operations. He says the mechanical factors that operate against successful results in advancement are the constriction of tissues by sutures or ligatures, the tension on point of union by the operated muscle and its opponent, the anatomical formation of the tendons with their parallel fibers but loosely held together, the stretching of the operated muscle, causing paresis, and the retraction of the globe into the orbit. In the operation described the points essential to success are: A clear field of operation with the entire tendon in view, placing the catgut loop the proper distance from the insertion, and sliding the tendon loops into close contact and retention in that position by the ligature of fine catgut. Out of 42 operations in 35 cases there were but three absolute failures as follows: In one case, owing to gonococcus infection several days after operation; in another case on inferior rectus, owing to the use of too small a catgut, and thus being an error of judgment excusable when it is remembered that it was his first operation on that muscle and he had no previous experience to guide him; in the third case, owing also to too small a catgut. If this had been a case under cocaine the error of judgment could have been corrected at once. In future in such cases he said he would allow the patient to come out of the anesthetic to see if enough effect had been secured, and if not, remedy the failure at once.

8. **The Effect of Activity on the Histological Structure of Nerve Cells.**—R. A. Kocher says there is the utmost divergence of opinion as to the nature of the changes taking place in nerve cells following activity, and one who tries to correlate the findings of the different workers in this field is utterly confused. The chief findings relate to (a) size of cell body and nucleus, and (b) amount and distribution of chromatic material. In conclusion he states that there could be found no constant difference in the size of the nerve cells or nuclei resulting from activity. An apparent difference in size which appeared here and there on counting a small number of cells was shown on enlarging the series to be counterbalanced by a similar variation on the part of the controls. Hence it must be concluded that any difference in size of cells found was within the limits of normal variation. Furthermore, in no experiment did the histological structure of the nerve cell following activity, even to the point of exhaustion, show any constant deviation from that of the corresponding resting cells of the controls. Some very sweeping generalizations have been drawn from the conclusions of previous workers; namely, that fatigue, fear, shock, and exhaustion may lead to permanent damage and even disintegration of nerve cells. Crile's present theory of surgical shock and of certain aspects of exophthalmic goiter, based essentially on these assumptions, may be cited to show to what extremes these deductions have led.

9. **The Nature, Manner of Conveyance, and Means of Prevention of Infantile Paralysis.**—Simon Flexner. (See MEDICAL RECORD, July 22, 1916, page 167.)

The Lancet.

July 1, 1916.

1. The Cavendish Lecture on the Fate of Patients Who Have Had Stones Removed from the Kidney. John Bland-Sutton.
2. An Address on the Prevention and Treatment of Cholera. (An Abstract.) Stafford M. Cox.
3. Remarks on the Cause and Nature of the Changes Which Occur in Muscle After Nerve Section. J. N. Langley.
4. The Diagnosis of Cancer of the Stomach. James Alexander Lindsay.
5. On a Substitute for Peptone and a Standard Nutrient Medium for Bacteriological Purposes. Report to the Medical Research Committee. Sidney W. Cole and H. Onslow.
6. The Shockless Operation. P. Lockhart-Mummery.
7. Intestinal Toxins and the Circulation. D. T. Barry.
8. Kala-azar in Soldiers Returning from Malta. Gordon R. Ward.
9. Abdomino-perineal Resection of Rectum by Coffey's Modification of the Two Statge Operation. L. C. Panting.
10. Annual Report for 1914 of the Registrar-General. John F. W. Tatham.
11. A Portable Fracture Box for Use in Field Ambulances and Field Hospitals. St. J. Dudley Buxton.

2. **Prevention and Treatment of Cholera.**—S. M. Cox, in an address before a Medical Conference in Malta, says there is little hope of treating cholera successfully by a bactericidal serum, when it is fully developed. The best hope of combating the disease is through prophylactic inoculation. He has treated over 2000 cases since 1907 and has found that at the collapse stage of the disease a continuous intravenous saline infusion offers certain advantages. After the infusion of five pints a reaction rigor sets in. The continuance of the infusion up to eight or ten pints results in a dilution of the blood; elevation of blood pressure, with reestablishment of supressed renal flow; elimination of the endotoxins from the blood and later from the stools, thus obviating the onset of febrile reaction stage of cholera, the remainder of the illness being usually apyrexial. The essential features of the apparatus used, apart from the heat-regulating apparatus, can be easily improvised. The procedure and requirements for doing this are detailed.

3. **Cause and Nature of the Changes Which Occur in Muscle After Nerve Section.**—J. N. Langley reviews the theories to account for the fact that section of a nerve causes atrophic changes in the muscle it supplies. By experiments in electrical stimulation he has tested the theory that the maintenance of nutritive conditions of the muscle depends upon its contracting at intervals, so that when the normally occurring contractions are prevented by nerve section the nutritive condition of the muscle suffers, and it gradually loses weight and decreases in irritability. If this theory were true a certain degree of contraction brought about by electrical stimulation would keep the denervated muscles in a normal condition. The author points out that this does not occur in clinical practice. He relates his experiments on rabbits from which he concludes that the changes which take place after nerve sections are not due to absence of contraction, and the term "disuse atrophy" is a misnomer. It therefore becomes necessary to look for some other cause of the atrophic and degenerative changes. Professor Kato and the writer noticed that muscles from about the fourth day after section of their nerves are in a state of continuous fibrilation, *i.e.* the separate muscle fibers contract rhythmically, but with different rhythms; the muscles present a shimmering appearance when viewed by light reflected from their surface. The contractions cause no movements of the muscle as a whole and are easily overlooked. As each fiber contracts many times a minute the total expenditure in a day must be considerable. It is then reasonable to suppose that this continued activity of the muscle fibers must cause fatigue and that the atrophy of the muscle is due to too great rather than too little functional activity. The changes in reaction which occur in denervated muscle are, in fact, like those caused by fatigue.

4. **The Diagnosis of Cancer of the Stomach.**—James Alexander Lindsay presents an analysis of 40 cases of cancer of the stomach which have occurred in his practice at the Royal Victoria Hospital. A history of previous gastric ulcer was obtained in only five cases, or 12½ per cent. Only 4 patients gave a history of alcoholic excess. The symptoms which first attracted the patient's attention were as follows: Painful dyspepsia, 15 cases, or 37½ per cent.; vomiting and pyrosis, 9 cases, or 22½ per cent.; loss of weight, 6 cases, or 15 per cent.; progressive weakness and anemia, 4 cases, or 10 per cent.; hematemesis, 3 cases, or 7½ per cent.; anorexia, 2 cases, or 5 per cent.; melena, 1 case, or 2½ per cent. A tumor was detected in 15 cases in this series. Its value as a signal symptom the writer does not consider great. Enlargement of the liver was noted in 9 cases in this series. In discussing the early symptoms the author states that loss of appetite may be early and marked, and may be the first symptom to attract attention. Oftener it develops gradually. It is usually a prominent feature in established cases. The dyspepsia of gastric cancer is attended by discomfort and pain, sense of fullness in the epigastrium, nausea, sickness, eructations of offensive gases, and in most cases vomiting. These symptoms are at first related to the ingestion of food, but at a later stage they become more or less constant. The differentiation of gastric cancer from chronic gastritis, non-malignant gastric ulcer, non-malignant pyloric growth, pernicious anemia, and phthisis are discussed.

5. **On a Substitute for Peptone and a Standard Nutrient Medium for Bacteriological Purposes.**—Sidney W. Cole and H. Onslow have been conducting experiments for the purpose of finding a substitute for the peptones the supply of which has been cut off from Germany during the war. In the process of this work they have found a sharp criterion for a standard nutrient medium. If a medium containing a fermentable carbohydrate be sown with a specific organism a definite final hydrogen-ion concentration is reached. This is dependent to a remarkable degree upon the constitution of the fluid, a very slight change in which may cause a considerable variation in acidity. This effect is most clearly seen if more than one organism be employed. In fact, it was often noticed that the degrees of acidity produced by two organisms might actually be inverted. With these views and facts in mind the authors made experiments with various media containing an abundant supply of these amino-acids. The growth on such media of a large number of pathogenic organisms is so rapid compared with their growth on the recognized standard media that the method of preparing this media is presented in the hope that it will be found a cheap and effective substitute for peptone and nutrient broths. The authors also describe a simple method of standardizing the reaction of media, based on Walpole's principle of eliminating the color of the broth by use of a special tintometer. They state that the supply of free amino-acid is best obtained by the tryptic digestion of casein, and to secure uniform results a pancreatic extract is used, prepared by a method which follows a formula given by Mellanby and Woolley. The details of its preparation are presented.

7. **Intestinal Toxins and the Circulation.** — D. T. Barry has been following up the investigation of the action of excretory toxins on the neuromuscular mechanism of the heart and has tried to ascertain approximately the level at which the alimentary toxin begins to be formed. As in the previous experiments the toad's heart was perfused through the inferior vena cava, using the intestinal contents, which were mixed with Ringer's solution in a mortar, and the solution rapidly filtered with the aid of a water pump. Extracts were used from the upper, middle, and lower third of the small intestine. The effects on the blood pressure and heart beat of intravenous injections of the intes tinal contents of the animals themselves was also investigated. These experiments indicate that there is little doubt that substances having a deleterious action on the heart musculature and nerves are formed both in the small and large intestine, even under apparently normal circumstances. It is quite conceivable that such products, whether of bacterial or ferment action, may on occasion exist in excessive quantity and find access by absorption to the circulation; or that certain conditions may determine undue absorption when they exist in ordinary amounts. Peptone has a depressing effect on the blood pressure, but practically no peptone

is shown to exist in those regions of the gut where the toxicity is most marked. If the contents of the lower end of the ileum are acidified and boiled, then filtered, and to the filtrate alcohol or tannic acid is added, no appreciable precipitate is formed. The writer thinks it is reasonable to assume that prolonged absorption of even minute quantities of toxins would produce effects on the mammalian heart similar to those immediately produced in the toad's heart by comparatively strong concentration; that many conditions of irregularity and block in the human heart in Stokes-Adams and other affections seem to fall into line with the action of these substances, and that a systematic course of treatment of the alimentary canal antiseptically and otherwise should be of the greatest service in some of these cases.

British Medical Journal.

July 1, 1916.

1. Notes on Military Orthopedics. V. Transplantation of Bone, and Some Uses of the Bone Graft. Robert Jones.
2. On the Life-History of Ascaris Lumbricoides. F. H. Stewart.
3. Disinfection of the Nasopharynx of Meningococcus Carriers by Means of Air Saturated with a Solution of Disinfectant. M. H. Gordon.
4. Paralysis of the Intestine After Resection for Gunshot Injuries. Owen Richards and John Fraser, with Note by Cuthbert Wallace.
5. Postoperative Paralytic Ileus. H. T. Hicks.
6. The Treatment of Backward Displacements of the Uterus. (Concluded.) Frederick J. McCann.

1. Transplantation of Bone, and Some Uses of the Bone Graft.—Robert Jones, in concluding an account of his experience in the grafting of bone says that whatever particular theory of osteogenesis may be the true one, he has found the following points valuable in practice: The area of the graft must be kept scrupulously aseptic, and free from unnecessary blood clot. Adequate blood supply is necessary to the growth of the graft. The graft must be placed in close apposition to raw surfaces of the bone with which it is to unite. The whole region must be kept fixed for a long period for undisturbed organization to take place. The bone graft should be autogenous, and it is better that it should include both periosteum and medulla wherever this is possible, for both these aspects of the bone afford facilities for the growth of new blood vessels. Surgeons should have patience, for union is often delayed, and hasty conclusions that union is not going to take place, and consequent relaxation of strict fixation of the part, may convert a case of delayed union into one of non-union. After any procedure of bonegrafting it is essential to fix the limb absolutely to let new vessels grow undisturbed by chance movements, for the idea of the operation is that all the transplanted bits of bone shall become vascularized. As a general rule, the limb should be kept fixed and undisturbed for at least twice the time necessary for union of the same bone in an ordinary simple fracture since there is no definite time within which a fracture will unite. It is difficult to formulate an exact rule as to when a bone grafting operation should be performed, for the danger of re-crudescent sepsis seems never to be absent. It is the essayist's habit to wait for at least six months after a sinus is closed, during which time and for a variable period afterwards efforts should be made to improve the general nutrition of the limb. Early operation is to be discouraged from every point of view, and failure to observe this fact has resulted in many a tragedy.

2. On the Life History of Ascaris Lumbricoides.—F. H. Stewart describes his experiments on pigs and rats which apparently show that, contrary to the generally accepted theory, the life history of *Ascaris lumbricoides* presents an alternation of hosts. Eggs develop mature embryos in the outer world in a damp atmosphere, preferably at a temperature of 25° to 30° C. When ripe eggs reach the alimentary canal of the rat or mouse they hatch. The larvæ liberated enter the bodies of their host, a few only escaping in the feces. Between four and six days after infection they are found in the blood vessels of the lungs, liver, and spleen. The host is seriously ill with symptoms of pneumonia. On the sixth day they have passed from the blood vessels into the air vesicles of the lung causing hemorrhage into them. On the tenth day they are found only in the vesicles of the lung and in the bronchi. If the disease does not prove fatal the host recovers on the eleventh or twelfth day. On the sixteenth day the host is free from the parasite. It is obvious that the transfer of the parasite from the bronchi of the rat or mouse to the intestine of man and of the pig could be readily effected. The writer concludes that the further course of the life history of this parasite requires additional study for its elucidation.

3. Disinfection of the Nasopharynx of Meningococcus Carriers.—M. H. Gordon has made observations to ascertain whether the air of a room when saturated with water vapor containing chloramine exerts bactericidal properties, and if so to what extent such air can be tolerated by human beings. He describes the procedure which he has followed in a number of experiments which he finds warrant the following conclusions: 1. The air of an ordinary room, when brought to the point of saturation by means of a steam spray containing 2 per cent. of chloramine, acquires pronounced bactericidal properties for *Staphylococcus epidermidis*. 2. Such air can be tolerated by human beings for a period varying from six to twenty minutes without marked discomfort and without harm. 3. When inhaled through the nose, this air succeeds temporarily in destroying the meningococcus in the nasopharynx of carriers. Its sphere of usefulness in this and other respects is being more closely investigated. In view of the simplicity and convenience of the method and its obvious suitability for the purpose of dealing with a large number of carriers at a time, the above results are encouraging.

4. Paralysis of the Intestine After Resection for Gunshot Injuries.—Owen Richards and John Fraser observe that this complication seems to occur only in the small intestine, the segments of the intestine above the union becoming distended, while the segment below remains contracted. The writers report several cases from which they conclude that in cases operated on is probably mainly due to some interference with the within a short time after the receipt of the injury this nervous mechanism, caused by the injury itself and the resultant shock, and increased by other causes—for example, local peritonitis. In cases operated on after a considerable interval, a further cause is that continued obstruction, and consequent septic absorption, render the bowel above incapable of rapid recovery. A case in which this complication has occurred may possibly be saved by subsequent short-circuiting of the affected coil. Cuthbert Wallace comments on two of the cases reported in which resection and circular enterorrhaphy were performed, one in the lower ileum and one in the upper jejunum. A short circuit operation was performed in both to relieve a distention which was limited to the small gut above the line of the circular enterorrhaphy. The cause of the obstruction was a paralysis of the bowel below the site of the operation, which was not due to septic peritonitis but to some acquired defect. It would be advisable in these cases to make the anastomotic opening at a considerable distance from the lesion, or to short circuit into the transverse colon, as suggested by Sampson and Handley.

Book Reviews.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. 1916. Thirty-fourth Year. Price, $4 net. New York: William Wood and Company.

THE International Medical Annual has had a long and honorable history as a publication of service to all English-speaking practitioners. Among its contributors this year are two New York men, Lewis A. Conner, who has written on Pulmonary Diseases, and J. Ramsay Hunt, who presents the Diseases of the Nervous System. It is but natural and right that a very important portion of this issue should be given over to the consideration of naval and military surgery, and this has been done very thoroughly. It should not be thought, however, that any of the other branches of medicine have on this account been neglected. This number is as interesting and instructive and as complete as any of its predecessors and will serve admirably to maintain the position of the series in medical literature. No other publication quite fills the position of the Annual and we are sure that no other will ever succeed in doing so.

A TREATISE ON THE PRINCIPLES AND PRACTICE OF MEDICINE. By ARTHUR R. EDWARDS, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine and Dean of the Northwestern University Medical School, Chicago. Third edition, thoroughly revised. Price, $6. Philadelphia and New York: Lea and Febiger, 1916.

WHILE one-volume treatises on the practice of medicine must inevitably have many faults they also may possess definite advantages, and that there will always be a demand for them is certain. The present example of the class is distinctly meritorious, and that it has found favor with many readers is shown by the fact that it is in its third edition. Features of especial interest are the very many diagnostic tables, in which conditions sometimes difficult to differentiate are contrasted, and the sections on treatment which are much more satisfactory than is usually the case in similar works. The text is modern in its presentation of most subjects, and though some readers may be disappointed at not finding such topics as the significance of the nitrogen partition in the blood, the fasting treatment of diabetes, or the present conceptions of acidosis fully discussed, such matter is hardly to be expected in a book of this scope. It is a pleasure to commend it as most excellent of its kind.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc. Edited by H. R. M. LANDIS, M.D. Vol. I, Twenty-sixth series, 1916. Price, $2. Philadelphia and London: J. B. Lippincott Company.

THIS number of the "Clinics" contains seventeen articles on Treatment, Medicine, Neurology, Public Health, Pathology, Gynecology and Surgery. In an article on chorea by E. E. and W. H. Mayer the treatment by the intravenous administration of phenol is recommended and seven successful cases are reported. This treatment is used apparently because of the authors' belief that chorea is an infection and that the phenol acts as a disinfectant. Whether there is any analogy between this and the well-known Baccelli treatment of tetanus cannot be said, but it is to be hoped that other observers will be able to confirm their results. They have adopted what is apparently an unnecessarily scornful attitude toward the bacteriological work which has been done on the streptococcus group of infections. Satterthwaite's article on Drug Therapy in Cardiovascular Diseases embodies many ideas in regard to digitalis which are at variance with the views held generally to-day. There are several other articles of interest which make this number conspicuous. The "Clinics" starts out well under its new editor and there is every indication that its present success will follow it in the future.

A TEXTBOOK OF NERVOUS DISEASES for Students and Practising Physicians, in Thirty Lectures. By ROBERT BING, Dozent for Neurology at the University of Basel. Only Authorized Translation by CHARLES L. ALLEN, M.D., Los Angeles, Cal.; with 111 illustrations in the text. Price, $5. New York: Rebman Company.

NERVOUS diseases for many reasons bulk large nowadays. The manner in which we live has the tendency not only to keep our nerves at a high tension, but to find out the weak spots in the armor of our nervous system. Moreover, neurology has now been brought to a more or less scientific basis and no medical student's education is considered complete unless he knows something of this branch of medical knowledge. The great teachers of neurology have been and are inhabitants of Continental Europe and among these Robert Bing, whose book is being noticed, is by no means the least distinguished. The subject matter in this work is presented in the form of lectures, which have been systematically arranged for publication in book form. In the arrangement of the material, the customary topographical and pathologico-anatomical classification has been subordinated almost entirely to the etiological and pathologico-physiological. This was done in order to condense the work to a suitable size. The author states in his preface that he has refrained from forcing to the front the views of any particular school, but has endeavored rather to exercise a certain eclecticism which is justly considered as the scientific signature of Switzerland, in which the German and the Latin manner of thought and investigation blend and reinforce one another in harmonious fashion. This work may be regarded as a thoroughly useful, practical, up-to-date book, and as such of great value to students and practitioners.

PAINLESS CHILDBIRTH, EUTOCIA AND NITROUS OXID-OXYGEN ANALGESIA. By CARL HENRY DAVIS, A.B., M.D. Associate in Obstetrics and Gynecology, Rush Medical College in affiliation with the University of Chicago; Assistant Attending Obstetrician and Gynecologist to the Presbyterian Hospital, Chicago. Price, $1. Chicago: Forbes & Co., 1916.

THE recent lay agitation in regard to Twilight Sleep has called forth numerous articles on analgesia in obstetric practice. The first articles dealt with the value or difficulties of scopolamine and morphine administration. Later, reports from several hospitals appeared, where nitrous oxide and oxygen had been used during labor with excellent results. Dr. Davis' book discusses these two methods of obtaining painless childbirth. After reviewing the introduction of anesthetics into obstetrics, he takes up the pharmacology and toxicology of the drugs whose use he afterward considers—scopolamine and morphine, nitrous oxide and oxygen. The advantages of nitrous oxide and oxygen analgesia are given in a report of results in 104 cases at the Presbyterian Hospital, Chicago. Dr. Davis found that labor was shorter, tears were fewer, the babies lost less weight, and the women were able to leave the hospital earlier. Cumbersome apparatus will largely limit the use of this method in private practice, except among the wealthy, but this will be only an added argument for hospital care of obstetric cases.

INSTINCT AND INTELLIGENCE. By N. C. MACNAMARA, F.R.C.S. Price, $2.00. London: Henry Frowde, Oxford University Press. Hodder & Stoughton. New York: Oxford University Press, American Branch, 1915.

MACNAMARA in his preface says, "In the following pages we have endeavored to give an outline of the evidence, and the reasons upon which we rely to prove that the instinctive behavior of human beings depends on work performed by definite parts of the brain; consequently, education has not only to deal with the training of something immaterial which we call mind or consciousness, but has first and foremost to deal with the proper development of the nervous substance of that part of the brain the orderly working of which is essential for the occurrence of instinctive and intellectual phenomena." He traces the development of the nervous system from atoms, molecules, and energy in amebas, insects, amphioxus, apes, idiots and finally intellectual beings. He shows how instinctive response to stimuli becomes more elaborate with higher forms, and how with the development of the cerebrum, intelligence, defending an association of ideas, somes in. Then, he says, "If the evidence referred to in this and the preceding chapters is trustworthy, and the hypotheses founded on it reasonable, it follows that any effort made to develop the moral and intellectual capacities of young people should be directed towards the efficient training and nurture of the nervous substance upon which this manifestation of these faculties depend; to be more precise, our efforts should be directed towards developing the nervous instinctive basic substance of the basal ganglia, and of the association areas of the neopallium."

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Forty-second Annual Meeting, Held at Washington, D. C., May 8-10, 1916.

THE PRESIDENT, DR. LEWELLYS F. BARKER OF BALTIMORE, IN THE CHAIR.

(*Concluded from page 216*)

Obstetrical Paralysis.—Drs. JOHN JENKS THOMAS and JAMES WARREN SEVER of Boston prepared this paper, which was presented by Dr. Thomas, who said that there was no evidence from their experimental work or clinical observation to support the theories of Lange and T. Turner Thomas that the primary cause of obstetrical paralysis lay in an injury of the capsule of the shoulder joint or a dislocation, with secondary damage to the nerve trunks. This theory got no support from experimental work, and in addition did not account for the distribution of the paresis of muscles generally seen, such as the spinati, supplied by the suprascapular nerves, nor the frequent involvement of the sympathetic fibers going to the pupil and eyelid, often seen in cases of paralysis of the whole arm, and of the lower arm group. The partial dislocation of the head of the humerus backward, the bending down of the tip of the acromion, and the forward dislocation of the upper end of the radius were all secondary changes, due to the formation of contractures in the stronger or unaffected muscles. Dislocations of the shoulder, separation of the epiphyseal end of the humerus, or fractures of its shaft, like fractures of the clavicle, were infrequent accidents, and, while they might be unaccompanied by an injury of the plexus, more frequently they were complicating injuries which rarely caused permanent difficulties. The treatment to be effective must be adapted to the conditions in the individual case. Treatment by massage of the paralyzed muscles and development of them as they recover through educational exercises were necessary in all cases where the plexus had been injured to more than a very slight extent. Resection of the plexus and transplantation of torn nerve roots of the plexus were to be reserved for cases which did not show evidence of recovery of function in definite groups of muscles within a reasonable time, generally not less than six months, though frequently this time needed to be extended to a year, a year and a half, or occasionally even longer. The late complicating deformities about the shoulder and elbow joints should be treated on orthopedic principles. The writers presented a new operation for this deformity at the shoulder joint by division of the tendon of the subscapular muscles outside the joint. These cases needed careful after-treatment by passive movement massage and educational exercises to bring about free and natural movement in the joints and use of the extremity.

Dr. CHARLES K. MILLS of Philadelphia said that he had seen many cases of obstetrical paralysis and had also published a small amount of matter with regard to traumatic brachial palsy. One thing seemed to him to have been omitted entirely, or else he did not listen with sufficient attention. He believed that these obstetrical palsies were due in a large percentage of the cases not to the direct lesion of the brachial plexus or of the shoulder, although these were present, but that they were due to an avulsion of the nerve roots of the plexus. It seemed to him this should be understood. He worked sometimes with T. Turner Thomas, and they had had this matter up in connection with one of the cases of injury to the shoulder and plexus, with regard to which he contributed a paper to one of the journals. However, it did not take away from the value of these observations and these experimentations for relief. Traction on the plexus, which frayed the nerves, always occurred; the avulsion of the nerve roots or a certain part of the nerve roots of the plexus, and therefore a total and permanent destruction which could never be very fully or largely relieved except by adaptation or compensatory operation.

Dr. TAYLOR of Boston said that there were two or three points he would like to make in regard to brachial palsy injuries; in the first place, in regard to the etiology. In a paper which he had presented to this society in Baltimore it had been stated that there were at least twenty experimental productions of this lesion on new-born babes who had died a few hours after birth. In every one extraspinal. In sixty operative cases, in only 10 per cent. was it fair to presume that there had been an intraspinal lesion. In a case which had not been published he was called upon to deliver a woman with a badly deformed pelvis. It was necessary to do version, in which the extraction was a breech extraction, and, feeling that this type of lesion was exceedingly apt to occur, he put most of the traction on the lower extremities of the child until they were damaged so that he did not dare continue; then the pressure was exerted over the shoulder and a lesion of the brachial plexus occurred where he had stated before the delivery of the child's head that such a lesion would occur. After delivery he found it had double hemorrhage from both hemispheres. If one explored a child in the early weeks of its career and one did not find damage to the plexus requiring surgical repair, he had done nothing more than make an incision 2 inches in the skin, subcutaneous fat, and fascia. That gave one an opportunity to observe the brachial plexus. On the other hand, if one found a serious surgical damage to that plexus, then he could do the repair at the time most favorable to the child and the risk one had run was justified by the improvement that took place.

Dr. JOHN JENKS THOMAS of Boston said that he thought Dr. Taylor had given us fully what Dr. Mills had alluded to. We know that the lesion in these cases was not a constant one. It varied in severity and in the situation of the injury. Occasionally avulsion of nerve roots was seen. Some of their cases had shown separation between the nerves of the plexus. He could not agree with Dr. Taylor on the advisabilty of early exploratory operation in all cases. Certainly he thought that should never be done in cases where at the time, soon after birth, we found the injury limited to the upper arm group of muscles. These cases practically all showed partial recovery after operation. The question was somewhat different when we came to total arm paralysis. He thought their work had given them a clue as to why this was so. In the upper arm paralysis, although the nerves were stretched, there was fraying out of the fibers and hemorrhage within the sheath; there was no complete separation or tear of the plexus. The only complete injury we found then was the tearing off of the suprascapular nerve. To suture the suprascapular nerve, which was very small in the infant, he thought was practically impossible. His plea was that we should make our treatments suit the individual case.

Further Contribution to the Treatment of Syphilis of the Nervous System.—Drs. B. SACHS, I. STRAUSS, and D. J. KALISKI of New York City prepared this paper, which was read by Dr. Sachs. Two years ago they reported 120 cases; to-day they reported 100 other cases, twenty treated by the intraspinous method, the others by the intravenous method. Omitting all the unnecessary detail, they were forced to conclude that the intravenous method was the one that they preferred by all odds to the intraspinous method, for the reason that the intravenous method had given absolutely satisfactory results and by the intraspinous method they had not obtained a single result that they could not have obtained by the intravenous method. The intraspinous method was attended by all sorts of disagreeable complications and discomfort of the patient, which increased the risk enormously. They had evolved a system of intensified intravenous treatment which was even more intensive than the form of treatment originally suggested by Dreifus. In some of the cases intravenous treatment was given by small doses daily, sometimes for five or ten days. Then a period of rest of four or five days, or a week; then followed a series of intensive mercurial treatments. The intravenous treatment of salvarsan should be observed most carefully, with special reference to the effect on the kidneys.

Dr. JOSEPH COLLINS of New York said that he was now in the position of holding no brief for the Wassermann reaction *per se*. He had no faith in it compared with other methods of diagnosis of syphilis. The Wassermann reaction meant nothing more than that we should be suspicious of syphilis. If a person came in to him and had only a plus Wassermann, he would say, "You marry." That was a different state of mind from two years ago. He believed that the Wassermann test has been far overrated in its value to the clinician. A few months ago, when this matter had been under discussion before the New York Academy of Medicine and he had made the statement that he was quite unwilling to pin much faith to the Wassermann reaction unless he found some changes of the biological reactions, all the speakers had said in closing that they were sure he was mistaken. He agreed with Dr. Sachs that the intravenous method of administering salvarsan or

arsenobenzol was preferable to the intraspinal. During the last two years Dr. Craig and himself had devoted themselves to the use of salvarsan intraspinously. They were convinced this had no advantage over the intravenous method.

Dr. C. EUGENE RIGGS of St. Paul, Minn., said that during the last two years he had closely watched the effects of the intravenous as compared with the intraspinous method, and his experience had not been in harmony with that of Dr. Sachs. In between 400 and 500 cases he had had no unpleasant experience with the intraspinous method aside from one case of cerebrospinal meningitis, which had made a good recovery.

Dr. E. E. SOUTHARD of Boston said that in respect to Dr. Collins' remarks in reference to marriage he would say that if anyone came to him with a doubtful Wassermann reaction he should regard that his desire to marry was a psychopathic one, and he should at once counsel lumbar puncture. He would rely upon the results then. He would have repeated Wassermann tests. He regarded it as a medical crime for a person with a positive Wassermann and any mental symptoms not to receive a lumbar puncture.

Dr. B. SACHS of New York said that in reference to what Dr. Southard had said, he thought he was in general agreement with him, although he did not think every candidate for marriage should be penalized by a lumbar puncture. In order not to be misunderstood, he would say that in all of their work they had endeavored to obtain negative reactions as regards the cerebrospinal fluid. In regard to the Wassermann reaction of the blood, they allowed that one condition to persist without insisting that the antisyphilitic treatment must be coninued to the extreme until a change in the Wassermann reaction of the blood was effected. As regarded the intraspinous form of therapy, they had a right to speak authoritatively so that the general practitioner should not be made to feel that here was the great solution to the question of antisyphilitic treatment. The attention of the general practitioner should be directed to the far greater dangers of the intraspinous as compared to the intravenous method, and the fact that it accomplished nothing that we could not accomplish by the far safer intravenous method.

Dr. I. STRAUSS of New York said that to show that in the last two years there had been a change in opinion and that we were not altogether wrong in our stand he would call attention to the fact that the very individuals who used the salvarsanized serum had turned to what they called the method of salvarsan plus salvarsanized serum. In other words, finding the salvarsanized serum contained no antibody, they had added this amount of salvarsan, which was practically 1 mgm., to their fluid to obtain their results. Regarding the dangers of this intraspinous method, there were two cases in his experience which showed that this method was not so harmless as generally portrayed. Unfortunately, he thought medical men were a little careless in reporting the sad results of therapy.

Types of Neurological Cases Seen at a Base Hospital.—Dr. JOHN JENKS THOMAS of Boston read this paper, saying that injuries of the peripheral nerves were frequent, but many that appeared total were, on careful examination, found to be partial. Immediate interference except for the suture of obviously severed nerves and to prevent their retraction was seldom advisable, as all wounds were septic. When an operation was necessary it should be done after the wound was healed, and followed the usual lines of those for other injuries of peripheral nerves. The spinal cord might be injured directly by fragments of bone or muscle, but not infrequently also indirectly through concussion, producing hematomychia. At first almost all these cases showed complete sensory and motor paralysis, and the true extent of the damage could be determined only after a time. Injuries of the brain from bullet wounds were fairly frequent at base hospitals, and many of these did surprisingly well. Primary operation except for checking hemorrhage should be avoided. In a good many instances with bullet wounds they found tangental wounds because of the high velocity, but in these, even though they found no extensive fragmentation of the inner table of the skull, the bullet very frequently lacerated the dura as it channeled the bone. Therefore, all of these bullet wounds of the head which were so located that an injury of the brain might have occurred should be explored. Functional disturbances of the nervous system were seen quite frequently at the base hospitals. Curiously enough, these functional cases seemed to develop most often, at least during the first few weeks after being incapacitated, in the men who had not been wounded, being mostly in those who had been thrown down by the concussion produced by the bursting of high explosive shells of large caliber or who had been buried in the dirt, as when a trench or dugout had been blown in by such shells.

Syringoencephalomyelia; The Function of the Pyramidal Tract.—Dr. WILLIAM G. SPILLER of Philadelphia read this paper, in which he stated that it had been asserted that syringomyelia did not extend above the lower part of the pons and no term was employed in medical literature to indicate the implication of the brain in the syringomyelic process except syringobulbia, a term applicable only to the lower part of the brain. He showed in 1906 that the syringomyelic process might extend upward through the brain into the uppermost part of the internal capsule and almost into the lateral ventricle. He now proposed the terms syringoencephalia and syringoencephalomyelia for those conditions confined to the brain or implicating the brain as well as the spinal cord and of the same character as syringomyelia. Syringomyelia was a term applied to cavity formation in the spinal cord. The methods in which these cavities were formed vary. A common way was by defective closing in of the posterior columns, leaving a space which later enlarged. A similar defective closing in might occur in the brain. The aqueduct of Sylvius at one period of embryonic life was relatively large. In 1902 he reported a case of hydrocephalus caused by almost complete obliteration of the aqueduct by excessive closing in, and in this report he mentioned that the closure of the aqueduct resembled in the changes of tissue produced by it the condition often seen in the region of the central canal of the spinal cord, leaving nests of ependymal cells about it. He had now studied the aqueduct in microscopical sections from thirty-eight cases taken at random, and had found that the character of this opening varied greatly. It might have a long, narrow slit at its lower part lined by ependymal cells, and frequently had nests of ependymal cells about it. Possibly from these, as in the cord, tumors might have their origin later in life. He had recently studied a case in which the fissure existing in the embryo between the optic thalamus and the corpus striatum had failed to close in entirely to form the opto-striate notch and had left a fissure extending from the lateral ventricle into the brain, destroying the anterior half of the posterior limb of the internal capsule. This fissure was surrounded by thickened neuroglia and some nests of ependymal cells. The upper extremity of the opposite side had been moved freely during life, except that isolated movements of the fingrs had been impossible but no paralysis of the face had been detected, and yet the fibers supposed to furnish motor power to the upper extremity and face had been destroyed.

A Consideration of Some Selected Problems in a Year's Neuro-Surgical Service.—Dr. E. SACHS and Dr. SIDNEY I. SCHWAB of St. Louis prepared this paper, which was read by Dr. Sachs, who said that it was important to study neuro-surgical cases from two points of view, the neurological, which placed its emphasis on the production of symptoms in relation to a definitely placed lesion, and the surgical, which emphasized the question of the adaptability of a given lesion to surgical procedure. It was this shifting of emphasis at the hands of two differently trained observers which they believed would eventually satisfy the broadest demand of neuro-surgical cases. Each case was therefore studied independently by the neurologist and surgeon; the resulting data were gathered and discussed before it finally became either a strictly surgical problem or was discarded into the neurological class with no surgical outlook. Among the many problems that had arisen during the past year the following seven were selected for presentation and comment: 1. The reliability of the Bárány observations as tested on stimulation of the cerebellum in a conscious patient. 2. Significance of albuminuria in intracranial pressure. 3. Multiple lesions. 4. The place of lumbar puncture in intracranial pressure. 5. Pseudo-optic neuritis. 6. Tumors of the Gasserian ganglion in sinus conditions. 7. Disappearance of cord tumor symptoms after lumbar puncture.

Acroparesthesia.—Dr. JAMES J. PUTNAM of Boston read this paper, stating that the object of his paper was to seek a more adequate explanation of the nature and pathogenesis of the affection which Schultze had denominated acroparesthesia (recurrent numbness of the hands, etc.), the first thorough description of which had been given by the speaker in 1880 on the basis of the

analysis of thirty cases. He called attention particularly to the following points: 1. The tendency of the numbness to recur toward the latter part of the night and at first to be present only then. 2. The slight changes of coloring or consistence of the fingers. 3. The frequent changes of sensibility during the attacks. 4. The presence (as a predisposing cause?) of other neurotic tendencies. 5. The relation of the symptoms to the use of the hands, or their position, or to slight stimulation of the skin with hot or cold water, and in other ways. The best view to take of such a neurosis as this, and perhaps of all specific neuroses, was (1) that they pointed to a failure of the coordinated adjustments of the nervous system (relation to the neurotic temperament as a whole, etc.); (2) that they pointed to an attempt on the part of the organism to assert itself through some new dynamic and quasi-coordinatory effort as if seeking for some new equilibrium. But the new coordinatory equilibrium thus established was always a relatively poor one (substitution of vascular cramp for coordinated contraction and dilatation, etc.). The aim of the treatment should be, first, to restore the tone of the nervous system; second, to eliminate emotional complexion at variance with health; third, to remove accessory causes, such as toxemias (note the arthritic tendencies and digestive troubles present in many cases); fourth, to remove specific excitations, such as exposure of the hands to hot and cold water; fifth, to adopt means calculated to encourage adequate vascular reflexes (exercises of specific sorts). Quinine is often useful, especially for short periods and in large doses, perhaps acting as a vascular stimulant. Local heat and electricity also had a place, and the same might be said of occupational training of the patient.

Wednesday, May 10—Third Day.

Intramedullary Tumor of Cervical Cord. Probable Diagnosis. Removal in Two-Stage Operation; Gradual Improvement.—Drs. F. X. DERCUM and J. CHALMERS DACOSTA of Philadelphia prepared this paper in which they stated that they placed on record a case which had to do especially with the recognition and interpretation of pain of spinal origin. The significance of such pain was frequently overlooked. At times it was incorrectly ascribed to a visceral origin and had led to futile abdominal and other operations. The case was interesting because of the relatively rapid and extensive development of symptoms, suggesting a myelitis rather than a local lesion, because of the serological findings and finally because of the diagnosis of tumor and its successful localization and removal. The first symptoms of illness appeared in the latter part of October, 1913, namely, some vague pain or numbness in the left shoulder which did not hurt when moved or handled. Numbness gradually made its appearance in the left arm and later there was distinct weakness of the left arm. When the patient coughed or jarred himself, he had a sensation as of a "thrill going through his body." Soon numbness, weakness and pain appeared in the right arm. About a month later there was weakness in both legs and in the bladder. Walking became difficult and soon there was loss of sensation and paralysis in both legs. When admitted January 27, 1916, the patient was completely paraplegic and there was absolute loss of sensation of all forms as far as the level of the second rib. A slight plus patellar reflex was elicited upon both sides. No ankle clonus, but Babinski upon both sides. Marked general wasting of the hands, forearms, arms and shoulders, as well as of the trunk and of the lower extremities was present. The lumbricales, both the thenar and hypothenar eminences, and to a smaller extent the interossei were wasted in both hands. The pupils were equal, average in size and reacted to light. The Wassermann reaction was negative. On February 21, 1916, an exploratory operation was undertaken. Incision over the fourth, fifth, sixth, seventh cervical and first dorsal vertebræ and the processes and laminæ of the seventh cervical and first dorsal vertebræ removed. Immediate on opening the dura a dark, bluish-red mass began to extrude. It was evident that dissection would damage the cord and it was decided to follow Elsberg's plan of allowing the tumor to extrude. The patient reacted well from the operation and was comfortable. After five days the wound was reopened and the cord was again exposed. The edges of the incision had become considerably separated, the tumor had extruded in part, and it was now gently coaxed or teased from its bed in the cord with the aid of small pledgets of gauze. The tumor was exceedingly friable and soft and came away only in small fragments. The subsequent surgical course was without incident. Within twenty-four hours after the operation, the patient became cognizant when the left leg or foot were touched. He felt the touch as something hot or burning but he could not localize the impression save to say that it was the left limb which was touched. Within a few days the hypesthesia of the hands and arms grew markedly less and soon disappeared. This was followed by a rapid gain in power over the movements of the fingers, hands, wrists, forearms and indeed of the upper extremities generally. The improvement in the right upper extremity was somewhat more rapid than in the left. Twelve days after operation the patient was able to distinctly abduct the left thigh. Once or twice slight movements were noticed in the toes. Patient was able to flex and abduct the thighs, slightly, but the improvement in this respect had not kept pace with the improvement in sensation. When examined on April 27, 1916, his improvement as regards the sensory findings were less manifest than at the previous examination. In other respects the improvement had continued, though it had been slow.

The Rising Tide of Disabilities Following Trauma and Their Relation to Our Compensation Laws.—Dr. B. SACHS of New York read this paper, saying that in ten cases there was only one case in which he could say that there was a permanent disability following injury. That was a distinct brachial plexus neuritis which had not been recognized. Thus far he had not seen anything in this country comparable to the traumatic neuritis, as it had been established by Oppenheim many years ago. In the main, we as neurologists, should insist that the evidence should point to organic changes of the nervous system, central or peripheral, and that we should limit so far as possible the purely psychic element. Much more important than establishing the fact that there was or was not an organic change in the nervous system is the ruling out of organic nervous symptoms. A man who had a distinct spondylitis as the result of trauma a year before added to his regular symptoms any number of disabilities which could not possibly fit into the general conception of a spondylitis or traumatic myelitis in association with spondylitis. Simulation and malingering were very infrequent. In this country the attempt at simulation is not made as in Europe. There was a peculiar mental attitude in all these cases and the fear of having the earning capacity limited by the accident became a perfect obsession with the individual. Dr. Sachs had given the opinion that that mental attitude was to be considered as a disability following injury. He urged that the profession give due allowance to the mental attitude of the person who has been injured. The workman should be given the benefit of every doubt. Do not exaggerate. Rely upon the basis of the symptoms known to be connected with both the organic and the peripheral nervous system.

Dr. SMITH ELY JELLIFFE of New York City said that he was in very thorough sympathy with Dr. Sachs' remarks relative to the compensation material that is being thrust upon us. He thought that we could get a great deal of light upon the subject of malingering if we made tests upon the autonomic and sympathetic systems. They were very definite tests for definite organic conditions.

Dr. HUGH T. PATRICK of Chicago ventured to make a very unscientific but, he believed, practical suggestion. He believed that these groups creep over into each other. He was sure we all had had the experience of being unable to place a given case in a given group, and we had been driven to trying various remedial procedures and agents in the hope that we might cure or relieve the patient. Some of these patients were very promptly and, he believed, progressively relieved by a very simple procedure, the suggestion of which he got from Dr. Moyer, which was elastic constriction. The application of the rubber tubing or elastic rubber bandage about the extremity two or three times a day for two or three minutes would absolutely and completely relieve some of these cases in a very short time.

Dr. CHARLES L. DANA of New York City said that he presumed there was a psychogenic side, although he had never seen it. Aside from that group there was a large number due to the causes stated. One rather unusual case he had seen recently in which he thought he had discovered a cause not mentioned. He had had *x*-ray pictures made of the arms, and had found a very distinct evidence of thickening of the arteries of the

more affected arm. One arm was more paresthetic than the other. The history of the case, the character of the symptoms all indicate that it was a paresthesia due to vascular involvement. He thought the vasomotor system and the vascular system were behind the majority of the ordinary cases. There was one other group of cases which he thought ought to be watched very carefully, that was the kind of acroparesthesia with the beginning of combined sclerosis, associated with anemia.

Diffuse Endothelioma Enveloping Spinal Cord in its Entire Length.—Drs. PETER BASSOE of Chicago and C. L. SHIELDS of Salt Lake City prepared this paper, which was read by Dr. Bassoe, who said that the patient, a girl of sixteen years, had been taken with headache, vomiting and dizziness eight months before death. Later, failing vision, two weeks of strabismus, and finally complete blindness. Hearing also had been lost. The optic disks showed secondary atrophy, and the tendon reflexes were lost. The spinal fluid showed lymphocytosis and increased albumin. There had been convulsive seizures during the last two weeks before death. The necropsy revealed the unusual condition of a diffuse grayish-white thickening of the pia along the entire cord, most marked posteriorly. Histologically, this tumor proved to be of connective tissue.

Dr. HARVEY CUSHING of Boston said that he thought that in a series of about 100 cases of certified tumors that had been called endothelioma, there had been many examples of endotheliomatous effects. Many of these endotheliomas had heretofore been called sarcomas, and whether this tumor of Dr. Bassoe's should be called sarcoma he did not know. It was his feeling that these tumors were not dural tumors. He thought they were really arachnoid tumors and that they originated from the endothelial cells which covered the arachnoid tufts. He surmised that, if this original tumor was an endothelioma, this meant a sarcomatous degeneration in the tumor with invasion of the cerebrospinal space.

Dr. BASSOE said that in this case the dura had not been involved anywhere. As to the sarcoma and endothelioma question, that was a very long question. He would simply say if he were shown a slide with cerebellum without being familiar with the history of the case, that it was a fibrosarcoma, and a slide from any other part of the pia would pass for a round-cell sarcoma.

Preliminary Report on the Use of the Abderhalden Reaction in Mental Diseases.—Drs. HENRY A. COTTON of Trenton, N. J.; E. P. CORSON WHITE of Philadelphia, and W. W. STEVENSON of Trenton, N. J., prepared this paper which was read by Dr. Cotton, who said that, since Fauser in 1912, with the assistance of Abderhalden, had begun to apply the principle of the Abderhalden reaction to psychiatry, very little had been accomplished. Simon had shown that uniform results could be obtained in various psychoses, and Ludlum and White had also reported results with certain psychoses. In this preliminary report of the work at the New Jersey State Hospital they would merely present the results of the Abderhalden tests in 289 cases, including the various psychoses and some normal individuals. It was not their purpose to discuss the nature of the reaction or to take up the various theories that were represented by the various investigators. The original method of Abderhalden had been used in all cases, and in thirty-one cases the reaction was confirmed by the ice-incubation method of Bronfeubremer. It was important to remark that in the hands of one who had had considerable experience the reaction not only was of value as shown by the uniform reaction obtained in the same case on repeated examinations, but also that certain definite types of psychoses apparently had given uniform findings in a number of cases. We could conclude that the Abderhalden reaction gave certain definite and uniform results. That these results were practically negative except in dementia precox and epilepsy. That in dementia precox 81 per cent. of the cases showed a positive reaction to sex gland, and in three cases out of fifty-five gave a positive reaction to thyroid and sex; two of them were the catatonic type. Differential count of the blood showed rather characteristic conditions in dementia precox; *i.e.* high red blood cells, very low white cells, and high lymphocyte count and low polymorphonuclear. That in epilepsy practically all cases, sixty-nine, gave a positive reaction to adrenal gland. That the value of these reactions was to lay the foundation for therapy, based upon the facts deduced. In epilepsy the feeding of pancreatic gland had produced some remarkable results.

Injuries to the Spinal Cord Produced by Modern Warfare.—Drs. JOSEPH COLLINS and C. BURNS CRAIG of New York prepared this paper, which was read by Dr. Craig, who said that these observations were based on ten months' service with the American Ambulance in France. Contrary to what might be expected, the injuries to the nervous system were not different from those occasionally seen in civil practice. The great difference was quantitative rather than qualitative. All wounds to the nervous system might be grouped under three heads: concussion, contusion or laceration, and compression. Injuries to the peripheral nerves were practically all lacerations, compression from scar-tissue formation also playing a rôle. The lacerations of the brain and spinal cord presented a prognosis almost hopeless. Such cases showed little improvement in symptoms after the initial shock had passed off. Over 90 per cent. of the lacerated wounds of the brain, being infected, developed meningitis and died. Cases with cord lacerations remained paraplegic and died of sepsis following pyelonephrosis within nine months. Concussion injuries to the brain and cord cleared up in a most remarkable manner. Concussion with hematomyelia of the cord, causing paraplegia or quadriplegia, might follow the impinging of a bullet or shell fragment upon the vertebra without fracture of the latter. Such cases recovered almost completely.

Dr. CHARLES L. DANA of New York said he also felt in sympathy with Dr. Sachs' presentation, and it would be a great satisfaction if we as neurologists held some attitude which, as Dr. Sachs suggested, is one of full sympathy with the attempt to find organic conditions. He thought the association ought also to keep in mind the fact that before many years the whole situation would be changed by the enactment of laws of health insurance which would give compensation to every working man who earns less than $1,000 a year whenever he fell ill from any cause during his employment. We did not know exactly what the conditions would be, but it would revolutionize the activities of our dispensaries and hospitals and it would make great changes in methods of examining and compensating those who were injured nervously as well as from other causes.

Dr. F. R. FRY of St. Louis said that in regard to what Dr. Dana had been saying there was a better outlook for adjusting all these things between the profession and the laity by this industrial insurance feature than we had ever had. The difficulty had always been to have the general laity grasp the situation or have some means of handling it. He could not help feeling that that was going to be the solution of the whole thing.

Dr. L. F. BARKER of Baltimore said that we must distinguish between cases of incontestable organic and functional disease. There could be no doubt that there would be just as great disability from functional as from organic disease. He believed that in this matter psychiatry would help us. He thought that the organic neurologists were very apt to go too far in the direction mentioned, and that the psychiatrists would help us to get matters straight. He believed that the phobias and ideas of damages were very important, as they act on the susceptible nervous system. There was no doubt that when there was a single capital payment for damages the disease might last a shorter time than when payment was made by instalments. If invalid insurance should be adopted it seemed to him there might possibly be different rates of insurance for people who had a tendency to psychopathic conditions and those who are healthy and whose stock is healthy.

Dr. E. D. FISHER of New York City said that he would agree with Dr. Sachs in saying that not many of the cases were malingerers. They were honest in their statements. They were disabled; they were unable to do work; they would like to work, and he thought that was something we ought to consider.

Dr. B. SACHS of New York City said that the difficulties were extraordinarily great. He believed the neurologist and psychiatrist would have to co-operate in order to determine the exact mental attitude. He had brought to his notice cases of distinct chronic psychosis in which the disease antedated the time of the accident. For instance, one was a case of paranoia with delusions of persecution. It was the claim that the accident had made that paranoia worse.

The Report of the Cancer Control Commission.—Dr. HARVEY CUSHING of Boston said that at the meeting of this congress held in 1913 the American Gynecological Society presented to the other branches of the congress an identical resolution requesting the appoint-

ment of two or more delegates to co-operate in forming a national organization to conduct an educational propaganda regarding the prevention and cure of cancer. Of all the validated societies probably the Neurological Society had least interest in this, as cancer of the nervous system was of less immediate interest than cancer such as the laryngologist or the general surgeon or the gynecologist might encounter. Nevertheless it seemed to him that it would be just and fair and co-operative if that society would be willing to express its interest and sympathy in that movement and express its desire to co-operate and affiliate with it in any way in its power.

Dr. CHARLES L. DANA of New York City said that there was just one line of inquiry in connection with cancer of the nervous system which would be extremely interesting. He had seen, and probably all saw at times, cancer of the brain following operation upon the breast. This had come within his observation so often that he viewed with trepidation operation on the breast. If we sent in our experiences of metastatic cancer of the brain and spinal cord it would be helpful.

Dr. ALFRED REGINALD ALLEN of Philadelphia said that in compiling some statistics a few months back he and Dr. Frazier had been very much interested and not a little surprised to receive statistics from a well-known surgeon who made the statement that of all cases of cancer of the breast he had seen, a good many (70 per cent.) had given metastasis to the spinal column. We saw not only metastasis to the brain, but we quite frequently saw cord involvement through metastasis from the bone.

Dr. ARCHIBALD CHURCH of Chicago said that it had been his misfortune to see a number of women who had had cord metastasis from the breast during the last three years.

Dr. L. F. BARKER of Baltimore stated that he wished to speak of a practical point about the relief of root pain. We all knew how often morphine wore out and how big the dose had to be made. Schlesinger had put out a formula that had been used in the Johns Hopkins Hospital with great satisfaction. Two doses a day would usually keep the patient easy. The formula was as follows:

Scopolamine hydrobrom., 0.0025.
Morph. hydrochlor., 0.2.
Dionin, 0.4.
Distilled water, 10.
M. Sig.: Seven drops hypodermically every twelve hours or oftener.

It was a very small dose of scopolamine and of morphine, but it was remarkable how it relieved the pain.

Officers.—The following was the result of the election of officers: *President*, Dr. E. W. Taylor, Boston; *secretary-treasurer*, Dr. Alfred Reginald Allen, Philadelphia.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-first Annual Meeting, Held in Washington, May 9, 10 and 11, 1916.

THE PRESIDENT, DR. SEWALL OF DENVER, IN THE CHAIR.

Tuesday, May 9—First Day.

President's Address.—Dr. HENRY SEWALL of Denver made a brief address in which he referred to the influence and the records of the Association and believed that their best interests were to be had in casting out the weak and letting in the strong. In their ranks were a large number of men, rich in potential forces, men who were greatly to be welcomed. They should seek a broader intercourse with men and especially with those men who had recently entered their ranks. The Association had at present an issue which they should encourage, the plan for establishing a National Board of Examiners and he hoped that the work that the late Dr. Rodman had begun would be carried out. The menace which now confronted the race was that children in general seemed less and less imbued with the respect for truth; if this was a fact it was time for them to make some suggestions and consider methods for the correction of this. Scientific investigations were all desirable; truth itself demanded that they should seek the limitations of science. Faith, hope, and charity might add to what they were after—truth. So-called pure science was the indispensable servitor of truth. In all schools and colleges it had been agreed that the atmosphere that was surrounded by truth was ideal. Truth would rule the mind and the conduct of people.

Biochemistry of Acidosis.—Dr. LAWRENCE J. HENDERSON of Boston read this paper by invitation. He said that whatever the causes might be there was a common result which involved the normal chemical equilibrium. It was not at all difficult to discover the changes, or the largest change in the body. The great change was a diminution in the bicarbonates in the blood. The three elements to consider in the body with respect to the topic under discussion were (1) water, (2) sodium chloride, and (3) the bicarbonates. To understand how any diminution in the bicarbonates came about was not a difficult matter. It should be remembered that everything was related in the body to every thing else, and nothing was more far reaching in adjustment than this. The equilibrium to be maintained between acidosis and bases involves bases which could yield alkalies. The alkali was split off from the base, or probably from an unknown source, and the alkalies became mobilized. To treat a nephritis with large amounts of sodium chloride he believed was malpractice. On the other hand, nothing was easier than to treat acidosis with moderate quantities of an alkali. Small quantities of sodium chloride alone might render the urine neutral or faintly alkaline; then there would be no difficulty or ill effects from the acidosis.

Acidosis in Infants and Children.—Dr. JOHN HOWLAND of Baltimore said that acidosis in children was a dangerous condition, for after treating infants and children with this condition they must as a rule treat some chronic disease and with the constant fear that the acidosis might return. He divided acidosis into (1) that due to acetone bodies in excess, and (2) that not due to the formation of acetone bodies in excess. In acidosis there was nearly a complete anuria; the body could not rid itself of the acids and so developed an acid equilibrium. In nephritis in children acidosis might develop as it did in adults. It was quite generally assumed that the acetone bodies were abnormal and that their presence signified an unusual complication in the course of disease, whereas one might liken the mere presence of acetonuria to fever, for it occurred in most of the infectious diseases of childhood with much the regularity that fever did. The quantitative difference between the mere presence of the acetone bodies and their production in sufficient amount to threaten life was an enormous one. To guard against the deleterious influence of acids formed or introduced into the body, a most efficient mechanism was available. It was only necessary to consider the mechanism from the standpoint of the blood since this served to regulate the reaction for the entire body. The important constituents of the blood influencing this regulation of the reaction were sodium bicarbonate, occurring chiefly in the plasma; the acid and alkaline phosphates of potassium, found almost entirely within the red blood cells, and the proteins. Acids, whether formed in the body or introduced from outside, displaced the carbonic acid from the sodium bicarbonate and set carbon dioxide free. This excess of carbon dioxide was removed by the increased pulmonary ventilation, leaving a neutral salt, sodium oxybutyrate, or chloride, or what not, to be removed by the kidneys. Such a mechanism allowed relatively large amounts of abnormal acids to be at once rendered innocuous and removed. Thus dyspnea, or more properly hyperpnea, under abnormal circumstances, was an agent of the greatest value in ridding the body of carbon dioxide and keeping the reaction within normal limits. Hyperpnea was the best evidence of acidosis to be obtained by physical examination alone. The second defense of the body by which acids were removed was elimination by way of the kidneys; these have the capacity to excrete an acid urine from a nearly neutral blood. The third method of defense was offered by the proteins and depended upon their amphoteric character. These three means of defense acted synchronously and resided in the blood itself. The body possessed a further means of defense in that it was able to neutralize acid by the production of alkali in the form of ammonia. In childhood acidosis resulting from the production of abnormal acids was found chiefly in diabetes and recurrent vomiting. A study of diabetes in children showed very well the enormous amount of acid that might be taken care of with no disturbance of the reaction of the blood and with no effect upon the respiration. In recurrent vomiting the conditions were more obscure and less understood than in diabetes.

Acidosis in Acute and Chronic Disease.—Dr. CHANNING FROTHINGHAM of Boston said that with the improvements in the methods now employed in detecting

acidosis the subject had increased tremendously in interest in recent years. The occurrence of acidosis in diabetics had long been known. Recently one of the profession had shown and demonstrated to us that in a great many of the acute infections and diseases of childhood this condition was present. During the past winter in Boston the cases had been studied as they came in and it was learned that acidosis occurred among adults as it did in children.

Investigations in Diagnosis and Treatment of Acidosis.—Dr. L. G. ROWNTREE of Baltimore, Md., described a method of diagnosis which he said was very simple and rapid, fifty demonstrations having been made in one afternoon. He thought the nomenclature of this disease should be considered by the Association. With regard to acidosis in diabetes he reported briefly one case in which all known methods of treatment had been applied. Alkalies were given in sufficient quantity to correct the hydrogen-ion concentration, in other words, the blood became alkaline; but in spite of this the hydrogen-ion concentration (the acetone bodies) in the blood persisted in twice the normal amount, and then the patient died in an attack of typical diabetic coma. This went to show that one could correct the acidosis without changing the patient's condition.

The Etiology of Pellagra.—Dr. EDWARD J. WOOD of Wilmington, N. C., presented this subject from the standpoint of a deficiency, but this deficiency was regarded as more specific than had been generally thought. Corn was thought by the writer to bear the same relation to pellagra as rice to beriberi. The evidence of the correctness of this view was proven both by experimentation on the pigeon and by evidence found in the literature of outbreaks of pellagra brought about by eating highly milled meal which were promptly controlled and corrected by feeding whole meal. The fault lay in two factors. The first was the heating of corn in the kilns above 120° C., which was enough to destroy the vitamine. The second was the removal of the fat containing germ from the grain. The remedy consisted in feeding the victims the whole grain and this plan was also prophylactic.

The Treatment of Typhoid Fever by Intravenous Injections of Sensitized Typhoid Vaccine Sediment.—Drs. FREDERICK P. GAY and H. T. CHICKERING of the University of California presented this communication. This report dealt with slight amplifications of the cases already given by the authors. It included a number of additional cases and also a continuation of the laboratory studies. The series consisted of between 75 and 80 cases of typhoid fever in which the diagnosis had been verified by blood culture and the Widal tests. In these cases the majority had been treated with intravenous injections of polyvalent, sensitized typhoid vaccine sediment as already recommended for prophylactic use by Gay and Claypole. The routine treatment of these cases, apart from this specific treatment, had varied somewhat, as the cases occurred in the practice of a large number of physicians, and both in hospitals and private houses. The mortality had been about the same as the best hospital normal, from 9 to 10 per cent. Very distinct benefit, however, had been produced by the vaccine treatment in cutting short the duration of the disease. Over 40 per cent. of the cases had been abortively cured, that is to say, the temperature had returned to normal within a week following the first use of the vaccine. In 25 per cent. more of the cases each injection of the vaccine had been followed by a successive fall in the temperature level and a more gradual return to the normal temperature in periods that had been distinctly affected by the treatment. The nature of the reaction produced by these injections and the correlation of the severity of the disease and the blood findings in relation to the results produced, would be considered as well as suggestions that might be useful in still further perfecting this method of procedure in the near future.

The Physical Signs and Symptoms of Wounds of the Chest.—Dr. C. P. HOWARD of the University of Iowa reported a series of 107 cases, of which 87 were thoroughly studied. The wounds were produced by rifle or machine-gun bullets (45) or by shell as shrapnel, high explosive, or hand grenades (42). In one group (15) no signs could be found. In Group II either pneumonia (4) or simple serous effusion (2) was found. In Group III mediastinitis (one case). In Group IV a hemothorax was found which was either infected (9 cases) or non-infected (56 cases). The infecting organisms varied. The symptoms were cough, pain, hemoptysis of varying degree and dyspnea. There was usually fever present. The physical signs suggested rather a consolidation than fluid owing to the great compression of the lung. The cardiac displacement was often striking. In eight cases unequivocal and in five others suggestive signs of pneumothorax were present. In four cases a pneumonia existed on the side opposite the hemothorax. Secondary hemorrhage into the pleural cavity was rare, only one case being noted. Simple fibrinous pericarditis occurred in three cases and in one a pneumopericardium. The treatment consisted of free drainage in the infected cases and of simple aspiration or of oxygen-replacement. The mortality was only 7 per cent. in the entire series.

Wednesday, May 10— Second Day.

Election of Officers and Members.—*President*, Dr. George Dock; *Vice-President*, Dr. Francis H. Williams; *Secretary*, Thomas McCrae; *Recorder*, Dr. Thomas R. Boggs; *Treasurer*, Dr. J. P. Crozier Griffith; *Councillor*, James B. Herrick; *Representative on the Executive Committee of the Congress of American Physicians and Surgeons*, Dr. Theodore C. Janeway; *Alternate*, Dr. Richard P. Strong.

Elected to Honorary Membership.—Dr. William C. Gorgas, Surgeon General, United States Army; Dr. George M. Kober, Washington.

Elected to Active Membership.—Dr. Charles C. Bass of New Orleans; Dr. Nellis B. Foster of New York; Dr. J. Ramsey Hunt of New York; Dr. James W. Jobling of Nashville; Dr. Howard T. Karsner of Cleveland; Dr. Francis W. Peabody of Boston; Dr. Peyton Rous of New York; Dr. Walter R. Steiner of Hartford, Conn.; Dr. Albert E. Taussig of St. Louis, Mo.; and Dr. Rollin Turner Woodyatt of Chicago.

Elected to Associate Membership.—Dr. Frederick M. Allen of New York; Dr. Alphonse R. Dochez of New York; Dr. Charles W. Edmunds of Ann Arbor; Dr. John H. Eyster of Madison, Wis.; Dr. Arthur D. Hirschfelder of Minneapolis; Dr. Arthur S. Lovenhart of Madison; Dr. Herman O. Mosenthal of Baltimore; Dr. Edward Carl Rosenow of Rochester, Minn.; Dr. George C. Shattuck of Boston, and Dr. Gerald B. Webb of Colorado Springs.

Lipase in the Urine of the Tuberculous.—Dr. WILLIAM CHARLES WHITE read this paper. He undertook a study of the lipase in the urine in tuberculous patients and found that there was a disappearance of fat in the animal body, and also an accentuation of the destructive process itself in the animal bodies succumbing to this disease. The fact that lipase act on the tubercle bacillus itself had also been shown. In all 194 separate tests had been made and the very useful method of Hulet was used; this method was published years ago. In order to rule out the possibility of the influence of food, etc., he took all the urine passed at each time for six days. In one case 19 separate tests were made, in another, 28; in another, 42, and in another 9. All were distinct cases of tuberculosis and in a dying condition. There were 73 tests made in the early cases, cases that were improving and those that had no fever. In one case of pneumonia with high fever and in one case with typhoid fever, a number of tests were made. In conclusion Dr. White said that in the urine of normal individuals, apparently normal, with tuberculosis and without fever, there was no lipase. They were practically normal individuals. In the urine of the advanced cases with fever and oncoming fatality, there was a marked variation in the lipase content. The increase in the lipase content preceded the accompanying fever. There was no lipase in the cases of pneumonia when there was a high fever.

Leucemia, Lymphosarcoma, and Hodgkin's Disease.—Drs. C. H. BUNTING and J. L. YATES presented this communication, and called particular attention to the difficulties encountered in making the diagnosis. There was a group of diseases in which the gland enlargement was a feature of the disease. To summarize the common factors there was the presence of the history of primary infection as well as some trouble in the buccal cavity. There was this progressive glandular enlargement with or without tumors. There were moderate anemia and a late fever. There was a fatal termination in all the cases. There was the occurrence of a true course of the disease, Hodgkin's blood picture or the leucemic blood picture. Bacteriologically the condition was characterized by considering the presence of the diphtheroid organism. Pathologically they might place the disease into one of three groups. First, the Hodgkin group proper; here they met with a marked destruction of the lymphocytes and a proliferation of

the endothelial cells and fibroblasts. In this group they often found the leucemic blood picture. Secondly, this was the group of the so-called large-celled lymphoma, a group commonly called pseudoleucemia. Thirdly, there was the group of small-celled proliferation, a lymphocytoma. The evidences all pointed to the etiological value of the diphtheroid organism.

Renal Function in Serum Disease.—Drs. W. T. LONCOPE and F. A. RACKEMANN presented this report. During the past two years they had made a careful study of renal function in ten cases and the method employed was placing the patients on a diet consisting of a certain amount of sodium chloride and then determining the output in the urine. The charted results were very interesting.

Studies of the Actual Constituent, in Crystalline Form, of the Thyroid.—Dr. E. C. KENDALL of Rochester, Minn., read this paper. He said that the investigation of the iodine compound isolated from the thyroid, had shown that it possessed the characteristic activity of the gland and was its actual constituent. Its isolation in pure crystalline form had been perfected, and preliminary experiments suggested that its function was concerned with the metabolism of amino acids.

The Pathological Changes in the Sympathetic System in Goiter.—Dr. LOUIS B. WILSON of Rochester, Minn., presented this paper, which was illustrated with lantern slides. The paper was based on a study of cervical and other sympathetic ganglia removed at operation and from patients with goiter, the results being controlled by a study of the ganglia from non-goitrous patients. Sections of the ganglia, stained by various methods, showed extensive histological changes, consisting of various stages of cell degeneration, viz., hyperchromatization, hyperpigmentation, chromatolysis, and atrophy or granular degeneration. So far as might be determined from the small number of specimens examined (25 cases), the pathological changes in the ganglia were paralleled to the stage and intensity of the symptoms of hyperthyroidism and to the hyperplastic and regressive change in the thyroid.

Dissociate Jaundice. — Drs. C. F. HOOVER and M. A. BLANKENHORN of Cleveland presented this communication in which they told of the methods employed in detecting bile pigment in plasma and in the urine, the method of isolating the bile salts in the urine, etc. Dissociate cholemia and dissociate choluria might be correlative in many cases, and not the consequence of dissociate biliary retention. Pigmental jaundice without bile salts was invariably hematogenous and never originated from dissociated hepatic retention of bile pigment. Pigmental choluria without bile salts was frequently a survival of complete biliary retention. Pigmental choluria without bile salts occurred only in hematogenous jaundice. Bile salts were not present in hematogenous cholemia. Bile salts unaccompanied by bile pigment might have occurred in the blood of primary anemia and lead poisoning. Bile salts unaccompanied by bile pigment might occur in the urine as a consequence of dissociated retention of bile salts in primary anemia and lead poisoning. The presence of bile salts in the urine without bile pigment was (with primary anemia and lead poisoning excepted) always due to renal dissociation of complete cholemia on account of the absorption of bile pigment in the plasma and the escape of bile salts through the renal filter. The maximum cholemia (pigmental) without choluria might be both hematogenous and hepatogenous. Obstructive jaundice yielded only moderate cholemia and choluria. When cholemia was pronounced from obstructive jaundice, choluria would develop. In hemolytic and infectious jaundice there might be pronounced cholemia without choluria.

Pancreatic Changes in Latent Syphilis. — Dr. A. S. WARTHIN of Ann Arbor, Mich., read this paper, which he illustrated with lantern slides. The histological study of the material from seven autopsies in deaths from diabetes showed in all syphilitic lesions in the myocardium and aorta, the presence of spirochetes being demonstrated in five cases. In all of these cases marked changes were found in the pancreas of the nature of interstitial pancreatitis, both interlobular and intra-acinar. This led to the study of the pancreas in a large number of other cases of latent syphilis with the result that in no case was a normal pancreas found. In all cases of latent syphilis this organ showed marked changes in the form of a diffuse or patchy fibrosis with active inflammatory foci corresponding to the localization of the spirochetes. The relationship of these changes to diabetes was discussed.

The Control of Malaria by Treating Malaria Carriers. —Dr. C. C. BASS of New Orleans presented this paper, which was illustrated by lantern slides. Where malaria prevailed there were many more malaria carriers who were not known to be infected than there were persons who had acute symptoms of malaria. In much of the country where malaria prevailed it was not practical at present to install and maintain measures that would prevent the breeding of mosquitos, nor to protect all the inhabitants, including the carriers, from their bite. Koch advocated the possibility of control and eradication of malaria by finding and treating all infected persons in the community. Experiments and a demonstration of this method on a large scale were now being made in Bolivar County, Miss., in the heart of the malarial section of the South. The work had advanced sufficiently to show that in this county, which was believed to be representative of a large part of the South in which malaria was most prevalent, the cooperation of all the people could be secured to the extent of making a complete malaria survey and inducing all to take quinine as directed. The cost of the control of malaria by such a method would be very small compared to the cost of controlling it by the known methods of mosquito control. Lantern slides were presented showing the prevalence of malaria, the importance of the malaria carriers, and some of the results obtained in this experiment.

Clinical Observations on Intestinal Autointoxication, Especially as Regards the Specificity of Toxin. — Dr. THOMAS R. BROWN of Baltimore presented a study of two cases of chronic eczema and urticaria of long standing, with definite hypersensitiveness to various proteins, and of a case of choroiditis apparently due to definite infection of intestinal origin.

The Bile Content of the Blood in Pernicious Anemia.— Dr. A. M. BLANKENHORN of Cleveland presented this paper. He said that while investigating the nature of the jaundice in pernicious anemia, the observation was made that many patients, although distinctly jaundiced, showed no bile in the urine. The blood plasma, however, in every case showed a corresponding jaundice. These plasmas when presenting a jaundice of certain intensity all gave a chemical test for bilirubin. Urobilin was found in the plasma of none. There was often a higher concentration of bilirubin in the plasma, coincident with the absence of bile from the urine, than was found in the plasma of patients with certain lesions of the liver which were always characterized by bile in the urine. Bile salts were found in the plasma in ten out of thirteen cases. The cases showing the highest concentration of bilirubin in the plasma were those showing evidence of the most active blood destruction, that was, anemia, jaundice, and increased urobilin in the stool and urine. The cases showing highest concentration of salts were those in which the nerve lesions predominated.

Anatomical Approaches to the Problem of the Functional Psychoses, Including a Particular Study of Five Brains.—Drs. E. E. SOUTHARD and M. M. CANAVAN of Boston presented this paper, which they illustrated with lantern slides. They stated that at the bottom of all work with the functional psychoses should be a series of cases anatomically verified. Massachusetts institutional material had been culled to secure such a series, and a summary of previous published work was offered. New York with Boston State Hospital material was offered from which by successive refinements and eliminations a series of five cases was obtained from an initial group of over 150, in which five cases a number of somewhat equivocal microscopic appearances were found, sometimes in remote parts of the cerebral cortex not often examined. These cases were all of long-standing, yet had brains of approximate normality in the gross (systematic photography available). The problem of the essential functionality of these five cases was then considered. Were there cases of severe chronic mental disease in which the brains were intrinsically normal?

The Roentgen Ray in the Diagnosis of Cancer of the Stomach.—Drs. JULIUS FRIEDENWALD and F. H. BAETJER of Baltimore presented this communication, which they illustrated with lantern slides. In the *x*-ray study of cancer of the stomach, they said it was important to recognize the varying positions and functions of the stomach under normal conditions. The greatest difficulty arising was that the stomach was not a hard fixed subject, for they knew that a perfectly normal stomach might present great variability, not only as to position, but as to motility and expulsion of contents.

We might divide the various types of stomach into three classes—first, the stomach of the fleshy individual; second, the stomach of the medium weight individual, and third, the stomach of the thin individual. We had no hard and fast rule, therefore, according to which the stomach could be said to empty in a certain number of hours and that if this time was prolonged, that the conclusion was reached that we were dealing with some pathological condition. In the first class, the stomach emptied in about three hours. In the third class it took about six hours, and so that the question of any beginning obstructive lesion was dependent very largely on the character of the stomach with which we were dealing. A third difficulty was to be encountered in the fact that the motility of a normal stomach might be naturally affected by conditions outside of the stomach itself. In dealing with carcinoma of the stomach their determination of the special lesion was dependent upon the study of several conditions. Namely, the peristaltic waves of the stomach and the many irregularities or filling defects in the stomach itself. We might divide the carcinomatous lesions of the stomach into three classes: first, lesions in the cardiac end of the stomach; second, lesions in the body of the stomach, not affecting the orifices; third, lesions at the pyloric end of the stomach. The carcinomatous lesions of the various portions of the stomach varied materially and had their characteristic *x*-ray pictures. Differential diagnosis between carcinoma and ulcer was often most difficult. The *x*-ray often furnished important evidence as to whether the tumor was or was not operable in as much as it definitely established the location and extent of the growth and degree of obstruction.

The Main Factors Affecting the Intensity of the Sounds as They Pass from the Interior of the Lungs to the Periphery of the Chest. — Drs. GEORGE W. NORRIS and C. M. MONTGOMERY of Philadelphia presented this paper which they illustrated with lantern slides. They stated that the main factors diminishing the intensity of sounds as they passed from within the bronchi to the external chest surface were reflection and diffusion. Reflection might be a potent factor where vibrations passed between media of different densities as air and fluid or air and tissue. Sound was not much affected in its passage between fluid and tissue because the differences in density were not sufficiently marked. Marked vocal resonance occurred over solid lung because the parenchyma was airless, thus eliminating reflection in this part of the lung. The vocal resonance might also be increased when fluid separates a solid lung from the chest wall. In the normal lung, on the other hand, reflection took place between the bronchi and the surrounding air, between the tense membranous tissues of the parenchyma and the adjoining air, and between the air in the lung and the chest wall. Diffusion, while more or less a constant factor in all conditions, plays a special part in pleural effusion, the sounds becoming spread out or diluted as they pass from the lung surface in contact with the fluid to the point on the chest revealing diminished vocal resonance.

(To be continued.)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. A Layman's Handbook of Treatment. By LAWRASON BROWN, M.D. Published by Lea & Febiger, Philadelphia and New York. Second Edition. Thoroughly revised. 184 pages. Price, $1.25 net. Cloth.

PROFILAXIS DEL TIFUS EXANTEMATICO. Por el DR. D. MANUEL MARTIN SALAZAR. Published by Enrique Teodoro, Madrid. 59 pages.

TRANSACTIONS OF THE THIRTY-SEVENTH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION. Held at Niagara Falls, Canada, June 1, 2, and 3, 1915. Published by the Association, N. Y. 402 pages.

ON MODERN METHODS OF TREATING FRACTURES. By ERNEST W. HEY GROVES. Published by William Wood & Company, New York. Illustrated. 286 pages. Price, $2.75 net.

Therapeutic Hints.

Roentgentherapy of Venereal Bubo.—E. Kilbourne Tullidge mentions a good and efficacious treatment for venereal bubo which he says was accidentally discovered by a German medical officer in charge of a mobile Roentgen apparatus in the field. He treated the inflammatory swellings symptomatically with roentgentherapy (10-20 X with a 0.5 mm. aluminum filter) with the result that fluctuation, pain, redness, and swelling gradually disappeared and the retrogressive changes that followed left only a small pigmented spot on the scar.

Calcium Sulphide in Bichloride Poisoning.—In the MEDICAL RECORD of July 1 (p. 29) reference was made to Rickett's recommendation of calcium sulphide as an antidote to bichloride of mercury. For every grain of mercury which has been taken he gives one grain of calcium sulphide by the mouth and repeats it every two hours until five doses have been taken. In the item referred to this was erroneously written five grains instead of five doses.

Purgative Rendered More Palatable.—One-half teaspoon of aromatic spirit of ammonia added to a dose of salts improves the taste and removes the nauseating effect for most patients.—*The Nurse.*

Orange Peel as a Cholagogue and Peristaltic Stimulant.—Rosenthal, a medical officer on active service with the French army, has been using plain orange peel prepared in the following manner as a means for improvement of the intestinal conditions of the soldiers in his charge: Fresh orange peel is boiled in about a pint of water for half an hour; this water is removed and may be used for a tooth wash. The softened peel is then boiled for another half hour in fresh, slightly sweetened water, removed and dried, when it is ready for use. The peel of one orange is an average dose. While the intestine is acted upon mechanically, there is also an increased flow of bile which may continue for several hours.

Ammonia as an Enema.—T. A. Black offers the following prescription for an enema to be used in the treatment of postoperative abdominal conditions where ileus and intestinal paresis may be present: Liquor ammoniæ fortior, 1 dram; water, 1 pint; a hypodermic of pituitary extract, 1 c.c., given half an hour before the enema produces an increased effect. The enema must not be used too frequently or in succession, or any stronger than the prescription above given, as otherwise injury to the intestinal mucous membrane is liable to occur. The enema produces a large movement and discharge of flatus.—*The Lancet.*

Another Use for Epsom Salts.—A saturated solution of Epsom salts applied to linen stained by iodine entirely eradicates the stain without injury to the material.—*The Trained Nurse.*

A Harmless Antiseptic Dressing.—Where personal idiosyncracy contraindicates the use of bichloride as a dressing for wounds, erysipelas, etc., the following answers as a general antiseptic:

℞ Sodium citrate, 0.5.
Sodium chloride, 3.0.
Distilled water, 100.0.

Prevention of Bed Sores.—

℞ Sodium chloride, ʒij.
Whiskey, Oj.

M. sig.: Apply to parts twice daily.—*Western Medical Times.*

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Original Articles.

CULTIVATION OF THE ORGANISMS OF VACCINIA, VARIOLA, AND VARICELLA.

BY HORACE GREELEY, M.D.,

BROOKLYN, N. Y.

IN the MEDICAL RECORD of Aug. 1, 1914, I gave an account of a diplococcus-like organism which I had "found to be constantly present in vaccinia virus, in vaccine vesicles, in varicella vesicles, and in the vesicles and pustules of such cases of variola as had been available." Since this time I have been studying the behavior in cultures of the organisms, and investigating various serological and immunological factors in connection therewith. In the present article I will recount some cultural experiments that may be easily performed by anyone, and detail other work which I have completed.

Appearances in Vaccinia Virus.—If a dilute smear be made of any specimen of commercial vaccinia virus or of Noguchi's rabbit-testicle preparation,* or of lymph from a human vaccine vesicle, and the smear be fixed and stained by one of the ordinary methods—preferably first "clearing" the specimen with 50 per cent. acetic acid—and care be used to avoid the formation of dye precipitates, a good many distinct, though minute, bipolar bacilli may be seen with aid of the usual oil immersion (1/12) lens and a magnification in the neighborhood of 1000 diameters. After one has detected these organisms and has made out that portion of their bodies, usually non-stain-taking, lying between their well staining poles, many oval non-stain-taking involution forms† may be seen, which in view of the cultural history (to be detailed), are probably in the process of "spore" formation or discharge. These latter are commonly very numerous in lymph from human vaccine vesicles.

Cultures from Vaccinia Virus.—Originally, cultures were made in pure hydrocele fluid, completely filling the hollow between a hanging-drop slide and its cover glass, the margin of the latter being sealed with paraffin. In such a culture, after two days, with the ordinary 600 magnification, a great many minute bipolar bacilli may be seen (as tiny globules) and clumps of branching organisms are numerous at the end of six days. In such fluid media all the organisms show a greatly exaggerated Brownian movement which tends to separate all daughter cells from their parents. Subcultures from such slides on ordinary solid media show no developments.

*Specimens of "strains No. 86 and No. 100" were used.

†In the Noguchi preparation such "spores" are not in evidence. This explains the relative short life of the rabbit testicle virus as compared to the skin produced vaccine.

In testing the suitability of various strengths of hydrocele fluid, several series of cultures were made, with the average results shown in the following table:

TABLE I.

HYDROCELE-FLUID-DILUTION MEDIA TESTS.

Each tube contained approximately 2 c.c. of total fluids; each was planted with one drop of one-in-ten vaccine virus (in saline solution, and taken from a market tube of virus); each had a blank control, and all were incubated, aerobically, at 37.5 deg. C.

	RESULTS—END OF SIX DAYS.	
Hydrocele Fluid Strength (Diluted with Salt Solution), per Cent.	Macroscopic	Microscopic
10, 15 and 20	0	Occasional bipolar bacillus.
25 and 30	Faint precipitate	Few bipolar bacilli.
35, 40, 45, 50, 55, 60	Slight precipitate	Many bipolar bacilli.
65,70, 75, 80, 85, 90, 95, 100	Faint precipitate	Few bipolar bacilli.

With 50 per cent. hydrocele fluid as a constant, and allowing for the saline contents of hydrocele fluid, the salt concentration of the media was increased in multiples of 0.9 per cent sall strength, with results as in the following table:

TABLE II.

SALINE CONCENTRATION EFFECTS.

Salt (0.9 per Cent.)* Concentration, Per Cent. of Total.	RESULT, END OF SIX DAYS.	
	Macroscopic.	Microscopic.
20	Very slight sediment	Few small bipolar bacilli.
33	Moderate sediment	Many small bipolar bacilli.
50	Heavier sediment	Great many bipolar bacilli.
100	Slight sediment	Few very small bipolar bacilli.
127	Slight sediment	Few very small bipolar bacilli.
160	Faint sediment	Few very small bipolar bacilli.
200	Faint sediment	Few very small bipolar bacilli.
250	0	Occasional one.

*Made from tablets each containing: sodium chloride, 2.250 gm.; calcium chloride, 0.075 gm.; potassium chloride, 0.025 gm. Four tablets to the liter used to make all the salt solutions. Same tablets were used in making bouillon. It is not thought, however, that the results would be any different with a 0.9 per cent. salt base of pure sodium chloride.

From the results given in Table II it was judged that a salt concentration of 50 per cent. was most suitable as a diluent. Therefore, using sterile distilled water in place of the saline recorded in Table I, a similar series of tests was carried out, with a similar result, only that the growth of organisms in each dilution was considerably greater (particularly so in tubes containing 50 per cent. hydrocele) than in the tubes of the series of Table I, and corresponded in development to "50 per cent." of Table II. To the last described favorable medium (50 per cent. hydrocele in distilled water) was then added glycerin in percentages from 0.1 to 50, and the same general procedure gone through with as before; and, while it was found that the addition of glycerin in all proportions exercised a slightly

unfavorable influence, still a few bipolar forms appeared in all strengths up to and including 5 per cent. glycerin. (It should not be forgotten that this applies to direct cultivation from vaccinia virus.)

In the course of many trials of various culture media it was found that after washing the surface of an ordinary Loeffler blood serum tube with lime water, a plant of vaccine virus would often yield a faint growth, which, though barely discernible macroscopically, supplied many bipolar forms to smear examination. On this account a series of cultures was made, as before, in 50 per cent hydrocele and distilled water, to which latter calcium oxide had been added in amounts to make the series of tubes contain a lime water (0.17 per cent. calcium oxide) strength running from 1 to 50 per cent.

After three days incubation, it was found that tubes containing lime water equivalent strengths between 1 and 20 per cent. showed heavier growths than controls without the calcium oxide. (It should be noted that tubes holding a lime water equivalent of 25 per cent. and over showed a distinct precipitate immediately after preparation.)

Bouillon was then substituted for the distilled water, and a series of tubes (containing 2 c.c. each of total fluid) was inoculated, and the same general procedure followed. After six days' incubation the results were as shown in Table III.

Dextrose added to the fluid media, even to the extent of 0.1 per cent., proved to have an unfavorable influence upon growth of the organism (on direct cultivation from virus).

TABLE III.

LIMED HYDROCELE-BOUILLON TESTS.

Lime-water-equivalent strength of media, 10 per cent.

Hydrocele Fluid, per Cent.	Bouillon, per Cent.	Macroscopic Appearance	Microscopic Finding
0	100	Faint precipitate	Few bipolar bacilli.
50	50	Marked precipitate	Many bipolar bacill
62 5	37 5	More marked precipitate	Great many bipolar bacilli.
75	25	Still more marked precipitate	Great many bipolar bacilli
87 5	12 5	As next above	Many bipolar bacilli.
100	0	None	Few bipolar bacilli.

From Table III it is seen that media consisting of about 70 per cent. hydrocele fluid and 30 per cent. bouillon, and containing a lime water equivalent of 10 per cent. (*i.e.* 0.017 per cent. calcium oxide) was quite suitable for the growth of the organism in question. Wishing to exclude more positively possibilities of the presence of organisms contaminating the hydrocele fluid, equal parts of bouillon, and the distilled water with various percentages of lime water, were tried and it was found that approximately 50 per cent. of bouillon, with 50 per cent. of distilled water—water from 10 to 100 per cent. saturated with calcium oxide—was very suitable for cultivating the bacillus.*

*In hanging-drop slide cultures, in medium composed of diluted hydrocele and sterile powdered guinea-pig skin, branching groups were observed in which no segmentation of central filaments could be seen, while terminal projecting filaments commonly developed spore-like bodies. This gave rise to the belief that the organisms were of the sporothrix variety. Subsequent free cultivation, however, showed their true nature.

TABLE IV.

GENERAL RESULTS—FLUID MEDIA (AS SHOWN BY A SERIES OF CULTURES SOWN WITH VACCINIA VIRUS).

Culture No.	Hydrocele, per Cent.	Bouillon, per Cent.	Diluent: Distilled Water	Diluent: 0.9 per Cent. Salt Solution.	Lime Water Equivalent, per Cent.	After Three Days Incubation: Macroscopic.	After Three Days Incubation: Microscopic.	After Five Days	Second Day Replant, Five Days, Loeffler.	Fifth Day Replant, Two Days Growth on Loeffler: Macroscopic.	Fifth Day Replant, Two Days Growth on Loeffler: Microscopic
1	100					Clear*	Few bipolar bacilli				
2	50			50		Clear*	Few bipolar bacilli				
3	25			75		Cloudy	Many bipolar bacilli	Large bipolar bacilli, surface gr'th		Profuse	Small and large bipolar bacilli
4	50		50			Clear	Many				
5	25		75			Clear	Great many		Few small bipolar bacilli		
6	100				10	Cloudy	Great many	As 3			
7	50			50	10	Clear	As 4		As 5		
8	25			75	10	Cloudy	As 5	As 3		Profuse	Sporulating bipolar bacilli
9	50		50		10	Clear	As 3				
10	25		75		10	Clear	As 3		As 5		
11	75	25				Cloudy	As 6	As 3		As 3	As 8
12	25	25	50			Cloudy	Few bipolar bacilli	As 3		As 3	As 8
13	50	50				Clear	As 4				
14	87	13				Cloudy	As 3	As 3			
15	43	7	50			Clear	As 12				
16	37	13	50			Clear	As 4				
17	50	50			10	Clear	As 12		As 5		
18	25	25	50		10	Clear	As 12				
19	75	25			10	Cloudy	As 12	Great many			
20	37	13	50		10	Clear	As 3				
21	87	13			10	Clear	As 3				
22	43	7	50		10	Clear	As 4				
23	33	34	33		**	Clear	As 4				
24	33	33		34	**	Cloudy	As 3	As 3			
25	50	50			**	Clear	As 12				
26	33	33		34	10	Cloudy	As 5	As 3		As 3	As 3
27		100				Clear	As 4				
28		50	50			Clear	As 5		As 5		
29		100			10	Clear	As 5		Sporulating bipolar bacilli		
30		50	50		10	Clear	As 12				

*Nearly all tubes showed some precipitate.
**Small piece of calcium carbonate added.

In preparing this medium, calcium oxide (Merck) was used, a small quantity being recalcined on a piece of platinum foil and dumped into a test-tube containing bout 4 c.c. of distilled water, the latter having just been boiled to expel the carbon dioxide. This tube was then centrifuged and the required proportion of the clear lime water was added to a tube containing bouillon, also just boiled with the same object.

Table IV is useful mainly to show in what varied media the vaccinia organism may be grown, and also that for a particularly successful transplant the sporulating stage must have been reached. Further, that this latter can be reached only under

TABLE V.—AGGLUTINATION TESTS.

Serum Tested				Twenty-four Hour Bouillon Growth					
				Variola organism		Vaccinia organism		Varicella organism	
Patient.	Disease.	Period.	Dilution.	Half Hour.	Hour.	Half Hour.	Hour.	Half Hour.	Hour.
S. A	Variola	Eruption	1-10	C.	....	C.	..	P.	C.
			1-20	C.	....	C.	..	S.	C.
			1-40	P.	C.	C.	.	O.	P.
			1-80	S.	C.	C.		O.	S.
			1-160	O.	S.	C.	..	O.	O.
S. A	Variola	Convalescence	1-10	C.	....	C.	...	P.	C.
			1-20	C.	....	C.	...	S.	P.
			1-40	C.	...	C.	...	O.	S.
			1-80	C.	....	C.	.	.	O.
			1-160	O.	S.	P.	C.	..	.
M. D.	Variola	Eruption	1-10	C.	..	C.	..	P.	C.
			1-20	C.	....	C.	...	O.	S.
			1-40	C.	..	C.	.	O.	O.
			1-80	P.	C.	C.	.	.	.
			1-160	O.	O.	P.	P.		
C. W	Variola	Eruption	1-10	C.	....	C.	....	P.	C.
			1-20	C.	....	C.	....	S.	P.
			1-40	C.	....	C.	..	O.	O.
			1-80	C.	....	S.	S.	.	.
			1-160	O.	O.	O.	O.	.	.
Four adults	Normal	Not vaccinated since infancy	1-10	O.	O.	S.	P.	O.	O.
			1-20	.....	....	.....	S.	.....	..
			1-40	.....	....	.....	O.	.....	.
			1-80	.....	....	.....	..	..	.
			1-160	.....	....	.....	..	..	.
Two adults	Normal	Not vaccinated since infancy	1-10	O.	O.	C.	C.	O.	S.
			1-20	.....	...	P.	C.	.	...
			1-40	.....	...	S.	C.	.	...
			1-80	.....	....	.....	O.	.	.
			1-160	.....	....	.....	..	..	.
Four adults	Normal	Successfully vaccinated within 3 months	1-10	S.	C.	C.	C.	O.	O.
			1-20	.....	O.	C.	C.	.	..
			1-40	.....		S.	C.	.....	...
			1-80	.....			C.	...	...
			1-160	....			O.	.	.
I. E. and M. E.	Varicella	Convalescence	1-10	O.	O.	C.	C.	O.	O.
			1-20	.....	.	C.	C.	...	...
			1-40	.....	..	O.	P.	.	.
			1-80	.....	...	.....	O.	.	.
			1-160	.....	...	.....	...	...	.
M. M.	Varicella	Convalescence	1-10	S.	P.	C.	C.	O.	P.
			1-20	.....	S.	P.	C.	.....	S.
			1-40	.....	.	O.	P.	....	O.
			1-80	.....	.	.....	O.	.....	....
			1-160	.....	....	.....	..	.....	..
Calf	Normal	Before use for vaccine production	1-10	O.	O.	O.	O.	C.	..
			1-20	.....	.	.....	...	C.	.
			1-40	.....	.	.....	...	P.	C.
			1-80	.....	.	.....	...	O.	S.
			1-160	.....	...	.....	...	O.	O.
Calf	After use for	vaccine production	1-10	S.	S.	C.	...	C.	...
			1-20	O.	O.	C.	...	C.	...
			1-40	.....	...	C.	.	C.	.
			1-80	.....	...	P.	C.	P.	C.
			1-160	.....	....	O.	S.	O.	O.
Six rabbits	Normal		1-10	O.	O.	O.	O.	C.	..
			1-20	.....	.....	.....	...	P.	C.
			1-40	.....	....	.....	.	O.	O.
			1-80	.....	...	.....	.	.	.
			1-160	.....	...	.....	.	...	.
Fourteen rabbits	After use for	vaccinia "seed"	1-10	O.	O.	C.	....	C.	..
			1-20	.....	.	C.	....	C.	...
			1-40	.....	..	C.	....	P.	C.
			1-80	.....	...	C.	...	O.	O.
			1-160	.....	..	P.	C.	..	..
Two rabbits	After use for	vaccinia "seed"	1-10	O.	O.	C.	.	C.	..
			1-20	.....	....	P.	C.	C.	....
			1-40	.....	....	O.	S.	O.	P.
			1-80	.....	...	.....	..	O.	S.
			1-160	.....	...	.....	.	....	O.
One rabbit	After use for	vaccinia "seed"	1-10	O.	O.	P.	C.	C.	...
			1-20	.....	....	S.	P.	C.	....
			1-40	.....	....	O.	O.	C.	..
			1-80	.....	....	.....	....	S.	P.
			1-160	.....	....	.....	....	O.	O.

Note. In this table the extent of agglutination is indicated as follows: No agglutination, O; slight, S; partial, P; complete, C.

aerobic conditions (note cultures 3, 6, 8, 11, 14, 19, 24, 26, from which highly successful transplants were made, and also cultures 5, 7, 10, 17, 28, whose transplants produced no macroscopic growth.

It is also apparent from this and the preceding tables that there is some element in both hydrocele fluid and bouillon that needs to be neutralized, or at least diluted, before much growth (primary plant) of the organism can take place. (In Table IV compare cultures 1, 3, and 6; 27, 28, and 29.)

It was some time before the appearance of large bacilli among the minute bipolar affairs was understood, since the temptation was to regard them as but contaminations, and it was not until the method of cultivating the organism upon solid media was discovered that any certainty was felt as to their rôle.

As a result of attempts (some successful and some not) to transplant the fluid cultures to solid media, direct cultivation of vaccinia virus upon solidified blood serum was essayed. Remembering the rôle of the limed bouillon in fluid cultures, and knowing the necessity of keeping cultures from drying; besides thinking of imitating the natural process by which the host's circulation carries off what may be called a parasite's sewage, the following procedure was adopted: The surface of an ordinary Loeffler blood serum tube was inoculated with a loopful of 10 per cent. vaccinia virus (in saline solution or distilled water) and upon this was dropped one or two drops of limed bouillon (bouillon 50 per cent. in distilled water from 10 to 100 per cent. saturated with calcium oxide). Tube was incubated at 37.5° C., and each day a drop or two of freshly prepared limed bouillon was made to flow over the surface of the media. In any case in which bouillon accumulated sufficiently to threaten to drown the culture it was pipetted off.

In cultures so treated there appears in about ten days, sometimes earlier, sometimes much later, a crop of low lying (flat) mucus-like, glistening colonies which, usually within 24 hours after they appear, begin to cause rapid peptonization of the media.

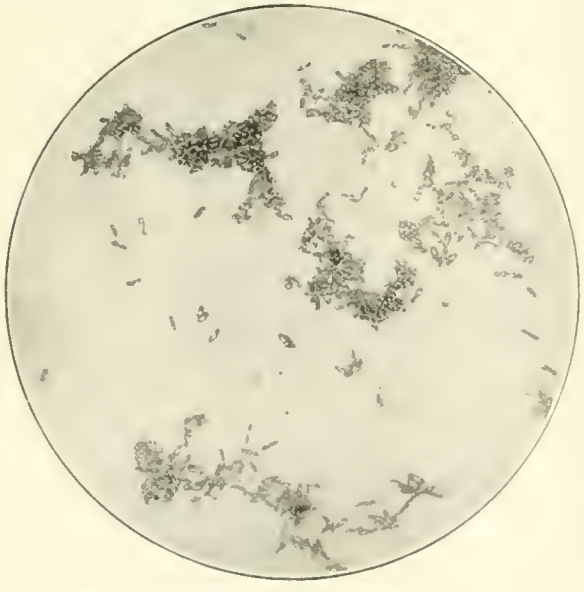

FIG. 1—Primary culture of vaccinia virus on Loeffler. Seventh day. Organism "sporulating." Stained by alkaline methylene blue. Magnification 1650.

Transplantation from such colonies on ordinary Loeffler serum gives rise, within 24 hours, to a profuse growth which usually covers the entire surface of the media and sometimes becomes wrinkled and curdy. Peptonization, with replants, begins quite uniformly within 24 hours. Transplanted to nutrient agar growth is uncertain but sometimes

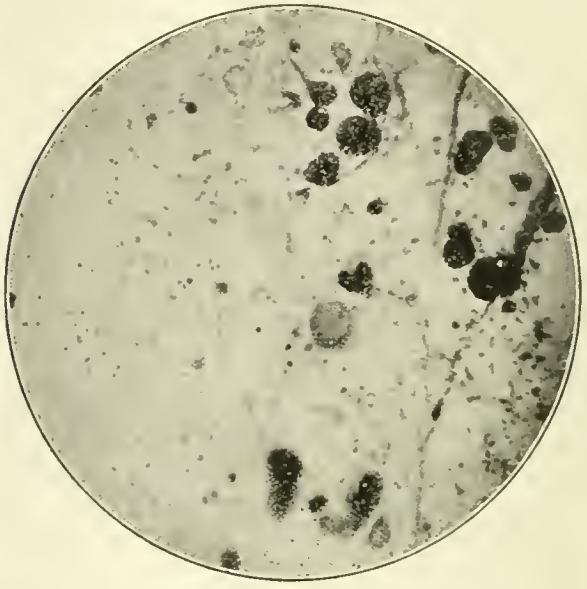

FIG. 2—Smear from pustule of S. A., a negro patient of the Kingston Avenue Hospital. Made at the height of a generalized variola eruption. Smear cleared with 50 per cent acetic acid, and then stained by alkaline methylene blue. Magnification 1650. It is seen that only the poles of many of the bacilli are stained.

(after extended artificial cultivation commonly) similar. Transplanted to bouillon, within 24 hours the medium is clouded, and sometimes a white matted growth appears a day or so later upon the surface. From the minute, bipolar, poorly staining bacillus of vaccinia virus we find in the fluid primary cultures described, after some three days, besides the same minute forms, large well staining bacilli, and others of intermediate size.

In the colonies which have developed upon solid media, as described, only the largest forms are to be seen, in various stages, either not distinctly showing the bipolar effect or with this very marked. Within 24 hours (after the first appearance of these solid media colonies) the organisms begin to "sporulate" (simultaneously with their peptonization of the media) when they show as non-staining centrally, oval-shaped bodies with a tiny "spore" in each end.* After the peptonization of the media is well advanced (within two or three days) nothing but the "spores" can be found, many appearing like the primary minute bipolar bacillus of vaccinia virus and young primary fluid cultures. These "spores" when planted in concentrated hydrocele fluid media usually develop only the minute form, so that by this procedure the organism can be restored to its vaccinia virus stage, or rather, development.

Appearances in Variola Virus.—Smears made from the vesicles and pustules of cases of variola show uniformly, and much more distinctly than vaccinia virus, small bipolar bacilli. When carefully stained, in a similar way to that recommended for vaccinia virus, these bacilli are very distinct and numerous. In the microphotograph of a variola

*Throughout this article I have put the word spore in quotation marks, since by it I mean one of the polar bodies that escapes from the involution oval shaped bacilli and grows into new bacilli, and not the involution form itself.

pustule smear, reproduced herewith, the outlines of most of the bacilli are poorly defined owing to the failure of photography to distinctly record lines depending mainly upon differences of refractility, such as surround the non-standing areas; but this is not

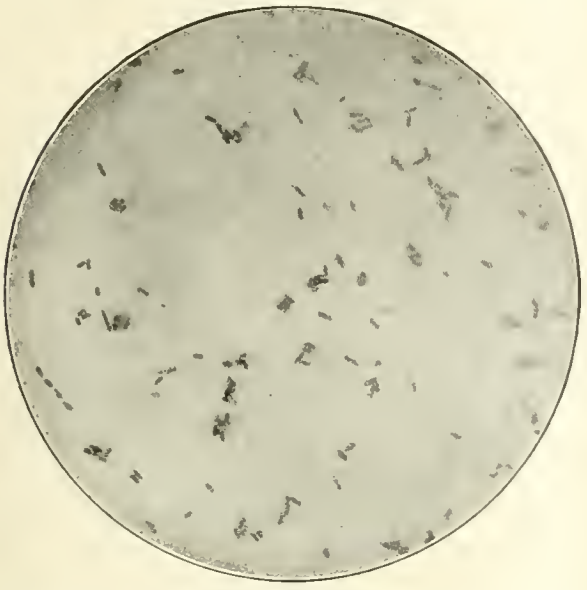

FIG. 3—Variola bacillus from culture on Loeffler's blood serum. Virus taken from pustule of S. A., a negro patient of the Kingston Avenue Hospital, at the height of a severe generalized variola eruption. Smear stained with alkaline methylene blue. Magnification 1650.

the case in direct observation of smears. As a case progresses to recovery, oval involution forms, similar to those of vaccinia virus, appear.

Cultures from Variola Virus.—Primary cultures from vesicles and pustules, made in limed bouillon (with or without hydrocele fluid) within 3 to 5 days show many of the small bipolar bacilli. Cultures made on Loeffler and regularly watered with limed-bouillon (as described in connection with vaccinia cultures) show within about ten days numerous low lying greyish colonies of very mucilagenous consistency.

Unlike the colonies of the vaccinia organism, developed under similar circumstances, there is but moderate tendency to subsequent liquefaction of the media, and the first few transplants usually refuse to grow on Loeffler unless it be "watered." After several generations, however, the organism will grow on plain Loeffler and will often partially digest it.

The appearance of the full grown bacillus from variola is very similar to that of the organism of vaccinia. In the microphotographs, actual differences seem very marked, owing mainly to different ages of the cultures used.

Cultures from Blood of Variola Case.—In one case, blood smears were examined at the height of the eruption and fever, and small bipolar bacilli were observed lying free in the serum and in about the same proportion as the leucocytes. It may be interesting to note that the latter had increased to about 24,000 per cubic millimeter, and were lymphocytes to the extent of about 50 per cent. Cultures made from the blood of this case gave exactly similar growths (by the same methods) as were obtained from the pustules.

Appearances in Varicella Virus.—The contents of the average varicella vesicle is usually very watery and organisms are correspondingly scarce. Yet every one from which a smear can be obtained, shows minute bipolar bacilli. The organisms are very numerous in smears made from severe cases. They resemble closely the bacilli of the variola vesicles.

Cultures from Varicella Virus.—Cultures from varicella vesicles, made and treated identically as those from vaccinia virus, give similar results. After two or three days in limed bouillon (with or without hydrocele) minute bipolar bacilli are numerous, and on solid media (Loeffler) "watered," as before, in about ten days a profuse development of grayish low lying mucilaginous colonies, which, in another 24 hours, liquefy the media. Replants from such liquefying colonies are very vigorous and grow very easily on plain Loeffler, liquefying it actively by the end of the first 24 hours.

The full grown bacillus from varicella cases is very similar to the vaccinia organism. In an epidemic of varicella this spring in a Brooklyn institution, smears were made of nasal and tonsillar mucus from three children who had been exposed to the contagion, and in two of the three cases bacilli exactly similar to the full grown varicella culture organisms were found. Both these children developed a varicella eruption two days later. Similar bacilli are uniformly present in the nasal mucus of active cases of varicella.

In the table which follows, the complete morphology of the organisms is given, as well as such differences between the three varieties as have been observed:

TABLE VI.—DETAILED CHARACTERISTICS OF THE THREE ORGANISMS COMPARED.

(Description applies to all except when it is stated otherwise).

I. MORPHOLOGY.

Vegetative Cells (a)

Medium: Loeffler blood-serum, wet daily with "enlivened" bouillon. *Temperature:* 37.5° C. *Age:* 7-10 days. *Form:* Long rods, quite variable in size—from 0.3 by 0.7 microns (as in virus smear) to about 0.6 by 3.5 microns (as in full development on Loeffler). Varicella organism is usually the longest. *Ends:* Rounded.

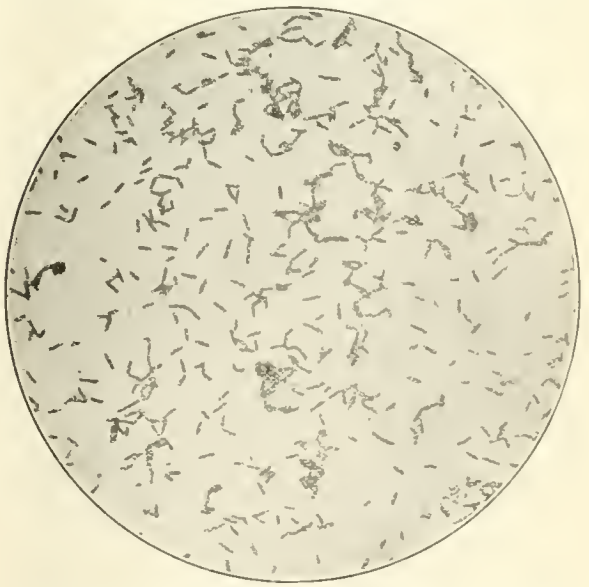

FIG. 4—Varicella bacillus. Primary culture from vesicle, 10 days on Loeffler. Stained by alkaline methylene blue. Magnification 1,650. This smear was made as soon as visible colonies developed, and just before organism began to "sporulate."

Arrangement: Small fluid-media forms—singly and in branching clumps; large solid media (aerobic) forms—commonly parallel and at acute angles (as diphtheria bacilli) sometimes in chains, especially the varicella bacillus.

Sporangia (b)

These involution forms appear in primary cultures, made as above, in about ten days; in replants in about three days. *Form:* Elliptical. *Size:* Slightly broader and shorter than fully developed bacilli. *Location of "Endospores":* Bipolar, sometimes unipolar. *"Endospores" (c)*

Form: Round; many, so soon as they escape, seem to divide and produce the minute bipolar form, as seen in the virus. *Size:* Round form, 0.3 microns; bipolar form, 0.3 by 0.7 microns (approximately). *Germination:* Bipolar, "spores" escape through rents in ends of cell wall.

Flagella (d)

Full grown bacilli, propagated in bouillon, are actively motile. The variola bacillus (full grown) does not develop active motion until after several generations in bouillon of a replant from primary solid media. Carefully stained by Gram's or Van Ermengen's method, a single short terminal flagellum may be seen.

Capsules (e)

Usually noticeable.

Staining (f)

Virus and vesicle smear forms, particularly, and those of primary cultures in "enlivened" bouillon are very difficult to stain, except at the poles. Full development forms stain easily with all the usual dyes. *Gram's:* Results vary somewhat with age of organisms; "spores" and polar areas are always positive.

2. Cultivation.

Loeffler's Blood Serum: Virus, vesicle, pustule (and, with variola—as found with the one case tried—blood, taken during the early stage of the eruption) plants, watered daily with "enlivened" bouillon, show, after 24-48 hours, the minute bipolar bacilli—usually there is no macroscopically visible growth. After 7-10 days, primary cultures usually show many round, glistening, greyish, low lying, viscid colonies. (I have seen a development appear, in a tube protected from drying out by a paraffined plug, as late as a month after sowing with vaccinia virus. Sometimes, when no macroscopic growth has appeared after a ten day incubation, a replant to a fresh tube will give prompt results) *Liquefaction:* This begins within 24 hours of the appearance of the viscid colonies described, and reaches its maximum within three days. *Replants:* If made from fully developed colonies of either the vaccinia or the varicella bacillus, replants on Loeffler usually produce abundant, flat, cretaceous growths, often wrinkled. Variola bacillus replant cultures, have, so far, invariably reproduced the original colony development, and usually show slight liquefaction of the surface of the media within three days. Vaccinia and varicella replants always produce liquefaction of nearly the entire medium. *Odor:* Distinct after liquefaction, especially in the cases of the vaccinia and the varicella organisms never putrefactive.

Bouillon: (limed, "enlivened") Primary cultures, during the first 48 hours, usually show no macroscopic change, but many minute bipolar bacilli may be found in the sediment. After 3-5 days these cultures often become cloudy, and show numerous bipolar bacilli of the small form, of intermediate size, and some of the full development. Replants from the cloudy cultures, and also replants from solid media (Loeffler) made in plain bouillon show diffuse clouding within 24 hours, or else, in the cases of the vaccinia and the varicella bacilli, a surface growth similar to the replant development described in connection with Loeffler's medium. Sometimes these two organisms will give the surface growth (without clouding of the bouillon) and sometimes a general clouding without the appearance of a scum. I have seen no surface development appear in the case of the variola bacillus.* In such transplants, the medium from which taken and the stage of development, seem to be the determining influence (with the vaccinia and varicella organisms) in respect to the form of growth in plain bouillon. The first few generations of the variola bacillus, replanted in bouillon, persist in the minute non-motile form but later develop, and continually reproduce, the large motile form. *Serum*, diluted with broth or water, effects a reduction of the variola bacillus (large form) to the minute non-motile form, when a transfer is made to it. The same may be effected in the cases of the vaccinia and the varicella bacilli (large forms) but is more difficult, since the large-bacillus form of growth tends to persist.

Nutrient Agar: Replants from profuse surface growth of the vaccinia and of the varicella bacilli sometimes show a growth similar to that which appears on Loeffler within 24 hours. The variola organism grows feebly or not at all, when so transferred.

3. Physical and Biochemical.

Gas Production: In bouillon containing 1 per cent. of dextrose, 48 hours, at 37.5°C. vaccinia bacillus: (2nd generation) produced no gas. Growth poor; variola bacillus: (8th generation) produced no gas. Growth poor. Varicella bacillus produced considerable gas.

Acid Production: In bouillon the growth of all three organisms (large forms) produce acid. In 48 hours the varicella bacillus, growing in 2 c.c. of this medium, developed acidity in it which required 0.07 c.c. of decinormal sodium hydroxide to neutralize.

Indol Production: In 0.5 per cent. Witte's peptone, after 72 hours at 37.5°C., the Salkowski test indicated a *feeble* production of indol by the vaccinia bacillus, a *very feeble* production by the variola bacillus, and a moderately large production by the varicella bacillus.

Vitality on Culture Media: All three organisms may be cultivated indefinitely under conditions described.

Drying: All three organisms are readily killed by drying.

Ferments: "Sporulating" forms liquefy Loeffler variola bacillus much less readily than the others.

*Since writing this, a slight surface growth on bouillon, of the variola bacillus, has been observed. It seems that the longer this organism is cultivated the nearer does its relationship become to the vaccinia organism.

TABLE VII.—COMPLEMENT FIXATION TESTS.

Serum Tested			Variola Antigen.		Vaccinia Antigen.		Varicella Antigen.	
Patient.	Disease.	Period.	Serum 0.01	Serum 0.02	Serum 0.01	Serum 0.02	Serum 0.01	Serum 0.02
S. A.	Variola	Eruption	++++	++++	–	–	–	–
S. A.	Variola	Convalescence	++++	++++	–	–	–	–
M. D.	Variola	Eruption	++++	++++	–	–	Not tested	
C. W.	Variola	Eruption	++++	++++	–	–	Not tested	
1	Normal adult	Not vaccinated since infancy	–	–	–	+	++++	++++
2	Normal adult	Not vaccinated since infancy	–	+	–	++	–+	++++
3	Normal adult	Not vaccinated since infancy	–	–	–	+	++++	++++
4	Normal adult	Not vaccinated since infancy	–	–	+	++	+++–	++++
5	Normal adult	Not vaccinated since infancy	–	+	–	–	+++	++++
6	Normal adult	Not vaccinated since infancy	–	–	+++	++++	++–	++++
7	Normal adult	Not vaccinated since infancy	–	–	–+		Not tested	
8	Normal adult	Successfully vaccinated within 3 months	–	–	–+	+++	Not tested	
9	Normal adult	Successfully vaccinated within 3 months	+	++	+++	++++	Not tested	
10	Normal adult	Successfully vaccinated within 3 months	–	–	+++	++++	Not tested	
11	Normal adult	Successfully vaccinated within 3 months	–	+	++++	++++	Not tested	
I. E.	Moderately severe varicella	Convalescence	–	–	–	–	–	–
M. E.	Moderately severe varicella	Convalescence	–	–	–	–	–	–
Calf	Normal	Before vaccination	++	+++	––	+	++	++++
Calf	After use to produce crop of vaccinia virus		++++	++++	–+–+	++++	++++	++++
Three rabbits.	Normal		+–+–	+–+–	+++–	+–+–	–+–+	++++
Six rabbits	After use to produce crop of vaccinia "seed" virus		++++	++++	++++	++++	++++	++++

Filtration: Cultures of all three organisms at the sporulating stage passed through Berkefeld filter (No. 5) give a filtrate from which new cultures (replants) may be readily obtained, on media described.

4. Pathogenicity.

Work in connection with pathogenic properties of these organisms, and natural and artificial immunity to them, is incomplete and will be the subject of a later publication.

Agglutination Tests.—In examining the table of agglutination tests we note that the variola organism was agglutinated, within one hour, in variola sera dilutions as great as 1-160, while with all of the six normal controls practically no agglutination developed. The sera of the recently vaccinated showed considerably greater agglutinating power over this (the variola) organism than that of the average adult; the varicella sera were totally lacking in this power. With the animal sera the results were inconclusive.

The vaccinia organism was clumped even more markedly than that of variola by variola sera. This organism was most specifically clumped by the animal sera tested, as is seen in the table in the case of both the calf and the rabbits.

The varicella organism was irregularly affected by all except the varicella sera which, strange to say, were the only ones totally without influence upon it.

From the standpoint of the sera examined we find indication from the table that specific value can be attached to the agglutination test in the case of variola.

Also that, in the case of vaccinated animals, their sera have specific agglutinative power over the vaccinia organism.

Complement Fixation.—It was found that the growth from the surface of Loeffler serum, before peptonization of the media had begun, was unsuitable for antigenic purposes since no filtered extract could be obtained which would give an anticomplement unit. If, however, peptonization had commenced (and this, as stated, is coincident with the breaking out of "spores") a definite anticomplement unit was easily found.

The antigen in the case of each of the organisms was prepared as follows:

The growth from the slant surfaces of four Loeffler serum tubes (usual 4-in. size) organisms of respectively, 3, 5, 7, and 14 days' growth (replants), was washed into 8 c.c.'s of normal salt solution, sealed in a tube and heated for one hour at 68° C. It was then filtered through Berkefeld filter No. 5 and tested.

Anticomplement units in the sheep-rabbit-guinea-pig hemolytic system (bulk of test 0.5 c.c.), were found to be as follows:

Variola antigen	0.15
Vaccinia	0.05
Varicella	0.10

Therefore, according to the usual procedure, one-fourth of these anticomplement units, made up to be contained in 0.15 c.c., were used in the tests detailed in Table VII.

Reviewing the table mentioned, we note that the variola antigen gave strikingly specific results with its corresponding serum. (The results were the same when half the antigen unit was used.) This antigen gave negative results with practically all of eleven sera taken at random from normal adults, four of whom had been successfully vaccinated within three months. Of these four, however, one gave a (+ +) and two a (+) reaction. Negative results were also obtained with sera from two children convalescent from varicella.* Results with animal sera are seen not to have been distinctive—possibly through failure to properly control the known anticomplementary action of such sera.

The vaccinia antigen gave irregular results with the normal adults, with the exception of those recently successfully vaccinated. The negative results, when tested with variola sera, are most interesting as contributing to the establishment of distinctions between the organisms in question. (The three cases of variola from which the sera came had never been vaccinated.)

Except, perhaps, with that from the calf in the case of the vaccinia antigen, the results with animal sera were generally unsatisfactory.

The varicella antigen, curiously enough, while it gave negative results with both variola and varicella sera, gave positive tests with most of the normal adult sera tried, as it did likewise with the animal sera.

Examining the same table for the results obtained with specific sera we note that the only clean cut results were from the variola sera. In the case of the others (with the exception of the inexplicable instance of the varicella sera) various plausible interpretations will suggest themselves to the reader.

Thanks are due to Dr. W. T. Cannon, resident physician, in charge of the Kingston Avenue Hospital, for opportunities to get material from cases of variola; to Dr. F. S. Fielder, in charge of the Department of Health Vaccine Laboratory, for blood from rabbits used to produce "seed" vaccine; to Dr. G. W. White, in charge of the Otisville Sanatorium Laboratory, for calf serum. Also to Dr. H. A. Reque, for material from varicella cases; to Dr. F. M. Sharpe, Dr. J. C. Kennedy, and to many other Brooklyn physicians, for the same.

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A PRACTICAL METHOD OF TREATMENT FOR "INOPERABLE" CANCER OF THE BREAST.†

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The purpose of this paper is to make known to the medical profession a method of removing the cancerous breast, which, as regards results, has as yet shown no subsequent remanifestation or recurrence of the disease within the limits of the operated area. Work and observation along this line now cover a period of seventeen years—my first operation having been performed in October, 1898. In all, sixteen patients have undergone the operation. The first eight cases were reported in the *American Journal of Surgery*, Nov., 1912. With two exceptions, the eight previously unreported cases herewith presented were operated upon at the Memorial Hospital for the treatment of cancer and allied diseases; the two exceptions at the West Side German Dispensary-Hospital.

The technique has undergone important modifications since 1912. It is earnestly hoped that the

*Results from these sera are offered with reserve, since they were negative throughout the series of tests for some unknown reason.

†Read by invitation, at Newark, N. J., January 25, 1916, before the sections of Surgery, Gynaecology and Obstetrics; under the ausnices of the section on Gynaecology and Obstetrics, of the Academy of Medicine of Northern New Jersey.

method will not be brought into disrepute through inadequate technical preparation; it is a surgeon's task; wherefore without the especial qualifications, it were better not undertaken.

Absolute removal of all cancer cells has been, and still is, the goal of all progressive surgical technique, with the result of gradually improving statistics. These statistics are, however, still far from holding out hope of ultimate absolute reliability along purely surgical lines, limits having been reached which may not safely be transgressed. The fatal defect lies in the inability of the operator to know at the termination of the operation whether or not all cancer cells are included in the removed tissue. Neither macroscopic nor microscopic examination permits of such a conclusion. Thus the only reliable proof of the removal of all cancerous cells in any operative area lies in the hazardous test of time.

These considerations, especially the frequent recurrences in the line of incision, have led me to proceed in an entirely different direction in the hope of avoiding local recurrence; and the striking fact of non-recurrence in the sixteen patients operated upon to date, indicates that there is a sound basis underlying the method. Yet I am not on that account here urging this treatment in the place of the usual surgical removal of mammary cancer in operable cases. Neither is it my intention to claim priority in the use of any of the agents employed in this work, or of any combination of them; the knowledge of their nature and use is common, and "old as the hills." Starting out with well-founded convictions as to the cause of local recurrence, following cancer operations in general, my idea was to develop in accordance therewith a simple and practical technique for the removal of the cancerous breast, to be, if possible, as extensive in scope as is the knife, but with the added advantage of an inflammatory reaction in the floor of the wound capable of destroying infected cells ordinarily responsible for local recurrence; also to accomplish this without possible further dissemination of the disease by manipulation or incision.

Theoretical Basis. — Theoretically, proliferating cancer cells scattered about in the tissues, comprising the floor of the usual amputation wound and commonly responsible for recurrence, are destroyed by a chemically induced inflammatory reaction attendant upon the formation of a "line of demarcation." This intense inflammatory reaction, penetrating deeply these floor tissues, constitutes a protective process, absent in other methods. The phenomena are:

1. Destruction by chemicals of the entire cancerous breast and isolated cancer cells, *in situ*.
2. Absolute avoidance of manipulative displacement onward of loose proliferating cells through vascular channels beyond the limits of the operative field.
3. Leisurely and safe necrotization of the condemned tissues to any necessary extent.
4. Phagocytic walling-off process of offense and defense, sealing all vascular channels preparatory to nature's own amputation at the line of demarcation.
5. Intense inflammatory reaction within the zone of tissues underlying the terminal or separated layer of necrotized tissue, followed by vigorous healthy granulations.
6. Regression, in varying degree, of enlarged axillary nodes.
7. Repair always vigorous and rapid, facilitated by autoplastic skin grafts, and resulting in a perfectly functionating, freely movable skin surface.
8. Unimpaired arm movement.
9. Absence of recurrence in the operated area.

This process is lethal to cells in that the active chemical agent is absorbed by the dormant tissues upon which it is spread. Cancer cells are not disturbed, but perish where they are overtaken. Avoidance of manipulation is ideal, as the destruction and daily removal of layers of devitalized tissues proceeds from above downward—the last layer being removed by natural processes. Leisurely the operation certainly is, as there is never occasion for haste.

Pain in the breast tissues in some degree there may be both before and during removal. Pain in the surrounding skin there would be, should one fail to protect the outlying or surrounding surfaces from the action of fluids draining away from under the dressings. This latter is, however, avoidable, while pain in the operative field is readily controlled. The method is free from shock, and therefore a perfectly safe operative procedure. It is particularly well borne by those well advanced in years, and by poor operative risks in general.

The *inflammatory reaction* is the key to the situation and solves the problem of local recurrence. The "walling-off" by an intense leucocytic exudate obviates the sudden severance and consequent exposure of defenseless tissue to possible reinfection.

Diminution of Axillary Nodes.—Where axillary lymph nodes are enlarged and there is no evidence of mediastinal involvement, as shown by a Roentgenogram, the nodes may be simply inflammatory, in which case they tend to rapid disappearance. When, however, the nodes have undergone hyperplastic, or fibrous changes, neither rapid nor total retrogression could of course be expected. My second case—still living—has carried such a node, unchanged, for nine years.

It is, of course, generally recognized that when the axillary nodes are invaded by cancer the prognosis for any form of treatment becomes very unfavorable. Greenough (*Annals of Surg.*, Vol. 46) reports that of 236 cases with palpable axillary nodes, only 12 per cent. were cured by operation, while of 275 similar cases, Finsterer (*Zeit. f. Chir.*, bd. 89) reports only 4.3 per cent. cured. With involvement of supraclavicular nodes, the condition is much more unfavorable. When the axillary nodes alone are involved, the chemical removal of such nodes cannot be claimed to be as thorough or radical in its operation as the dissection of the axilla by the knife. When both axillary and supraclavicular nodes are involved, the patient will probably sooner or later succumb to the coincident internal metastases, and the removal of nodes would not materially influence the prognosis. This at least is my observation.

Indications for Chemical Operation.—The exact scope of the applicability of the chemical operation is as yet difficult to determine. In a general way, to a believer in the "lymphatic permeation" theory of Handley regarding the mode of dissemination of cancer, it would seem reasonable to suppose that the "microscopic growing edge" could, with more certainty, be overtaken by the penetrating destructive action of zinc chloride and subsequent inflammatory reaction than by methods not accompanied by such phenomena.

At present, it is at least clear that the operation

has a definite field in the several groups of cases classed as inoperable. Particularly so in:

1. Cases of advanced inoperable carcinoma in which the local condition is intolerable to the patient and attendants by reason of ulceration, hemorrhage, suppuration, necrosis, fetor, and pain. Here the chemical operation speedily changes the intolerable condition to one of wholesomeness and comfort and restores the patient to her home and friends. (See Figs. 2 and 3.)

2. Cases of advanced or of *operable* carcinoma in which there exists a contraindication to operation by reason of general debility, valvular disease of the heart, or nephritis.

3. Cases of advanced carcinoma with invasion of axillary and supraclavicular nodes, in which experience shows that postoperative recurrence is practically certain.

In the above groups of cases the results of chemical removal have been so much better than might be expected that I naturally feel inclined to employ the method in all breast cases in which the outcome of surgical removal is distinctly unfavorable. Only inoperable cases have thus far been treated.

As to recurrence of the disease, within the limits of the operated area, following chemical removal, it has yet to be noted.

Active agents employed in the operation are:

Potassium hydroxide (KOH) U. S. P., long crayons, employed only in the first stage, or stage of denudation. The substance absorbs water from the tissues and diffuses quickly. Its effect is to disorganize and liquefy tissues, which it does to a considerable distance.

Zinc Chloride Compound.—

℞. Zinci chloride, U. S. P., ℥vi.
Sanguinariæ radicis, pulv., ℥ii.
Carbonis salicis albæ, pulv., ℥i.

M. Employed only in the second stage for the destruction of gross breast tissue.

The action of this compound may be fittingly designated :: the chemical drive. Zinc chloride is a safe escharotic in this operation, in that it is not absorbed by the system to the extent of reaching vital parts. Its "drive," so far as observed, is about three-fourths of an inch in depth. The outer third of this "driven" tissue dies a rapid death, becomes hard and leathery, and may be removed; while the inner two-thirds successfully resists its attack. This remaining two-thirds undergoes inflammatory reaction, theoretically fatal to cells of lower degree of vitality than the normal.

The compound is prepared by trituration in a Wedgewood mortar. The sanguinaria—a vegetable escharotic and adjuvant—is combined with the given quantity of zinc, to make a mixture of the consistence of vaseline, or cold cream, when water is added. Powdered willow charcoal is added to blacken the mixture, which serves to identify it. The coloring of the mixture is important, since thus is made practicable the strict confinement of the active agent within prescribed limits, which is absolutely essential to a painless operation. Wherever the least "speck" of this black mixture settles and is allowed to remain on the adjacent skin, there it will destroy tissue and cause needless pain.

Armamentarium.—A well-lighted operating room is essential. Besides the anesthetist, two assistants will be required; long crayons of KOH; a wedgewood mortar, containing the zinc compound ready for applications; a half dozen hemostatic forceps; bandage shears, scissors, and scalpel; tincture of iodine; steel spatulum; two six-inch thumb forceps; ten-yard spool of surgeons' zinc oxide adhesive plaster; good supply of gauze sponges, 6 x 6 inches; and 2-inch canton flannel strips; one pound of absorbent cotton; rubber gloves, gowns, etc. Protective compound:

℞. Boracic acid, 2 parts.
Starch, 20 parts.
Zinc oxide, 20 parts.
White vaseline, 58 parts.

Anesthesia is employed in the first and third stages only, according to the case. It may be primary, general, or local.

If primary, the production of analgesia, amnesia, and anociassociation alone is aimed at. Agents thus used are morphine with hyoscine or scopolamine, combined or not, with inhalants; if general, morphine, followed in a half hour with ether, or nitrous oxide gas and oxygen; if local, only by nerve blocking at the spinal roots.

Technique of primary anesthesia: One and a half hours before starting the operation, grain 1/128 of hyoscine hydrobromate, grain 1/128 of scopolamine hydrobromate, and grain ¼ of morphine sulphate (or gr. 1/128 of scopolamine hydropbromate, and gr. ¼ of morphine sulphate) are administered hypodermically.

The operation starts one hour and thirty minutes after the hyoscine-morphine injection, coincidently with the administration of inhalants. As the work proceeds, the patient is gently aroused from time to time by the anesthetist, the ability of the patient to respond being the guide to dosage.

Operative Plan.—First stage, denudation; second stage, removal; third stage, skin-grafting; fourth stage (occasional only), lymphangectomy, radium, *x*-rays.

The object to be accomplished in the *first stage* of the operation is the destruction and removal of all skin layers overlying the mammary gland, together with its attached underlying fascia, and including the nipple structures.

The object aimed at in the *second stage* is the destruction and removal of all mammary and adjacent infected tissues from the midsternal and midaxillary lines, horizontally, and from the second to the seventh ribs, vertically. This removal includes all accessible fascial structures and the major portion of the great pectoral muscle. It may also if required include the costal periosteum.

The object of the *third stage* is to facilitate repair of the granulating surface by grafting it with healthy skin taken from the patient's thigh. This hastens convalescence and insures a functionating, freely movable skin. It also minimizes contractures.

Persistence of enlarged axillary lymph nodes at the conclusion of the healing process constitutes a *fourth stage* in which these glands may be treated by physical methods, or dissected out *en masse*. (The rôle of the lymph nodes in this operation has not yet been worked out. My experience is that in a large percentage of cases they regress in varying degree, or remain stationary without further manifestation.)

Preliminary Precaution.—A limiting or boundary line should be drawn on the skin with moistened lunar caustic twenty-four hours before the operation, following as closely as possible the circumferential basal outline of the breast. This, by then, blackened line must not be crossed the following day in the process of denudation, as it provides a

margin of safety for the spreading action of the chemical in the second stage, wherein the diameters of the field are extended. Wide removal of the skin is always indicated.

Operative Technique.—First stage, denudation.—The operator may begin his work immediately the inhalation of gas and oxygen or ether is started. The surrounding skin surface is first protected from the action of the chemical by a liberal application of the protective compound.

The destructive agent employed at this stage is potassium hydroxide, which liquefies tissues more or less rapidly. The commercial long crayons are used, the holding end being wrapped about with gauze for protection of the operator's hand. The free end of the crayon is dipped in water and made to pass gently to and fro over the skin surface, within the limits previously marked. Any liquid excess of the potassium hydroxide must be constantly wiped away as it forms, to prevent its contact with the skin outside the limiting silver line. Sponges of absorbent cotton, dipped in water and wrung out nearly dry, are best for this purpose. Soon, a multitude of small brownish necrotic spots appear all over the breast; these later coalesce until the entire surface is of a light brown color. The epithelial layers then successively peel off. Later, the necrosis extends to the fascia. Openings appear here and there, through which can be seen the fat lobules. With the removal of the fascia is encountered the network of superficial mammary veins. As the walls of these veins are destroyed, venous oozing begins, but this is easily controlled by clamping and pressure.

The removal of the skin fascia nipple, and its areola accomplished, the remaining portion of the breast presents as a mass of fat lobules, exhibiting the characteristic concentric arrangement of the mammary gland with its radiating vertical septa. This process occupies on an average about the space of an hour, varying with the texture of the skin and the size of the breast.

The Second Stage.—The second stage, or stage of *removal* of the mammary gland proper, may be begun, if primary anesthesia has been employed, when denudation is completed and before the patient leaves the table. *If, however, general anesthesia has been employed, the application of the zinc compound would better be delayed for six hours, or until there is certainty that the dressings will not be shifted to adjacent skin surfaces, where they would cause discomfort, by the restlessness of the patient.* In either case, the protective compound is removed, and strips of cotton cloth, rather thinly spread with the zinc compound, are applied to the breast. Care must be taken to have the zinc compound of just the right consistence, or the agent will "run" over the adjacent skin and cause severe pain. The zinc compound must be kept absolutely within the bounds set for it, and for this reason the operation is best done at hospitals where the nurses are familiar with the work. Proceeding spirally from the base upward, the zinc-cotton strips are then securely fastened into position by inch-wide tapes of surgeon's adhesive plaster, forming a cap when completed. At the expiration of twenty-four hours the plaster and zinc cap is lifted off, and the layer of devitalized tissue removed by careful dissection. In doing this the operator must be mindful not to traumatize the living and sensitive tissue beneath, or pain and hemorrhage will follow. Removal of the mummified layer completed, a fresh application of the active agent is made, as well as of the skin protective, and so on from day to day until the deep fascia is removed and the fibers of the pectoralis major are exposed. Upon this, the final application of the active agent is made for from 24 to 48 hours, according to indications.

This last layer of devitalized tissue is not to be disturbed, but is, in a variable period of time, cast off by an intense reactive exudative inflammation, which extends deeply into the underlying tissues and forms a line of demarcation. The resulting slough leaves a finely granulating level area which discharges a profuse lymphorrheic exudate (see Fig. 1). Febrile disturbances accompany the operation throughout, but more especially so during the separation of the final layer or devitalized tissue, when the temperature, pulse, and respiratory fluctuations attain the maximum. Fluids forming under the last layer of the slough must be given early and free exit by means of dependent drainage openings, mainly approximating the axillary edge. The amount of absorption is never alarming. Throughout this second stage the nursing is of the utmost importance *both by day and by night.* The indication is best met by the application of absorbent cotton sponges, changed hourly, to prevent the zinc compound drainage fluids from running down over the axillary edge, and coming in contact with the adjacent skin. Frequent bathing of this skin area is of greatest benefit. The nurse should at all times be sure that the dressings are absolutely in place and not allowed to shift from their moorings. Also she must scrupulously remove and keep off any black "speck" or stain from the skin outside the line of demarcation. All these special precautions may, of course, be discontinued when the final zinc application is removed.

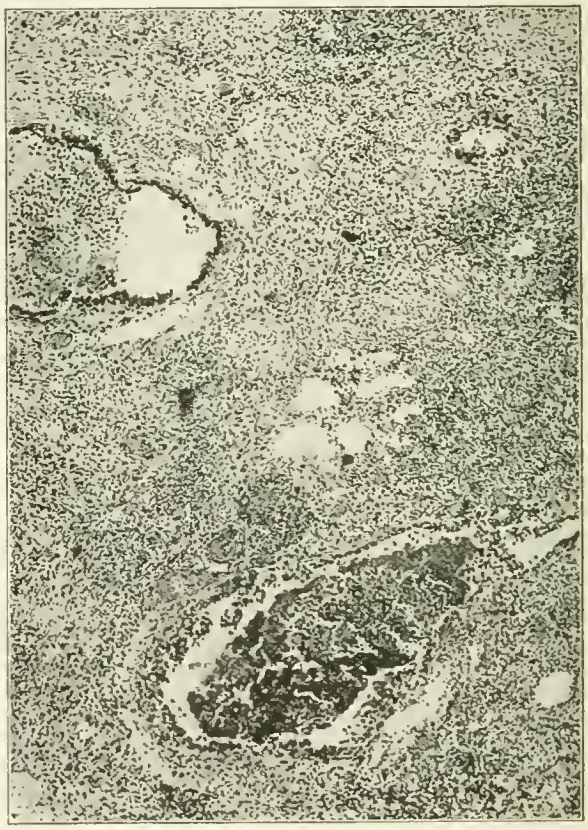

FIG. 1.—Character of the tissue reaction in the operated area; thrombosis of vessels with rich polynuclear leucocytic exudate into stroma and gland alveoli.

Irregular loosening or separation of the slough will cause some discomfort, especially from the resisting nerve fibers. Prompt removal of loosening portions is best in some cases; in others, it is better to support them and allow all to come away *en masse*. Pain manifesting itself at any stage of the operation is always readily controlled by the judicious employment of morphine or codeine. Usually none is requred.

Much might be written on the technique of this stage of the operation. In the daily removal of devitalized tissues good judgment is required to know just how deep to cut, and in what direction, in order to avoid pain and hemorrhage. Danger signals must be respected, and these things can come only with experience and observation. As to hemostasis, tincture of iodine has proved to be of greatest service. It is an ideal antiseptic as well, and should be applied upon the slightest appearance of color. For any obstinate oozing, such as may occur in the removal of indurated tumor tissues or when encountered in the soft abscess walls, or hematomata, the most reliable hemostatic is the zinc chloride compound, applied to the site on a small patch of cotton cloth and moderately compressed by means of a wad of absorbent cotton, for a short space of time. The action of this agent thus quickly controls the situation. The application of hemostatic forceps is not very useful in the stage of removal, owing to the friability of the devitalized tissues, yet occasions will arise where it can best control the situation.

During the period of separation or sloughing, and up to the time of skin grafting, a cerate composed of: Pinus canadensis, ℥i; white wax and zinc oxide, of each, ℥iij, and white vaseline, ℥xii, is spread thickly on a square of cotton cloth, large enough to cover the wound and three inches beyond in all directions and applied. This dressing should be changed every eight hours. No other will be required throughout.

At times it will be desirable to facilitate separation of the slough when the vitality is low and repair processes slow, by the application of dry or moist heat. This is most readily and neatly accomplished by the employment of an electric pad 6 x 8 inches, with or without an interposed wet compress.

Skin Grafting.—The third stage consists of covering the granulating area with skin grafts from the patient's thigh, by the well-known method of Thiersch. These thin tissue paper-like grafts should be immediately transferred to the waiting breast surface. They should overlap the edges of the wound. The grafts are covered with a sheet of asceptic rubber tissue, and over this several layers of gauze, all strapped securely into position.

This dressing need not be changed for a week, when the grafts will all be found to have "taken." The thigh is similarly dressed, but these dressings are renewed every second day. The thigh surface speedily heels over and causes no inconvenience. The new skin soon becomes as freely movable as on the back of the hand, and functionates perfectly. (See Fig. 2.) A dusting powder of boracic acid, following the daily cleansing or dressing, is the best treatment for some time after the dismissal of the patient.

Advances will continue to be slow, from the very nature of the work. However, that progress has been made is evidenced by the fact that at the Memorial Cancer Hospital, where for the past eighteen months this method has been under observation, it has been conceded that the author's chemical operation has a definite field in surgically inoperable cancer of the breast.

The following six case reports from the records of the Memorial Cancer Hospital, as also this paper, are published with the approval of the committee on publications, Drs. James Ewing, Wm. B. Coley, and Richard Weil.

Case I.—Mrs. C. J., age 79, widow. Admitted May 20, 1915. Ad. No. 21418. Chief complaint, tumor of left breast. Grandmother and aunt died of cancer. Present illness began two years ago. First noticed that the left breast became swollen, but no pain. About a year ago, consulted physician, who told her that there was a large lump in her breast. Shortly afterward she noticed retraction of the left nipple and some discharge therefrom. About six months ago, noticed some blisters appearing on the skin of the breast, which broke down, leaving a yellowish scab. This had continued up to the time of admission, when it involved the entire breast.

Status Praesens: There is some discharge exuding from the ulcerating surface. *Clinical Diagnosis:* Cancer of the breast. *Pathological report on specimen from lymph node:* Metastatic alveolar carcinoma. (Ewing.) *X-ray of chest:* Glands of hilum of lung much enlarged and represent probable metastasis (Holding).

Operated upon by chemical method, May 27. Operation completed and ready for skin grafting, June 14. Postponed. Patient died a week later of uremia. The autopsy showed an advanced chronic interstitial nephritis. The temperature range from time of admission was between normal and 102°; pulse between normal and 100; respirations between normal and 40.

Notation.—The operation was done to relieve an intolerable necrotic local condition. The influence of the operation in hastening death is problematical. For the sake of statistics, had the renal condition been known, the operation would better not have been done, as it was only a matter of days, at the best.—(Author.)

Case II.—Mrs. E. T., widow, age 64. Admitted September 11, 1914. Ad. No. 21603. Chief complaint. —Tumor of the breast. Mother died of cancer of breast. She had an operation for tumor of right breast at 18; and one for tumor of left breast at 28. Present illness began fifteen years ago with small nodule in region of left nipple. The nodule remained small until three months prior to admission. It was tender but not painful. Two months ago noticed a large lump in the breast; pain became more constant, nipple retracted, reddened. General condition of patient good.

Status Praesens: Left breast the seat of a large, irregular, indurated growth, the size of an orange, not very firmly attached to the fascia; skin adherent, nipple retracted. (Axillary nodes were enlarged. December 18, 1915. C. W. S.) *Patholigical report:* Alveolar carcinoma; mucoid changes in certain areas (Ewing). No X-ray examination of chest was made before operation.

Operated upon by chemical method September 12, 1915; skin grafting, September 28. Discharged, October 8, 1915. Temperature fluctuations between normal and 101°; pulse, normal and 116; respirations between normal and 24.

Notation.—The breast was removed, together with half an inch in thickness of the pectoral muscle. The resulting smooth healthy granulating surface was covered with skin transplants from the thigh. Good operative results; fine movable functionating skin surface. This patient is alive and without sign of local recurrence. *X*-ray examination of chest, taken February 3, 1916, shows enlarged glands in right side of chest extending from mediastinum out into lung tissue, apparently along the bronchial tube.—(Holding.)

Case III.—E. C., age 59. Admitted May 21, 1915. Ad No. 22296. Chief complaint.—Ulcerated tumor of the right breast. Trouble began about twelve years ago, when a lump the size of a hickory-nut was noticed above the right breast. This gave no trouble for nine years, remaining the same size, movable, not tender

and not painful. Three years ago this nodule began to grow rapidly larger; the skin over it became retracted, puckered (pigskin), and pain and tenderness were first noticed. One year later, the skin over the tumor broke down, and the ulcerated area has since increased in size until it is 4 x 3 inches in diameter. There was never any discharge from this nipple. There is no history of injury to the breast. Past and family history, not important. Constant excruciating pain for past two years.

Status Praesens: The upper inner quadrant of the right breast is the seat of the disease. Ulcerated area involves half of the breast. It is above the main mass of the mammary tissues. Edge, hard and elevated; base of ulcer is gray; purulent discharge, with foul odor. There is a deep contraction furrow between the breast and anterior axillary fold. There are no palpable axillary nodes. Pectoral gland at margin of breast, distinctly involved. Very corpulent female; left leg shorter than right from old fracture of femur, which is constantly painful. There is a pigmented eruption over the upper abdomen and lower chest. X-ray shows probable extensive metastasis in the chest (Holding).

Clinical diagnosis, based upon physical examination, —carcinoma of breast with metastasis in chest. *Pathological diagnosis:* Alveolar carcinoma.

Operated upon by chemical method, June 3. Skin grafted, June 30, 1915. Temperature range between normal and 101°; pulse between normal and 100 respiration between normal and 24. Discharged, August 1, 1915.

Notation.—The patient presented a very bad physical condition generally. There was constant sciatic neuralgia at and above the site of fracture—almost helplessly crippled. Right brachial neuritis streaking down into arm and breast complicated the far-advanced condition, which was absolutely inoperable surgically. Some avoidable pain was encountered during the removal. The breast was removed along with a half-inch layer of pectoral muscle and a large pectoral node. Later, small tubercles appeared an inch beyond the inner border in the skin. These were destroyed with KOH. The patient made a good recovery, and is well at this time of writing. The new skin surface is in fine condition. X-ray examination of chest, taken January 17, 1916, shows adventitious tissue in mediastinum, very marked on the right side. No metastases in lung parenchyma.—(Holding.) This operation was done at the request of the medical staff, for a demonstration of the method, the case being surgically inoperable. A pectoral node the size of a cherry persists.

Case IV.—Mrs. R., age 42, married. Admitted August 12, 1915. Discharged September 2, 1915. Admittance No. 22384. Chief complaint, tumor of right breast. Twelve months ago, patient first noticed a bloody discharge from the nipple. Several hard lumps developed around the nipple, and she experienced occasional sharp darting pains. The discharge continued and became more profuse in the later months. No other history of cancer in the family. The patient had a tumor of the right leg, which was removed at operation eight years ago. It was pronounced sarcoma. It recurred, broke down, and finally healed, giving no further trouble. Three months following the operation on her leg, an abscess in her left side (flank) developed. This was opened, drained, and healed.

Status Praesens: Thorax; left breast normal; right breast has nodules in lower outer quadrant, skin slighly involved, nodules hard. No X-ray of chest taken. Clinical diagnosis of carcinoma by five General Memorial surgeons. No pathological examination made.

Operation by the chemical method, August 12, 1915. Skin grafting was done August 26, 1915. Temperature fluctuations from normal to 101°; respirations from normal to 24; pulse from normal to 104.

Notation.—The patient was greatly debilitated and emaciated. The breast was small and indurated. Removal of the breast was rapid and painless. Skin grafting was done at the end of the second week. Three weeks from the beginning of the operation the patient was discharged. No axillary glands were palpable. The case was referred to me for the chemical operation by her physician. Mrs. R., who lives in the South, reports herself perfectly well; new skin surface soft, smooth, flexible, and functionating; no arm stiffness; general health improving.—January 15, 1916.

Case V.—Mrs. G., age 57, widow. Admitted August 12, 1915. Ad. No. 22450. Chief complaint, tumor of breast. Five years ago noticed a small lump, the size of a marble, in right breast. Not much growth was noticed for the first two years. A short time later, the skin became discolored; no discharge from nipple. Never had any pain from breast. The mass continued to grow, and about eight months ago the skin broke down over the tumor. Menopause, ten years ago. No injury to the breast; no complications during the nursing period; no other case of cancer in the family. *General appearance:* Large, stout, florid woman. Surgical condition.—There is a large bleeding mass, a little larger than an egg, in the upper portion of the right breast. It involves the nipple and is firmly adherent to the chest wall. There are no palpable axillary or supraclavicular nodes. The left breast is the seat of a transverse scirrhus cancer. There is a slight induration of a portion of the scar,—it passes through the nipple. Scar is from an ancient traumatism. Axilla, negative. X-ray of chest, taken September 21, shows

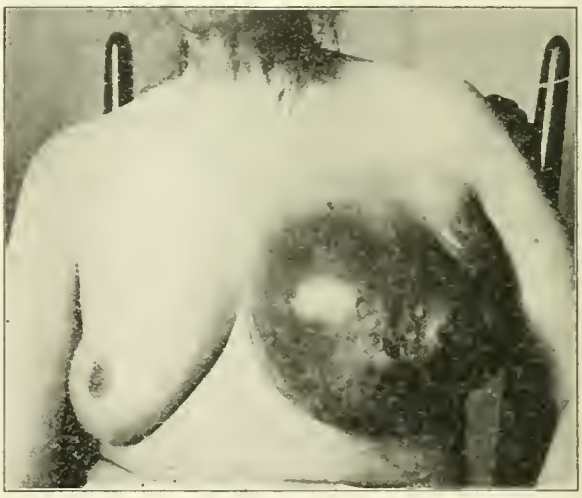

Fig. 2.—Case VI. Inoperable carcinoma of the breast in a woman aged 47 years.

probable metastases to both lungs. General condition, fair.

Chemical operation begun August 30. Both breasts were removed. Fine recovery. Skin grafting was done September 18. Temperature fluctuations between normal and 102.8°; respiration between normal and 26; pulse between normal and 101. Pathological report, alveolar carcinoma.

Notation.—This patient's general condition was very good. Notwithstanding both breasts were removed, there were no complications. The nursing was excellent. The active agent being kept wholly within bounds, there was no pain. The breasts, together with a half-inch layer of pectoral muscle and a large right pectoral gland, were removed. The patient was discharged four weeks from the beginning of the chemical operation; no palpable axillary glands. Last report: patient perfectly well; has gained fifteen pounds in weight. X-ray of chest, taken February 3, 1916, still shows probable metastases to both lungs.

Case VI.—Mrs. T., age 47, married. Nursed her children. Admitted October 22, 1915. General history, negative. Chief complication, large ulcerating tumor of the left breast. Four and a half years ago, noticed small lump in breast, gradually increasing. Shooting pains for last six months. Systolic bruit all over chest.

Description of tumor: The left breast is immensely enlarged. (See Fig. 2.) On the outer surface, are irregular ulcerations that are sloughing. The general color is purple, the surface is irregular, due to separate bosses fixed to underlying tissue. Foul discharge from ulcerations. Tumor surface, irregular in contour. Skin is smooth and shiny. There are large (glandular) masses extending toward the axilla. The induration extends upward to the clavicle, outward to the mid-axillary line, and internally to the costal margin. Parallel (or nearly so) to left clavicle, is a varix-multiple enlarged vein. Ulcerations are in region of nipple. These have sloughing bases and foul discharge. Tumor is fixed to the skin above and to the chest wall beneath, is non-sensitive, and very vascular. Approximate measurements of tumor mass are 7 x 7 x 3 inches. Pathological report, from tissue from edge of ulceration.—Large alveolar carcinoma, somewhat resembling adenoma malignum. General hemorrhagic pigmentation (Ewing). X-ray of chest taken October 25, 1915, shows diffuse shadow of a very large mass over the right side of the chest which obliterates all detail at the hilum of the lung on that side (Holding).

Operated upon by chemical method on October 29, 1915. On account of the extreme vascularity and magnitude of the growth, progress was slow. Skin grafting was done January 30, 1916. Temperature fluctuations ranged between normal and 102°; pulse between normal and 120; respirations between normal and 26.

FIG. 3.—Result of the chemical operation and skin grafting in the case of mammary carcinoma in Fig. 2.

This patient seems perfectly well and does her usual housework.

The two following case reports are from the West Side German Dispensary-Hospital, where the operations were performed:

CASE VII.—Mrs. J. S., married, age 64. Admitted June 4, 1915. Multipara; menopause passed at age 45; mother died of carcinoma of stomach. Three months ago, first noticed a "lump" in the outer part of the right breast. This was at first neither tender nor painful. The tumor grew rapidly, at the same time becoming painful. The breast was greatly enlarged; the outer half being distorted and irregular in outline from the presence of an indurated mass which was adherent to both under- and overlying fascia. The skin, also adherent to the tumor, was unbroken, smooth, and tense; the nipple was sunken below the general level. There were no ulcerations. Axillary glands indicated metastasis, there being a lymph node, the size of a robin's egg, under the edge of the pectoralis major muscle, and smaller ones near the vessels. Clinical diagnosis, carcinoma. Pathological diagnosis, adeno-carcinoma. No Roentgenogram of chest taken.

Operation by the chemical technique, June 5, 1916. The entire breast, a half inch in thickness of the pectoral muscle, and the enlarged pectoral node were removed. Skin grafting was done June 20. The patient was discharged about four weeks from admission. The axillary glands had subsided so that they were scarcely appreciable.

Notation.—Examination of the patient, June 15, 1916, shows the chest wall smooth; skin soft, movable, and freely functionating. Slightly enlarged fibrous glands in dome of axilla. No restrictions of arm movement other than she has had for several years, from an old dislocation. The patient was doing her housework, and declares herself perfectly well. She has gained twelve pounds in weight, and is the picture of healthy old age.

CASE VIII.—Mrs. D. A., age 66, married forty-one years. Admitted October 31, 1915. Had two children, nursed but one; always in good health; weight, 210 pounds. Menopause began at forty-eight and ceased at fifty-two years. First noticed a hardening of the right breast in the vicinity of the nipple in June, 1915. Growth was quite rapid. There has been no pain, but an occasional "stitch" runs through it. The right breast is very greatly enlarged and distorted by the presence of a growth the size of a large orange. This growth is of irregular contour, hard, non-sensitive, adherent to the fascia below and the skin above. The mass occupies almost the entire breast, but mainly the upper outer quadrant. The nipple was deeply depressed, ulcerated, and discharged a foul exudate. The axillary glands were enlarged, but not greatly so. A large pectoral node at the outer edge of the great pectoral muscle presented, the size of a medium horse-chestnut. There was also a large supraclavicular node, rather painful to pressure and of the size of a large hazelnut. The arm was somewhat swollen and at times painful. The surrounding skin was dotted with brownish, flattened papules, ovoid in shape, and covering the upper half of the body above the umbilicus and mid-axillary line laterally. Pathological report, fibro-carcinoma (Ewing).

Operation by chemical method was begun October 1, 1915. On account of the great size of the breast, the removal occupied time in proportion. All the skin layers and the fascia or capsule of the breast were removed with caustic potash under primary anesthesia, and the zinc compound was applied. Skin grafting was done in the third week, the grafts all taking. The patient was discharged December 1, 1915. No *x*-ray examination of chest was made.

Notation.—This patient was seen July 1, 1916, at which time the breast area was level with the chest, covered with soft, movable, functionating skin transplants. The feeling of constriction of the chest was lessening. The arm was greatly swollen, while the nodes in the axilla were still perceptible. The supraclavicular node was also still palpable. The patient's general health was improving, and she felt well.

Mrs. A.'s condition was absolutely inoperable when she consulted me. Surgical relief had been denied her by other surgeons. The operation was done as a palliative measure, since internal metastasis was quite probable, as indicated by her general condition.

17 EAST THIRTY-EIGHTH STREET.

EPIDEMIOLOGY AND PREPAREDNESS.

BY CHARLES E. NORTH, M.D.,

NEW YORK.

WAR, earthquake, fire and pestilence are more stimulating to the public mind than any other kind of events. The consciousness of the civic body is aroused to a realization of the common interest and the necessity for self-preservation by the common danger. An epidemic of infectious disease is like a conflagration in that it starts from a small beginning, and if unchecked may spread like a fire through a municipality or state.

Through the centuries, time after time, epidemics have swept through human communities, but in spite of their frequent occurrence and the temporary panics caused thereby, there remains a strange lack of preparedness, and each epidemic seems to catch the community it attacks unprepared. Recently the mayor of one city remarked to the writer: "Cities must have epidemics once in a while, and the only way is to let them burn themselves out." Thus the epidemic is still in most minds a periodic dispensation of Providence which suffering humanity must accept. The chronic indifference of the community to its own self-preservation has prevented the development of the science of epidemiology and of expert specialists able to qualify as epidemiologists. While it is true that there is an abundant supply of bacteriologists, chemists, pathologists, physicians, sanitary inspectors, and other specialists, yet at times of epidemic it is difficult to discover men of ripe experience in the control of epidemics who can qualify as specialists in epidemiology. Experience with more than one epidemic as a qualification would reduce by one-half any group of experts called in for consulting purposes, and, perhaps, eliminate the health officer himself. More than two epidemics' experience would reduce the expert list another 25 per cent., and three or more epidemics would probably reduce the list to one man. Such is the limitation of expert practice in this special science. In America it is doubtful whether there are more than one-half dozen men who can personally qualify as experts in the science of epidemiology. As a consequence, the majority of epidemics are handled by inexperienced persons, and the death rate and morbidity rate are correspondingly higher than they would be if standard methods in the control of epidemics in every community were immediately applied.

Epidemiology is not bacteriology. It is not chemistry, or physics, or medicine, or pathology. It is not vital statistics, or sanitary science, or any of the special branches of medical or public health knowledge. It is a science of sciences. It partakes of all of the other branches of medical and public health work. Epidemiology is an overhead science, in which the other sciences are used as instruments. It co-ordinates not only the knowledge secured through the special medical and sanitary sciences, but it plays upon them as upon an instrument, laying the emphasis when necessary on the one hand or on the other, as the particular problem to be solved demands.

For this reason the chemist, the bacteriologist, and the other specialists in the various special sciences are not necessarily epidemiologists. The specialist with his nearby point of view may not have the comprehensive view necessary to play the part of a good epidemiologist. The first essential of a good epidemiologist is a point of view which is remote and detached so that he can view the field from a sufficient elevation to give values which are not distorted to the various facts and data collected. The epidemiologist must not overestimate or underestimate the value of the facts brought to him. His view, in short, must be macroscopic, rather than microscopic.

The science of epidemiology itself is so new that even a definition has not been formulated. It deals primarily with the investigation and control of epidemics of infectious diseases. Such epidemics can be divided into two great classes. The first includes the annual or seasonal epidemics, such as infant diarrhea and dysentery in the summer; typhoid fever in the fall; grippe, bronchitis, and pneumonia in the winter, and scarlet fever, whooping cough, chickenpox, measles, etc., in the spring. These annual waves of infectious diseases sweep through all communities with clocklike regularity each year.

The second class are those which visit communities at irregular intervals and unexpectedly, including smallpox, cerebrospinal meningitis, typhoid fever, septic sore throat, infantile paralysis, plague, etc. Strange to say, the annual or seasonal epidemics are accepted as a matter of course and looked upon by many health officers as unavoidable. While the death rate from the seasonal epidemics is far greater than from the irregular epidemics, yet the irregular epidemic is sufficiently unexpected to be dramatic and to cause a much greater sensation in the community mind.

Though the science of epidemiology is new, medical literature and public health records furnish abundant material for the establishment of certain definite principles of action. While the collection of data is still incomplete, and some infectious diseases are not fully understood, yet many of the principles are sufficiently clear to make it possible for the student of epidemiology to recognize the action which communities must take to put themselves in a state of preparedness.

The work of Bentham, Chadwick, and Southwood Smith from 1833 to 1848 resulted in a recognition of the necessity of a centralized control by public officials over sanitary conditions, so that the state became a party to the health of the individual. The Chadwick agitation brought about the establishment of a central statistical department in London, known as the Central Register's Office, and the history of registration of cases of disease dates from this time. This registration was the basis of the elementary sanitary laws established for London, and eventually for other parts of England. Since 1875 three fundamental principles of public health control have been recognized in England. Notification, meaning the reporting of cases to municipal health authorities, was applied to London and adopted by over eleven hundred provincial districts. This notification is interesting because the law provides that, "Diseases must be reported by any one of seven persons, the duty falling in the following order: The head of the family, the nearest relative in the building, the person in charge of the patient, the occupiers of the house, the attending physician, and the assistant attending physician. A notice by any one of these relieves those who come later in the list, but not those who come earlier. Penalty for failure to report is forty shillings."

A second provision in the early English law is that, "Whenever any part of England or Ireland appears to be threatened with an epidemic, the local government board may make regulations for guarding against the spread of the disease within the whole or any part of the district of any local authorities." This fixes supreme power with supreme authority in the case of emergency.

A third important principle established by this law is that it prohibits "illegal exposure of an infected person without proper precautions against the spread of said disorder in any street, public shop, public conveyance, etc." This refers to walking cases of infectious diseases, and establishes control over such persons by public health authorities.

The demonstrations of Pasteur and Koch threw

great light on the direction which must be taken by the science of epidemiology. For many years after bacteria were demonstrated to be the cause of infectious diseases there existed a widespread belief that germs could live out of doors for considerable lengths of time, and that dirt, garbage, air, dust, rags, clothing, streets, walls, and floors were the common means for the transmission of infectious disease. In short, external agencies were believed to be the means for carrying disease from person to person. This meant the environment of human beings rather than the human beings themselves.

As a consequence, sanitation was looked upon as the most important weapon for the control of epidemics, and sanitary science, dealing with the destruction and prevention of external infections, was developed as a special department of knowledge treating with the proper cleaning up of this environment. The cleaning of streets, the disposal of garbage, the disposal of sewage, the purification of water supplies, the disinfection of dwellings, pasteurization of milk, have all been developed as a result of this era of sanitation. Faith in sanitation is so widespread that it still remains the chief weapon in the hands of public health authorities, and a "clean-up" campaign is the first measure to be applied in times of epidemic diseases.

A more intimate study of the nature of infectious disease has brought about startling revelations during the past ten years and has created a new and powerful influence which marks a distinctly new era in the methods for the control of epidemics. This may be called "the era of contact infection" as contrasted with the older "era of sanitation." Contact infection recognizes the bacteria of disease as primarily parasites of warm-blooded animals, unable to live for any great length of time outside of living bodies. It recognizes that occasionally the environment may be responsible for the transference of infection, but that most of the time infection is transferred directly from person to person by contact.

The discovery that persons in apparently perfect health may be the carriers of infectious bacteria of a number of well-known infectious diseases has entirely changed our point of view regarding the prevention of these diseases. Not only carriers, but mild cases and missed cases are now known to be the means of spreading infection. The picture of an epidemic has been changed from that of a series of sick persons, transferring disease through external things, to a picture of sick persons, each of whom is surrounded by a group of those with whom they have come into contact, and this group of contacts is now recognized as the chief source of danger to the community. It is out of this group of contacts which surrounds each recognized case that the next crop of cases may be expected. The transference of infection frequently occurs before disease is recognized. Thus each case becomes a focus and the center of a small, localized epidemic all its own.

In the year 1916, however, the health authorities even of our largest cities still cling to sanitation as their most important weapon, and make the control over carriers, mild cases, missed cases, and persons who have come into contact with the recognized cases a secondary and incidental matter. This fact justifies us in attempting to weigh the merits of this new principle of control by a brief survey of the opinions of leading investigators of this subject.

Chapin, in his epoch-making book entitled "Sources and Modes of Infection,"[2] gave a powerful impetus to the recognition of infection by contact. He states that "Municipal cleansing is of little use in the prevention of disease. Mild, atypical cases and unrecognized cases of infectious diseases are often extremely common. . . . They may be more numerous than recognized cases. . . . Any scheme of prevention which fails to take into account carriers and missed cases is doomed to partial and perhaps complete failure. I have sometimes been told that I lay too much emphasis on contact infection, but if it is the principal way in which disease spreads, too much emphasis cannot be placed upon it, and it seems to me that the evidence is that it is the chief mode of infection."

Doty,[3] in his book entitled "The Prevention of Infectious Diseases," says: "The popular fomites theory is unsupported. Fomites are not the cause of disease, but persons, insects, food, and drink. . . . The control of disease consists in an investigation to discover the whereabouts of those who are infected and to secure their strict isolation. Also, to detain, or in some manner keep under observation, those who have been exposed to infection and who are known as 'suspects,' and to detect irregular and unrecognized cases which are largely responsible for the outbreaks of infectious diseases."

Wassermann[4] says: "In practically all infectious diseases the existence of persons has been established in the surroundings of all cases who are apparently perfectly well, but are, nevertheless, the carriers of the corresponding germs. These, because they go about at will, become a source of further distribution of the epidemic."

Rosenau[5] says: "The practical value of isolation varies with each disease . . . with the existence of latent infections, missed cases, carriers and other factors which influence the spread of the infection."

Kirchner[6] says: "The basis for the control of epidemics in war time and in peace consists in the determination of the cases themselves as well as in the establishment of germ carriers from those surrounding the patient. At the outset of an epidemic it is necessary to ascertain how many apparently healthy individuals in the patient's surroundings harbor disease germs."

Kiefer[7] says: "The first necessary step in the control of epidemics is a campaign of education to teach the public something about contact infection."

Neufeld[8] says: "The modern fight against epidemics consists in the rapid, accurate discovery not only of the patients, but also of all persons capable of transmitting the disease germ. Experience has repeatedly shown that excellent results were obtained when undoubtedly only a portion of the disease transmitters have been checked."

Hune[9] says: "The number of healthy germ carriers is small at a time free from epidemics, in the beginning as well as at the end of epidemics, but it is enormously high at the height of the epidemics. For this reason early measures alone are appropriate and practicable."

MacNutt,[10] in a review of epidemiology, says: "Carriers, missed cases, and incipient cases have within a few years been shown greatly to aggravate problems of control and to add an entirely new chapter to epidemiology, revolutionizing our views in important respects. A study of every epidemic should include a careful consideration of the activity of this class of cases."

The pendulum has swung too far in favor of

sanitation, and it is now, after many years, swinging back again to contact as the chief means of the transmission of infectious diseases. The word "contagion" in its original means contact, and contagious diseases have been called such because in the earliest times it was believed that they were transmitted by contact. We have been mistaken in getting too far away from this idea, and we are now getting back on to solid ground and a full recognition of the vital importance of contact, not only on the part of severe cases, but on the part of carriers, mild cases, and unrecognized cases, as the chief means of transmitting the majority of infectious diseases.

It is possible to draw up a list of the measures which experience has shown are effective in the suppression of epidemics, as follows:

General Measures	*Special Measures*
Legal powers	Water purification
Notification	Pasteurization
Inspection and diagnosis	Destruction of animals
Registration	Destruction of insects
Field investigations	Vaccination
Tabulation	Serum therapy
Medical treatment and nursing	Diphtheria antitoxin
Isolation	Nose and throat disinfection
Hospitalization	Disinfection of discharges
Quarantine	Personal hygiene
Sanitation	
Control of contacts	
Disinfection	
Education	

Each measure in the list is capable of special modification to meet the conditions created by a special epidemic. The selection of the correct measure and its application to the community at the right time and in the right place requires of the epidemiologist not only a familiarity with the special epidemiology of the disease he is combating, but a peculiar intuition which can be obtained only from experience.

The application of the science of epidemiology to American municipalities has been inefficient for a number of reasons. The majority of communities have not yet elevated the health department to a position of sufficient importance. Even where financial appropriations are considerable, there is commonly a tendency to look upon public health service as a political matter. Frequent changes of health officers and appointments to such positions of men with no particular qualifications other than political qualifications, or with no experience, means lack of preparedness.

Real students of the science of epidemiology are so scarce that standard methods for handling epidemics are not fully recognized. As an illustration of this uncertainty, one American author says that "In America, when the number of cases of measles amounts to one in one thousand of population, there is an epidemic. In England, measles is epidemic when there are 1.2 per thousand. In New Orleans, measles is epidemic when there are between 2000 and 5000 cases, or 22 per thousand population; and, mark you, any disease is epidemic when there are ten cases in close proximity to each other." Another prominent health authority administers comfort to the inhabitants of his community by comparing the number of cases of epidemic disease with the total population, and showing how infinitely small the percentage really is. It is a question whether such arithmetic conveys any real comfort to that portion of the population living in the afflicted locality. The addition of large groups of healthy persons to vital statistics is hardly an adequate means for offsetting the seriousness of an outbreak in a limited locality.

In America seasonal epidemics are too largely accepted as a matter of course, and no such thing as preparedness is undertaken. In the fall the annual typhoid epidemic is a distinct surprise. The grippe epidemic in January is always unexpected. Scarlet fever and measles in the spring is a startling novelty. Yet such a thing as preparing this year for the epidemics of next year is unheard of, because these surprises are chronic.

I will mention for illustration one thing which is not done, but which might be done to reduce the annual number of cases and deaths from infectious disease. Assume a class of thirty school children. One of them contracts measles and is sent home. Two weeks later fifteen others in the class come down with a rash and are sick with measles, to the great surprise of their parents, who were not notified by the school authorities or by the health department that their children had been exposed. Two weeks later in the homes of the fifteen children, among their brothers and sisters, and in the neighboring homes among playmates, over one hundred cases of measles are discovered. Here we have a third crop of measles cases entirely due to a needless exposure, because the parents were not notified, either by school authorities or health authorities that such exposures had taken place. Only a little notification to parents and only a little education regarding the meaning of contact would have prevented this third, and largest, crop of cases. Many parents are sufficiently intelligent to understand the importance of keeping exposed children separate from unexposed children. The condition cited above is not imaginary, but really exists to-day in all American cities not only in regard to measles, but scarlet fever, whooping cough, chicken-pox, mumps, and all the infectious diseases of childhood contracted in the public schools. The neglect of school authorities and health authorities to inform parents of the exposure of children to these diseases, and to point out the value of isolation for the protection of other unexposed children is directly responsible for three-quarters, and perhaps a higher percentage, of the cases of infectious disease among children.

Proper preparedness for the occasional and irregular epidemics which occur is also lacking. There is no such thing as a first-class bureau of epidemiology in America. No municipality employs a specialist in epidemiology, qualified by experience to take active control of epidemics. Municipalities depend for their protection on such incidental experience and incidental organization as their health department may possess. It is small wonder, in view of the circumstances, that epidemics, whether seasonal or irregular, catch municipal health departments napping, and almost panic stricken.

New York City illustrates by its own career instance after instance of this sort of unpreparedness. A review of the epidemics from which the city has suffered shows the imperfection of methods of investigation and control. Where the department of health has not entirely missed the discovery of the true cause of an epidemic, the outbreaks recorded have pursued their course uninterrupted, and in some instances for weeks, and even months, unannounced. A health department which in other respects is excellent has been peculiarly weak in its control of epidemics.

As an illustration of this deficiency may be mentioned the current epidemic of infantile paralysis. The records show that from April 13 until the last

day of May, 1916, there were only nine cases of infantile paralysis in the greater city, but from June 6 to 10 there suddenly appeared ten new cases. From June 10 to 15 nine more appeared, making nineteen cases in nine days. From that time on the epidemic increased by leaps and bounds, and still continues. The record up to this writing, tabulated below, shows 3098 cases and 647 deaths.

Date	*Cases*	
April 13 to June 1	9	
June 2 to 10	10	
June 11 to 15	19	(epidemic evident)
June 16 to 20	35	
June 21 to 25	121	
June 26 to 30	279	
July 1 to 4	463	
July 5 to 10	1,082	
July 11 to 17	2,124	(control of contacts)
July 18 to 20	2,446	
July 21 to 26	3,098	

The New York City Department of Health undertook emergency measures to suppress this epidemic the first week in July. It laid emphasis on the cleaning of streets, disposal of garbage, and sanitation. The reporting of cases and the isolation of discovered cases seems to have been carried out so far as possible. But a most remarkable omission was the failure of the Department to take any steps for the control of contact cases until July 14. On that date, the special committee appointed by the mayor passed a resolution stating that "It would be wise to follow the ramifications of personal contact radiating from every known case of infantile paralysis so far as possible." And this work was supported by the contribution of $50,000 from a well-known foundation to be expended under a specialist, who opened his office in Brooklyn on the 17th of July, and with a force of physicians and nurses undertook to follow the cases of persons who had come into contact with this disease. If control of contacts was good practice on July 17, it would have been even better practice on June 15.

Infantile paralysis is a disease in which contact infection is the only known means of transmission. In support of this, Flexner[11] says: "The virus enters the body, as a rule, by way of the mucous membrane of the nose and throat, and is readily distributed by coughing, sneezing, kissing, and by means of fingers and articles contaminated with these secretions. * * * The fact has been determined that the noses and throats of healthy persons who have been in intimate contact with cases of infantile paralysis may become contaminated with the virus, and that such contaminated persons, without feeling ill themselves, may convey the infection to other persons, chiefly children, who develop the disease. * * * Protection to the public can best be secured through the discovery and isolation of those ill with the disease and the sanitary control of those persons who have been associated with the sick."

The MEDICAL RECORD of July 8 stated: "A more plausible theory than that of the biting of the fly is that the disease is spread in the same way as influenza or common colds, for it is known that the pathogenic agent is contained in the nasal secretions of the sick."

The *Journal of the American Medical Association*, in its issue of July 8, states editorially regarding the epidemic in California in 1913: "In practically every instance infection could be explained on the theory that epidemic poliomyelitis is transmitted by contact from acute cases or carriers. * * * All become potential agents for the dissemination of the virus, as do also healthy persons who have been in intimate contact with those who are ill. The prevention of such dissemination is the actual prevention of the disease."

Neufeld[12] says: "The infected virus exists not only in the patients having the disease, but also in acute cases for at least six months after, as well as in healthy persons in the surroundings of the sick."

The quotations are sufficient to make it clear that the best knowledge regarding infantile paralysis is that transmission commonly occurs by contact, consequently the epidemiologist in taking steps for the prevention of this disease must look upon the control of all persons coming in contact with the cases of this disease, not as an incidental measure, but as the most important measure which can be applied for the suppression of such epidemics. The delay in applying this measure for the suppression of the New York City epidemic is an instance of the character of the control of epidemics so commonly applied in American municipalities. True preparedness would have made it possible to apply the right remedy at the earliest moment when the outbreak was recognized.

The warfare against infectious diseases requires a preparedness all its own. It is necessary to maintain an emergency form of organization just as a fire department is organized. There must be not only a perfect alarm system, but a force capable of quick and intelligent action in the location where the conflagration starts. The ordinary type of bureau of infectious diseases cannot answer this purpose. It demands a special bureau of epidemiology, with a man at its head who has specialized in that science, and with a consulting board, making available to him, instantly and regularly, the best consulting service. Such an organization might well be included within the regular department of health; but so connected with the various special departments, such as the diagnostic laboratory, statistician, research laboratories, sanitary inspection service, disinfection service, etc., that all of these departments can be instantly swung into line, not aimlessly, but as instruments in the hands of the epidemiologist. In his book on typhoid fever, Whipple says: "To control an epidemic and keep it within bounds demands prompt and energetic measures. A community afflicted with an epidemic is sometimes almost panic stricken. Correspondents fill the public press with theories, and many foolish things may be said and done. What is needed is a strong central authority that for a time can exercise almost autocratic power, and a government and a public opinion that will uphold such authority and provide all necessary resources." Like the fire department, a real, strong bureau of epidemiology might seem to be inactive between epidemics, but when one estimates the cost to the community of such conflagrations of disease as occur, it will appear that like the fire department, communities are justified in keeping mobilized constantly an adequate force, properly informed and equipped, and capable of acting intelligently and with a strong hand to instantly suppress a conflagration of disease.

True preparedness means that steps be taken now for the epidemics that are to occur in the future. Steps should be taken now for the grippe epidemic that is to occur next January. Steps should be taken now to prevent the scarlet fever epidemic that is due next spring, also the measles, whooping cough and other spring outbreaks.

It is certain that the regular seasonal epidemics

will yield to a campaign of preparedness. Public education alone can be made to do wonders in the reduction of mortality and morbidity in these seasonal outbreaks. For the occasional and irregular outbreaks preparedness also can give the community a far better service than it has ever received in the past. The immediate application at the beginning of an outbreak of the very best measures for the suppression of the epidemic would result from an adequate study of each of the infectious diseases causing these irregular outbreaks and a comprehensive plan of action readymade for immediate application when emergency calls.

Where communities are not big enough to maintain a department of epidemiology of the first class, such service should be established for the district or county. Certainly each state should have a first-class department of epidemiology, fully equipped to suppress epidemics that occur within the State. Above all, the United States Public Health Service should have a national department of epidemiology so thoroughly competent that it can act in interstate outbreaks, and, when called upon, in local outbreaks.

It is looking ahead considerably to assume that communities are yet ready to accept public health service of this kind. It will probably be necessary for each large municipality to have several severe epidemics of its own to arouse the civic consciousness. New York City should take the lead in such preparedness. In this particular instance the suffering which has occurred can be made of actual benefit to the city if it results in immediate steps for a stronger form of organization and adequate preparedness for the prevention of the epidemics of infectious diseases which experience has shown are certain to threaten the city in the future.

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VACCINES IN ACUTE INFECTION.

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It is not the purpose of this paper to enlarge upon the method of using vaccines in acute disease, but rather to bring out five important points which are essential to make the use of vaccines in acute infections successful.

It is well known that the failure of vaccine has been reported most frequently in acute infections and if we can find a way to better success in these cases, we shall come nearer to saving life than in any other form of disease coming under the therapeusis of vaccine.

Acute infection counts within its radius the most desperate conditions; and because of failure we have acquired a fear of the use of vaccines,—a fear largely brought about by the idea that vaccines add to the toxins already present in the body. I do not wish to go into the theories of vaccine therapy in this paper so as to avoid befogging the importance of the points I wish to bring out. I shall not go into a detailed explanation why the above fear is groundless and the reason for it entirely without foundation. I shall merely state that vaccines are not toxins; that they merely stimulate at the point of inoculation the formation of antibodies specific to the vaccine and therefore to the disease.

The five important points that I wish to bring out in this paper are as follows: (1) A correct etiological, bacteriological diagnosis; (2) the correct time of administration of the vaccine; (3) the determination of correct intervals between inoculations; (4) the prevention of the growth of the causative organism, or the growth of new organisms beyond the reach of the antibodies; (5) the proper preparation of vaccines from growths of the causative organism.

I. *A correct etiological bacteriological diagnosis.*—In discussing the correct etiological, bacteriological diagnosis, we must bear in mind that a virulent bacteria will very often grow much more rapidly on artificial culture media than virulent ones, and if both are put on the same culture medium will destroy the virulent bacteria. Thus it can easily be seen how a vaccine may be made from an unrelated organism. The failure to get results in the use of immunotherapy has often been brought about by the use of just such a vaccine. The taking of a smear from the point of infection, inoculating culture tubes, and sending them to a laboratory with a request to make a vaccine, without first determining the causative organism, will bring about many failures without vaccine as a therapeutic agent being at fault. I have seen containers filled with vaccine, ready for shipment to a physician, labeled "so many million organisms per cubic centimeter, containing a small micrococcus, a bacillus unidentified, and *Staphylococcus albus*." This vaccine may or may not have contained the causative organism, and not only is the presence of the causative organism in doubt, but its quantity unknown, a fact which prevents even approximate dosage.

To illustrate this point, I shall relate the following case:

Case I.—Miss W. H., aged 28. Operated on by suprapubic cystotomy for severe hemorrhage into the bladder from tuberculous ulcerations in the bladder wall. Three or four days later a severe chill occurred, followed by temperature rise to 104° or 105°, and for 93 days this daily temperature rise continued, with remissions to below normal. The patient's condition at this time became very grave. She was greatly emaciated. About the ninetieth day, tubercle bacilli were found in her urine and for the first time the tuberculous origin of the trouble was discovered. This discovery was responsible for my being called in on the case by the attending physician, who knew my work with tuberculin. The question of vaccine had not been considered up to this time. As previously stated, acute infection had now lasted for ninety-three days, and when I examined her, I found her in a most desperate condition, suffering from what appeared to me to be a streptococcus septicemia. All urine came from the suprapubic incision, but was not recognizable as urine; it was a thick, creamy discharge having microscopically the appearance of pure pus which on analysis showed urinary elements. A microscopical examination showed numerous tubercle bacilli with a short-chain small streptococcus predominating, with an admixture of other organisms

such as staphylococcus, and a small micrococcus, the identification of which we did not deem worth while at the time. Suitable culture media were at once inoculated and the making of a vaccine of the streptococcus was ordered. Meantime a stock streptococcus from a similar condition was at once injected in order not to lose valuable time waiting for the autogenous vaccine to be made. The laboratory report, both a day and two days later came back that no streptococcus grew in the media. For a few days fresh inoculations were made with the same result. Finally, on the third or fourth inoculation, we were able to isolate the streptococcus. The reports always came back that there grew either a small micrococcus unidentified, a staphylococcus, or the colon bacillus; and in each case I rejected the growth for a vaccine, as I was convinced from the pus appearance in the smear that the streptococcus was the causative organism. The stock vaccine proved efficient; we not only had the patient's temperature normal within 48 hours after the first inoculation, but after three more inoculations, during a period of two weeks, the patient was out of bed. Pure urine appeared from the suprapubic wound with only a microscopic trace of pus. At this writing the patient is still coming to the office for tuberculin treatment, which was instituted ten days after the first inoculation of vaccine; the suprapubic wound is closed; the urine which began to come through the normal channel shortly after the pus disappeared, is free from tubercle bacilli; the bladder is under normal control, micturition occurring only four or five times a day and once at night; her weight, which was ninety pounds at the beginning of treatment, is now 116, and she has for the last two weeks resumed her former occupation of general housework.

2. *The correct time of administration of the vaccine.*—In discussing the time of day for a vaccine inoculation in acute infection, we must bear in mind that time is a great factor in this class of patients. We cannot indiscriminately give an approximate dose of vaccine, especially if we are forced to use a stock vaccine pending the manufacture of an autogenous one, and then wait four or five days for an effect before a repetition of the dose. We must so gauge our inoculation, that in 24 hours we may be able to judge whether our inoculation was sufficient to effect a beneficial influence on the patient's condition.

In studying a temperature curve, in acute infection, we find that during 24 hours there is an ascent of temperature continuing for several hours, a period during which the highest temperature is maintained, and then a long interval during which the curve descends, reaching its lowest level at normal, or even below normal. The period of ascent is the period of resistance, during which time the defensive mechanism of the patient is exercised to its maximum. At the height of the curve the patient holds his resistance until the moment of exhaustion, when the temperature begins to fall. During the falling of the temperature there is a multiplication of the bacterial elements, replacing those destroyed during the defense and perhaps even accumulating to a larger extent than they were present before. It is during this period of lack of defensive power on the part of the individual, plus the lowered temperature which is favorable to the growth of bacteria, that we can extend any aid by artificial means. The establishment of an antibody factory in the subcutaneous connective tissue, away from the point of infection, will prevent the reinforcement of the enemy and will turn the tide of battle in favor of the patient. It is therefore clear that a vaccine inoculation should be given during the descent of the curve; at the same time we must allow the maximum time for the accumulation of a sufficient amount of artificially stimulated antibodies to produce a positive effect. And so it is best to choose an hour or two after the high point of temperature for the day has been reached. This will allow sufficient time for the vaccine to become active before the lower temperature of the day has been reached; in other words, the time of the least resistance; and if the dose was sufficient, this effect will be shown by the high point of the day following not reaching as great a height as on the day previous. If the height of the day is 104° and is reached about 4 P. M., the proper time for inoculation would be approximately 6 P. M., and the efficacy of this dose should be manifested by the temperature at 4 P. M. the following day reaching only between 102° and 103°. However, if no temperature change occurs in twenty-four hours, then the dose given was not sufficient and a reinoculation can be practised in the same relation to the height of the temperature as previously.

Thus it is clear that by gauging inoculations at the correct time with relation to the height of the temperature curve, we can judge the effect of treatment within twenty-four hours and reinoculations will be practised without the loss of precious time. At these reinoculations, either the dose can be increased, or the discharge further examined for a possible error in the stock vaccine used; or one can become convinced that an antogenous vaccine is necessary without unnecessary delay.

To illustrate this the following case may prove of interest:

Case II.—Mrs. M. R., aged 66, had suffered from diabetes and chronic interstitial nephritis for many years, but managed to keep in fairly comfortable health by being under the care of physicians at all times. She infected her great toe in cutting a corn; the infection spread rapidly over the entire leg with swelling doubling its size, temperature rose to 104° and the surface of the entire limb looked almost like an erysipelas. Both from the appearance of the leg (erysipelas) and the septic temperature I concluded that it must be a streptococcus infection and used as stock an erysipelas strain from a former patient. The temperature reached its height at about 9 P. M., and when I arrived between 10 and 11 P. M. to give the first inoculation, I found the patient in her fifth day of the disease, with the last two days in a very critical condition, having been constantly in a muttering delirium. The pulse was very poor and the urine showed signs of acute nephritis.

A dose of 20 mil. of the vaccine was administered, but the temperature at 9 P. M. the following day reached 104.5°. At 11 P. M. 40 mil. of the streptococcus was given, a smear from the serum taken from a bleb over the ankle showed a few short chains of streptococci; cultures were made from this, and a vaccine ordered, but was cancelled two days later, as the temperature in twenty-four hours after the second inoculation had reached only 102.5°, with the patient out of delirium, and expressing a desire for food. The swelling markedly diminished, the redness almost entirely disappearing except for four or five patches about the size of a silver dollar remaining over both sides of the ankle, two or three over the anterior surface of the tibia, and one just over the knee. Two days later a fluctuation appeared under these red spots; under local anesthesia punctures were made and a seropurulent discharge evacuated from each area. Cultures produced no growths from this discharge. Forty-eight hours after the last inoculation the temperature came to normal and remained normal until the sixth day after this inoculation, when the temperature again rose to 101° at 4 P. M. At 7 P. M. a third inoculation was given, using 50 mil. of streptococcus as the dose, and the next day the temperature was normal, the discharge from the punctured incisions stopped, and in another two days healing of all these areas occurred. After inoculation of 50 mil. of streptococcus on the fifth day after the last the patient was pronounced cured.

Four years after this occurrence I had occasion to see this patient at the home of one of her married daughters, whom I was called to see in consultation; she told me that whereas previous to this blood poisoning she had had attacks of facial erysipelas nearly every year for several years, the erysipelas had never returned since.

3. *The determination of correct intervals between inoculation.*—Incidentally, the last quoted case illus-

trates this point as well. After an effective dose, it is better to wait for the tendency to the recurrence of the temperature in order to determine the interval than it is to readminister vaccine by guessing at the intervals; it is more scientific, it will prove the value of vaccine by eliminating the conviction that a spontaneous cure has occurred, and will prevent the possibility of a negative phase by cumulative effect. Once the temperature has again shown a tendency to rise, the interval can be determined for future inoculations as one day before the expected return of rise in temperature. The fear is groundless that the return of temperature might bring back the severe condition where vaccine may not again prove efficacious; as when once vaccine is effective in a given condition, it will subsequently be even more efficacious in the same condition.

4. *The prevention of the growth of the causative organism, or the growth of new organisms beyond the reach of the antibodies.*—As the form of therapy with which we are concerned is an immunotherapy, our defense against the invading organism can be successful only so long as the invading organism can be reached through the circulation. But if the infection brings about a profuse serous accumulation such as occurs in peritonitis, or in pleuritic effusions, the antibodies, when carried into the effusions, are so diluted that but few organisms can be reached; on the other hand, these serous effusions form such fine culture media for the growth of the bacteria that, were we to permit it, this growth could far outstrip any defensive products the circulation might throw into this effusion to counteract it.

Having come to realize that our enemy is beyond our reach, we must adopt other methods in combination with our immunotherapy to counteract this possible invasion from his stronghold. That can be done by aspiration, by catharsis, by filling cavities with substances that will resist bacterial growth after the serous effusion has been removed. In the pleural cavity this is particularly effective by using olive oil to replace the aspirated serous discharge. The olive oil in the pleural cavity will not only fill the hollow when the expansion of the lung fails, but it will also act as a lubricant between the roughened parietal and visceral pleura. A host of other methods exist both to get rid of, when already present, and to prevent serous effusions, methods which the scope of this paper does not embrace.

Again, bearing in mind that an infection may be beyond the reach of antibodies, the failure of immunotherapy in cerebral infections may be accounted for. We know that the cerebral cavities are beyond the reach of the antibodies, and unless we use antitoxic substances injected directly into the cerebrospinal circulation, immunology must prove a failure here.

5. *The proper preparation of vaccines from growths of the causative organism.*—In dealing with autogenous vaccines, it must be borne in mind that slipshod methods may creep into a bacteriological laboratory as well as into any business institution. I know of instances where standardization is done by comparison of the opacity of the resultant suspension of bacteria in the normal saline with other opaque fluids, supposed to be equivalent to certain bacterial counts. Unless great care is exercised in the making of vaccines, autolysis of the bacteria may occur, making the vaccine innocuous. Again, it may not be amiss to mention that the improper treatment of the infected culture tube may play an important part in producing an inactive vaccine. For instance, if an infected culture tube is exposed to cold or allowed to lie around for any length of time, although we may get the microorganism to grow again when placed in an incubator at proper temperature, it may have become so attenuated that it will no longer stimulate antibody formation; or else its stimulation may become so feeble that it will have very little value as a vaccine.

In conclusion I would like to call attention to the fact that many elements enter into the use of the artifically induced immune response as a therapeutic agent besides those I have mentioned. And if the points I have brought out in this paper are not found as important as I wish to make them, at least let this writing serve as a warning against the disregard of vaccine in acute infections before a thorough analysis is made and the cause of failure discovered elsewhere than in the vaccine itself.

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THE HISTORY OF CONDENSED MILK, WITH A NOTE ON ITS THERAPEUTICAL USES.

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The history of condensed milk emerges bit by bit from beneath the records of kindred industries, as, for example, the refining of sugar and the evaporation of fluids and substances liable to decomposition. It deals with important subjects in physics and chemistry which have been stowed away from sight and have therefore been unduly neglected. It is almost essential in understanding the uses of condensed milk that we should know something of the principles upon which it is made, yet this knowledge has hitherto ended at the "curtain" or peroration of the lecturer or manufacturer when introducing condensed milk as a food for children and babies. The mere mechanics of the subject should preserve us from a view so superficial.

Some of the contributions to this science do not demand much notice. The dissertation of Braun, and the brief history of Hosford in the *Milch. Zeitung* several decades ago, come to nothing, or next to nothing, for they describe methods of manufacture that have long since gone to pieces. Mohan, indeed, has given us something more in a brief reference to the patents of Newton and of Green, but it is not clear whether he has read the original specifications or not. For, as to Green's patent, it cannot be stretched to cover any method related to the manufacture of condensed milk.

The invention of the process really originated with Howard, whose vacuum pan recalls some names illustrious in science and trade. It was invented, wrote Maumené in his "Fabrication du sucre," t. i., 3, in 1816. The account of the apparatus was given by Howard's friend, Thomas Thomson, in the *Annals of Philosophy*, 1816, Vol. 8, p. 209, which was translated and published in the *Annales de chimie et de physique*, 1816, p. 373. "In the ordinary way of boiling sugar, the temperature is so high that a considerable portion of the sugar is converted into treacle. Mr. Howard's vessels are globular, and of copper, and connected with an air pump, which is wrought during the whole time the boiling goes on. The consequence is that a vacuum is formed within the boilers. This enables the boiling to take place at a temperature so low that there is no risk of destroying any of the sugar. The vacuum is such as to support a column of mercury from one to four inches in height. There is a thermometer attached

to each boiler, and likewise a mercurial gage to give the degree of rarefaction." (From A Short Sketch of Mr. Howard's New Process of Refining Sugar). Manufacturers of sugar and of condensed milk have made full use of this invention. The vacuum pan described in Thomson's memoir is virtually the same as the globular and cylindrical apparatus in use to-day. According to Foster (Treatise on Evaporation) "the vacuum pan is quite as old, even older than the multiple apparatus . . . it has the same unpractical globular form, low and confined evaporation space, small heating surface."

These passages describe the vacuum pan used in refining sugar and in condensing milk; they show that the two industries are inseparably connected. Even the multiple system of Wellner-Jelinek by which large surfaces of milk or sugar are exposed to evaporation, is used by some manufacturers, in making evaporated milk, which in this context must not be confounded with condensed milk. It is certainly important that Howard's vacuum pan has given such an impulse to the manufacture of condensed milk.

What must be regarded as the most valuable feature of Howard's system is generally found in the manufacture to-day. In nearly all factories the vacuum pans are worked upon the general principle of Howard's. The air is kept, by the working of an air pump, at such a state of rarefaction that the milk boils at a temperature too low to cause browning, and the other changes incident to exposure to a temperature of 100° C. By carefully regulating the supply of heat to the pan, and of cold water to the condenser the progress of the operation being watched through a glass plate in the roof of the chamber, the condensation is carried on at a rapid but uniform rate until completed. The milk after sugar is added is raised to such a temperature that it may begin to boil immediately when brought into the rarefied atmosphere of the vacuum pan.

Richmond in his "Dairy Chemistry" refers to the multiple evaporation system, without, however, telling us where it is employed. A vacuum pan with a fairly large vapor space is used by the best manufacturers in America. The heat is carefully regulated, as well as the cold water to the condenser, and the milk is boiled at an even, rapid rate until concentration is sufficient, a point easily told by an experienced operator. The pans have a large heating surface, fitted with coils, as in the Wellner-Jelinek system. There is a high vapor space and low boiling level, unlike many pans in which the steam coils occupy most of the space, leaving little or no room for the charge. In a really good and modern pan the full charge is only 0.1 to 0.12 meters above the top row of tubes, which are of copper. These tubes are placed in 2, 3, or 4 rows, according to the size of the pan, and heated separately with steam. A high vapor space in the pan is indispensable to the manufacture of a good brand of condensed milk, since it allows the dispersion of gases from the mass of boiling milk. Such a system, however, is in my experience not often seen, the proof being the low standard of condensed in the constituents of the original milk. According to Tibbles, these variations in the composition of condensed milk are so great that it is essential that some standard should be fixed. Now, a medium quality of cow's milk would contain before condensation 3.3 per cent. of fat, and condensed to one-third its bulk 10 per cent. of fat. Such milk should also contain 8.5 per cent. of solids-not-fat before evaporation, and the condensed substance at least 25 per cent. of solids-not-fat. It has therefore been an established custom of the British Government to stipulate that it should contain not less than 10 per cent. of fat, and 25 per cent. of solids-not-fat. The Board of Agriculture made the following regulation under Section 4 of the Food and Drugs Act 1899.

"That any condensed milk (other than that labeled 'Skimmed Milk' in conformity with provisions of Section 2, Food and Drugs Act, 1899) in which the amount of milk-fat is less than 10 per cent., or the amount of solids-not-fat is less than 25 per cent. shall be deemed to be so deficient in some of the normal constituents of milk as to raise a presumption until the contrary is proved, that it is not genuine."

This English rule is a good one, and should be followed.

It is now more than fifty years since Gail Borden first manufactured condensed milk on a commercial scale. In 1856 he received a patent for a "process for concentrating sweet milk by evaporation in vacuo, having no sugar or other foreign matter mixed with it." Readers of advertisements naturally conclude that he invented condensed milk; at least that is the impression these advertisements make until corrected. But there is no doubt in the minds of those who have studied the history of condensed milk in detail that it was a Frenchman who first thought of it, and an Englishman, named Newton, who perfected it. The Frenchman was Appert, who in 1809 published his "L'art de conserver toutes les substances animales et végétales." This little book, which is now extremely rare, was dedicated to Gay-Lussac. At the time Gay-Lussac was a Member of the Board of Arts and Manufactures. His opinion of Appert's method is of particular interest. "The Board of Arts and Manufactures," he wrote, "has reported to me the examination it has made of your process for the preservation of fruits, vegetables, meat, soup, milk, etc., and from that report no doubt can be entertained of the success of such a process. As the preservation of animal and vegetable substances may be of the utmost utility in sea voyages, in hospitals and domestic economy, I deem your discovery worthy of an especial mark of the good will of the government."

Appert tells us how he condensed milk, "reducing it to two-thirds of its original volume." He sweetened it with sugar, though sugar, he says, is "hurtful to the patient." Evidently he disliked sugar. Indeed, his opinion on its use for preserving milk might have been written at the present day. I quote it at length. "A second inconvenience is this, that a large quantity (of sugar) is required to preserve a small quantity of milk; and hence the use of it is not only very costly, but even in many cases pernicious."

It is clear that the original idea in condensing milk was to preserve it, and its appropriate uses are equally distinct. Preserved or condensed milk was intended for armies, fleets, and hospitals, and not at all for children or babies. An English translation of Appert's work was published in London in 1811. Englishmen followed Appert in his process, and a patent for evaporating milk in a vacuum pan, it is stated vaguely by Mohan, was granted to Green in 1813. I have been unable to find this patent in the Specifications of British Patents. But there is a patent that was granted to Green in 1850 for the "preservation of substances liable to decomposition and destructive agencies." (Eng. Pat. 13,420.)

There is no doubt, however, that the process of

condensing milk in vacuo was fully developed in 1835 in the patent granted to Newton. (Eng. Pat. 6787, 11 March.) As the words of the specification tell the story of the original condensed milk, it is worth while to repeat them. (Specifications of British Patents 1830-1835.) "A method for preparing animal milk and bringing it into such a state as shall allow of its being preserved for any length of time with its nutritive properties and capable of being transported to any climate for domestic or medicinal use."

"Taking the milk in a fresh state, as drawn from the animal, having first strained it, if necessary, to get rid of any dirt or other improper matter which may have accidentally fallen into the pail or other vessel while milking, I introduce into the milk a small quantity of pulverized loaf sugar, say, from fiftieth to one hundredth part in weight of the whole quantity of the milk, which quantity may, however, be greater, dependent upon the desired sweetness of the preparation when completed. On the sugar becoming perfectly dissolved I subject the milk to a tolerably rapid evaporation, either by blowing through the milk warm or cold air by means of a suitable apparatus of any convenient form such, for instance, as those at present in use for evaporating syrups, or by means of external heat in connection with a vacuum above the surface. . . . Warmth will best be obtained from hot water or from steam, or heated air. . . . By evaporating the aqueous particles of the milk in this way, its nutritive or essential parts may be concentrated, and its substance reduced to the consistency of cream, honey, or soft paste, or even into dry cakes or powder, and may in the latter states be exposed to the air for a length of time without being impaired, the sugar tending to preserve it. By dissolving the milk so prepared in a proportionate quantity of warm or cold water the original milk is reproduced, with all its properties, original flavor and salutary qualities."

These early methods of making condensed milk proved most expensive undertakings. Though the quality of the product was good, even superior, the quantity was clearly not great enough for the needs of fleets, armies, and hospitals. It is therefore no small achievement of Gail Borden to have manufactured condensed milk on a scale meeting commercial conditions and requirements. I am inclined to think that the article he produced in 1857 was of better quality than the present brands. In 1857 a committee of the New York Academy of Medicine published a report on condensed milk after a visit to Gail Borden's laboratory. The details are not complete, but enough is said to make a not unpleasant picture. In the following words we get the impression of a primitive process, but one which is not tainted by modern arts. "The milk, immediately after leaving the cow, was strained into an ordinary milk can, then placed in a cold water bath until it was entirely deprived of its animal heat. It was then heated to a temperature of 175° Fahr. The milk is now passed through a second strainer, and without delay removed to a vacuum pan, where water is evaporated. This pan consists of a large metallic vessel supplied with a jacket for the reception of steam, by means of which heat is applied." It is not stated whether sugar was added. The uses of this condensed milk are appropriately noted. It "imparts a delicious flavor to coffee, and whenever used in the various departments of the culinary art has given entire satisfaction." At the end of the report the committee publishes letters from the stewards of steamship companies praising the milk as an article of food on long voyages.

The indications for the use of condensed milk are plain. It is both a food and medicine: a medicine for invalids, the sick in hospitals; a food for soldiers, sailors, and travelers. Its chief fault is the seductive sweetness that makes such an appeal to children. Again, the saturation of low-graded milk in sugar is a source of profit to manufacturers. At present the conditions of trade are such as to make the original uses of condensed milk more significant than ever. The food crises in Europe has reached such an acute stage as to necessitate the constant production of condensed milk for the armies and adult civil population.

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THE PROBABLE FUTURE EVOLUTION OF INSURANCE MEDICINE.

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Life insurance is now doing a wonderful work but its present field of operation is greatly restricted; whether necessarily so is subject to argument but that it should be enlarged, if possible, is not a matter for dispute, because even a casual observation discloses the fact that as the business is now conducted the life insurance agent is laboring under an almost impossible condition—those who are able to secure life insurance do not urgently need it while those who need it most cannot get it. Let us see if the present unsatisfactory condition is necessary and, if not, how it may be remedied.

The average duration of life does not change rapidly from generation to generation. It is true the potential longevity of man now is only a fraction of what it was in antediluvian times and actuaries tell us it is now being shortened in each generation. It doubtless will continue to fall so long as doctors rely on the augmentation of immunity to prevent disease, (see "Physiology and Pathology of Senescence," *So. Cal. Practitioner*, May, 1911), but by using the statistics compiled in recent generations it is possible to quite accurately estimate the average duration of life in this generation. Therefore it is safe to insure the inhabitants of a country basing the price charged upon mortality tables; it is also safe in the same way to insure all the inhabitants of a state, even of a healthful county. It is not safe, however, to insure those who voluntarily apply for insurance because it was found early in the history of insurance that those who are anxious about their health are prone to apply for insurance while those in good health do not seek it. This character of human nature is a thorn in the

side of the insurance business. With the discovery of this trait in men there appeared two new factors in the insurance scheme—the agent to solicit the healthy, and the medical examiner to keep out the diseased.

But the entrance of the doctor into the insurance business marked the beginning of the end of insurance as it is now conducted. The plan of life insurance based on mortality tables of average lives has no place for the medical examiners. Ignorance of physical condition is required for life insurance to be ideal, and just as knowledge of the health of applicants comes in, the pure insurance feature will go out of life insurance, for common honesty will demand that the cost of insurance will depend on the individual risk if this risk be known and, to carry the thought to its ultimate conclusion, if death could be accurately anticipated life insurance would be a crime.

This of course would not affect the legitimacy of accident insurance, and accident insurance, if we cling to mortality tables while using medical examiners, is certain to be *the* insurance of the future. If we exclude present infection in an applicant by scientific test and demonstrate, by examination, a normal nervous system, a perfect heart, soft arteries, good lungs, healthy kidneys, and a digestive system in good working order, then it is not life insurance he needs so much as accident insurance for almost any illness he may contract will be accidental.

I might say, in passing, that accident insurance of the future will cover infection, because contracting an infection is generally as accidental as a lick on the head. The present line drawn by accident companies between sickness and accidental injury is a purely imaginary line. For instance, they admit that ptomaine poisoning is an accident, but claim autointoxication is a disease. The fact is autointoxication, so-called, is often caused by putrefactive germs in the intestinal canal. It follows the only difference between this form of autointoxication and ptomaine poisoning, as recognized by accident companies, lies in this: in ptomaine poisoning the germs make the ptomaine outside the body while in autointoxication the ptomaine is made inside the body, a distinction too fine to be drawn. Accident insurance in the future will cover infections and a premium will be charged commensurate with the risk involved. This will eliminate the dissatisfaction now prevalent and it will demand a thorough examination by accident companies.

To get back to life insurance, the ideal insurance is state insurance where everybody, sick and well, is compelled to carry a certain amount of insurance, the premiums charged being the premiums of our life companies to-day. At the present time this is impractical. But is life insurance as conducted to-day a dishonest business? No, it is not dishonest but illogical. The managers and actuaries probably honestly believe they are running the business on the foundation of the average expectation of life as shown by mortality tables. But some men by actual measurement are as old at 30 as others at 60. (See "How Old is Ann?" *So. Cal. Practitioner*, September, 1916.) The fact is life insurance is run on the firm foundation of medical science and the ability of examiners to measure the expectation of individual lives. If this be true there is no logical reason why insurance should not be issued to sick and well alike. The mortality in typhoid fever, for instance, is just as uniform as is the mortality experienced by the various insurance companies.

We, the medical examiners, are willing to assume the responsibility of making prognosis in all cases and will promise to place the actual mortality as near (if not nearer) the expected as we do at the present time. Now we are asked simply "Is this a good risk?" Then we will be able to say how good or how bad.

If the insurance business continues to be conducted by private corporations there is bound to come a time when life insurance premiums will be made according to the risk involved. This means competition in prices. It also means examinations or appraisements and price-making before insurance is sold. It will also require thoroughly scientific diagnostic and prognostic methods. At first thought it may appear that this would be a very expensive method of conducting the insurance business but I believe it will be almost free from expense.

Suppose an insurance company decide to conduct their business in this way. They will hold their examination in prognosis after the graduation of a class in a medical college. Those who pass will be appointed examiners whose duty it will be to examine insurance prospects for a small fee or nothing. In doing this they will immediately have a practice, unremunerative it is true, but it will grow into a paying practice which will be along the line of preventive medicine, which will be the medicine of the future and which will be ushered in immediately by this plan of making life-insurance examinations.

That the procedure may threaten to undermine the whole structure of medical ethics will not stop it and there will probably be a way to avoid this catastrophe. Who knows that competition in prices in the insurance business may not ultimately be the life of the insurance business as it now is of every other business?

But whether they insure substandards or not the company that adopts the plan of examining prospects and suspects free of charge is going to get the lion's share of the insurance business. It will put new life in life insurance and will take the drudgery out of the present agency methods.

Baker-Detwiler Building.

Alcoholism a Symptom.—W. A. White states that a normal man does not become an inebriate. This goes counter to the accepted belief that an alcoholic has simply been overcome by a habit-forming drug. Take away his drink and he will never become normal. Inefficiency to face the world leads him to resort to liquor, and when he is deprived of the latter he still remains inefficient. Some men also have periodic psychoses which may be ushered in by a drinking spell and cease to want drink when the psychosis has ceased. Inefficiency is accompanied with a desire to escape the sense of reality, which may lead a man to shut himself up and drink to stupor. From the author's viewpoint alcohol in such cases is never a stimulant and differs from a mere habit-forming drug which call for use in ever increasing amounts.—*Interstate Medical Journal.*

Treatment of Human Rabies.—Geiger reports thirty-three cases of rabies in man occurring in a recent epidemic in California. Nine people had begun or finished the Pasteur treatment, but according to the canons of treatment in only three of the nine is failure to be charged. Short incubation period showed extreme virulence, and twelve patients had been bitten about the face. The average duration of illness was three days. In but six cases had the bites been cauterized. There were two cases of pseudo-rabies, one simulated and the other hysterical, which are not included. The dog accused remained healthy. No sedative was of any avail, and this is true of quinine. This is an old remedy recently revived.—*California State Journal of Medicine.*

MEDICAL RECORD.

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CHEMOTHERAPY OF TUBERCULOSIS.

THE many failures in the field of serotherapy during the past quarter of a century, beginning with Koch's discouraging fiasco in 1890, and the large measure of success obtained with salvarsan and similar products in the treatment of syphilis, not to mention quinine in malaria and ipecac in amebic dysentery, have turned the attention of experimenters and clinicians to the possibilities of chemotherapy in the conquest of disease. As ever, tuberculosis is the touchstone in all those attempts, and this for many reasons: it is the most common of all mortal diseases, so that material for study and experiment is never lacking; its germ is known, so that experiments *in vitro* as well as by animal inoculation are easily carried out; its course, once it has reached the second stage, is so almost invariably progressive that its arrest under any method of treatment would seem fairly attributable to the measures thus carried out; and finally the fame to be accorded one who discovers a real cure of the disease is so great as to tempt many to put forth their best endeavors to obtain it.

One of the latest of these experimental studies has been made by Gensaburo Koga of Tokyo who makes a preliminary experimental and clinical report in the *Journal of Experimental Medicine* for August, 1916. He used a compound of copper and potassium ferrocyanide treated in a special way so as to prevent the formation of free hydrogen cyanide. In the animal experiments, in which over 150 guinea-pigs were used, the preparation exerted a decided action upon the tuberculous lesions. A single injection was without any appreciable effect, but after repeated injections a decided regressive change was observed in the lesions and the number of bacilli decreased until they were finally no longer to be found on microscopical examination. That the tissues were not absolutely sterile, however, was shown by the fact that injection of emulsion of the same into the peritoneal cavity of guinea-pigs was followed in some instances by the development of tuberculosis.

Trials of the copper cyanide in the treatment of human tuberculosis were made in a number of cases, reports of eleven of which are given in some detail. The author's conclusions, which seem to be justified by the reports, are "that the preparation greatly improves or apparently cures pulmonary and surgical tuberculosis in the first and second stages, and that it seems also to produce beneficial effects upon the disease in the third stage. The duration of those beneficial efforts is still to be established by more numerous trials and many years of observation." In the same journal is a report by Morisuke Otani of eighteen cases treated with Koga's preparation, in a number of which very favorable results were obtained, though in some absolute failure was noted.

We have thought it worth while to comment upon these experiments, in spite of the fact that Koga does not give directions for the preparation of the drug, apparently therefore intending to keep it secret, because they present a strong argument in support of the value of chemotherapy in tuberculosis and, by analogy, in other infectious diseases. The trustworthiness of the reports and the repute of the authors may be accepted on the authority of the journal which publishes the papers. It is not to be supposed, however, that there is only one preparation that is sufficiently parasitotropic and not too organotropic to be efficacious in the treatment of tuberculosis and other bacterial diseases; indeed we have considerable evidence to support Barton L. Wright's claim that succinimide of mercury has this property and that tuberculosis and many other infections may be controlled by intramuscular injections of this drug. Its efficacy has apparently been proved in various diseases by a number of observers and it possesses the great advantage of being an open remedy, always to be had, and available by any one of ordinary competence. Kago's and Otani's reports are of great value as affording additional testimony regarding the efficacy of chemotherapy in bacterial infections, and the experience of Wright and others would appear to justify further trials with succinimide of mercury along this line of therapeutic endeavor.

THE DEVELOPMENT OF PHYSICAL RESERVE FORCE.

WHATEVER other significance there may be in present-day military movements in the direction of preparedness, it indicates a physical renaissance that must redound to the good of the race generally and to its stability particularly. Physical improvement, as such, even if separated from a mental improvement of the race, is of great benefit. Physical development the result of healthy indulgences can go a long way to overcome the unhealthy tendencies, the sedentary life, and the vices of present-day civilization—to such an extent the forerunners of physical and mental decay. Perhaps the enormous increase in the mentally deficient is actually the result of these tendencies, and not merely relative, as is so often claimed. In any event, even the training of these defectives must be essentially a physical one. First, they must be taught the muscular power and the muscular coordination before they are prepared for much mental training. "A crooked mind in a crooked body" is as true as it ever was. The oft-repeated charge that a great mind and a great body do not go hand in hand is not true. The college athlete with a poor record in

his mental work is a poor student only because all his attention, all his time, and all his energies are directed to the athletic pursuits to the neglect of the mental. There should, of course, be maintained a proper balance here, as everywhere. In the building up of the body it is not the barbaric sport that is demanded, or the highly competitive, but rather the rational sport aimed at the development of definite muscle groups and the general increase of their resisting power or reserve force. The barbaric and the highly competitive sports are signs of physical decadence, in which the decadent, being themselves unable to get personal benefit from physical exercise, demand this from others to stimulate their failing powers.

The importance of increasing the muscular power and the muscular reserve is at once apparent when it is realized that the muscles are really the internal organs of respiration, wherein the interchange of blood necessities takes place. The increase of muscular power increases the extent of this respiratory membrane. The tendency toward physical training, as well as its specialized form, military training, does not aim so much at the increase of the actual physical power as at the increase of the reserve power. The former, no matter how small, is usually sufficient to mainttain ordinary bodily needs. But the ordinary muscular force is wholly inadequate to sustain any unusual demands of the body, whether from disease or otherwise, and against which the body must be prepared. The laity speak of the increase of reserve force as a "hardening" process. Under this conception it is believed that any hardship or discomfort increases the body reserve, and that the more suffering and hardship the better. The more comfort and ease under which one lives, the less reserve force there is developed—because not needed—and the "softer" they become. Hardening is exercise of the wholesome kind against resistance. It must, however, be done with an eye on the actual powers of the body, from the standpoint of endurance. The amount of fatigue must never rise beyond a point where the fatigue products can be easily absorbed and the body recuperate. Otherwise, whatever increase of power there is will be actual, and needed to drive a less easily running human engine. There may be increased muscular power, but it will be bound—"muscle bound" to the actual needs of the body.

To be rational, the hardening process, or the reserve building, must be periodic and ever increasing. The body must be immunized, so to say, against a certain amount of fatigue toxin before it attempts to incur more of it. The belief that the body can be placed indiscriminately in positions of discomfort and hardship which will of necessity be the means of improving it is fallacious. For a body that is already on the ragged edge this sort of immunization may be fatal. In actual immunization methods, contraindications especially include the ill, the weak, and the sensitive. The injection of bacterial products often produces a negative phase that is too much for them. In muscle building, this same negative phase must be reckoned with, otherwise there will be exhaustion and collapse.

The advantage of building up a reserve force is well illustrated in cardiac conditions. A break in compensation is really a lowering of the reserve force, no matter how large is the actual force generated to drive the blood against increased resistance. A reserve force of varying height is necessary to prepare the heart against any emergency demands made upon it. In the normal heart, the reserve force is always many times that of the actual force. And while this same condition is of prime importance in the muscles generally, and should be developed either by systematic physical training, by "hardening," or by military training, it should be encouraged only under proper guidance. Each individual must have prescribed for him the proper kind and the proper amount of physical exercise, else there will be a great many who will suffer from the general application of a good principle, that should have been applied specially.

THE TOO-READY WRITER AND THE HIGH COST OF PAPER.

THOSE who are in possession of the facts have for years been deploring the extravagance of the American people with their resources, and nowhere is this national failing more strikingly emphasized than in the paper industry. Whole forests are laid waste to feed a paper mill which, when it has exhausted one region, moves on to another, leaving behind it a scene of ruin. If all the old paper and rags were hoarded by the housekeepers for sale the result would be a decrease in the price of paper and a resultant double increase in the family finances, from both buying and selling. Already magazines are feeling the high cost of paper; some have increased their subscription rates, others are contemplating this step. Some English medical periodicals are economizing by issuing a limited quantity of their annual indices and supplying them only to subscribers who write and ask for them.

George Eliot speaks somewhere of the too-ready writer. He has a facile pen and delights to exercise it. Undeterred by the superficiality of his knowledge of a given subject he plunges boldly in, eking out his remarks by glittering generalities whenever he feels himself at a loss for real material. The more he writes on a subject, the more clearly he reveals the tenuity of his information to the experts in that particular branch, and with it all he manages to impress some with his versatility. We are all familiar with the physician who goes around laden with reprints which he forces upon acquaintances. He is the same gentleman who persists in discussing every paper presented in the medical meeting whether he has anything to say germane to the subject or not. On examining his productions for a year we find as a rule little original work and that little first published in a leading periodical and then reprinted with slight revision in many smaller ones. One interesting case is dragged in *ad libitum et ad nauseam* to illustrate points in many papers and his references are nearly always confined to himself.

In view of the destruction of the forests to feed the paper mills, in view of the possibility of war with its privations, and for the sake of a long suffer-

ing public, will not the medical writer who has nothing to say, say it? The English publication *Nature*, which has been forced to reduce its size, in its issue of March 23d, hits the nail on the head when it begs its contributors to "confine themselves to essentials, points of prime importance, in order that our record of scientific works and events may still be as extensive as possible, though it must necessarily be less detailed." There is food for thought in this request. American medical writers would do well to avoid historical summaries, rehashes of text-book material, and unnecessary detail in the report of cases even though we have no Royal Commission on Paper scrutinizing our use of that necessity.

Fainting Attacks in Children.

This complaint attacks both sexes, but girls somewhat oftener than boys. Occasionally the fainting spells date from quite early life, but usually they do not appear until about the fifth year or later and are commonest after the beginning of the school age. In general features the attacks are very similar in all cases. The child is observed to "go white"; he may fall down but does not lose consciousness entirely, although in some cases he is dazed, or even only semi-conscious. Occasionally retching or even vomiting occurs, but in no case is urine voided involuntarily. The attack lasts for a period varying from a few minutes up to half an hour or even longer, and passes off gradually. Sometimes it is followed by a headache. The commonest time for the attacks to occur appears to be in the morning, often before breakfast, or while the child is getting ready for school. Many of the children are nervous and dyspeptic, but in a considerable number the general health is quite good and the appearance of the child is flourishing. The preceding statements are taken from an article by R. Hutchison in the *British Journal of Children's Diseases* for June. Despite the large number of patients with histories of fainting spells, the author saw but one attack himself. In his summary he neglects to state that the attacks are frequently repeated through a sort of cycle. The distinction from petit mal is readily made. In the cases narrated there is no mention of family history. The author is wholly unable to account for these seizures, and can only accuse the sympathetic. With one possible exception the heart's action was normal. The attacks disappear under improved diet and roborant measures. The literature of this subpect is extremely limited, but this is true enough of syncope in general. Since fainting seizures often represent epileptic equivalents, a further study of these cases might repay the trouble.

Venereal Disease in the Austrian Army.

It always happens that in a great war venereal diseases flourish. As the present European war is the biggest war ever known, so it is to be expected that venereal diseases should be rampant. That such is the case is stated in a paper contributed to the *Military Surgeon*, July, 1916, by E. Kilbourne Tullidge, formerly Captain-Surgeon in the Austrian Army. He points out that the statistics of the French, German, and Austro-Hungarian armies show that the number of troops both in the home zone and on the front are acquiring venereal diseases with results that far out-distance the records of any previous wars. Of the three important venereal diseases commonly met with, syphilis is the most frequently manifest among the soldiers, about 33 per cent. of whom are married men. Emphasis is laid upon the fact that prophylaxis is the one feature that stands out in caring for syphilis, and that all things should be eliminated that increase the lure of extramatrimonial sexual intercourse, not only during a soldier's active service but also at home in the communities and large cities. The writer insists that the whole subject of venereal disease not only in war time but in times of peace should be regarded and managed strictly from a hygienic-medical standpoint without regard for esthetic considerations. The day of prudery in fighting this disease is past, and the matter must be considered entirely from the common-sense standpoint of public health and safety.

News of the Week.

Poliomyelitis Epidemic.—With a total of 5,519 cases and 1,251 deaths to August 9, the epidemic of poliomyelitis in New York City still causes considerable concern. In the State outside of New York City, 630 cases had been reported to August 5 with 57 deaths. The disease has also made inroads into the adjoining States, and on August 4, the State Health Board of Pennsylvania ordered a quarantine against children under sixteen years entering the State from New York and New Jersey. Many of the towns of New York State and of New Jersey and Connecticut had already adopted more or less stringent quarantine regulations against children from New York City, and efforts have been generally made to prevent the traveling of children from one place to another.

The laboratory workers invited by Health Commissioner Emerson to study the epidemic and discuss possible measures for its control, met at the College of Physicians and Surgeons on August 3 and 4. Dr. Simon Flexner of the Rockefeller Institute was elected to preside, and two committees were appointed. The first, which is to study laboratory methods, is made up of Dr. Ludwig Hektoen, Dr. Hans Zinsser, Dr. Richard M. Pearce, Dr. J. W. Jobling, Dr. G. W. McCoy, and Dr. Theobald Smith; and the second, which is to study methods of prevention, of Dr. Victor C. Vaughan, Dr. M. J. Rosenau, Dr. William M. Park, Dr. Francis W. Peabody, Dr. John Howland, Dr. Augustus Wadsworth, and Dr. Charles C. Bass. At the close of the meetings a report was made to the Health Commissioner, of which the following is a part:

"The weight of opinion favors the view that infantile paralysis is mainly spread through personal contact, and measures have been directed chiefly from this point of view. Cognizance, however, has been given to additional methods of transmission, among which is the bite of insects. For sanitary purposes it is proper to consider that this disease is transmissible directly from the sick to susceptible persons, or indirectly from the sick through carriers. . . . In seeking to abate the epidemic, stress must be especially laid upon two things as is now being done: (1) The early recognition and notification of the disease, and (2) the immediate isolation of patients and cases of suspicious illness. Furthermore, on account of incomplete knowledge concerning the disease, measures known to be effective in checking the spread of other infections should be

portion are possessed of an immunity against any ordinary dosage from these specific infections. And, further, the race is a debtor to our profession to the extent of absolute prophylactic measures in two of these diseases.

Because of many etiological factors that tend to show kinship in these affections, a possible relationship between their separate organisms, it would seem rational to attempt to bring about a partial immunity against infantile paralysis, by the use of an allied antitoxin. I suggest, therefore, the use of the antitetanic serum as a prophylactic measure; say about 500 c.c. every week for three weeks or more, to all children known to have been definitely exposed. It may be that we would render unpalatable the nerve cells for that combination which is the peculiar terror in this disease. If we fail—we have at least tried, and done no harm.

HARDEE JOHNSTON, M.D.

BIRMINGHAM, ALA.

OUR LONDON LETTER.

(From our Regular Correspondent.)

NEW CHELSEA HOSPITAL—COLLEGE OF SURGEONS' MUSEUM—NATIONAL COUNCIL—CALCUTTA HOSPITAL SCHOOL—OBITUARY.

LONDON, July 15, 1916.

THE Queen opened the new Chelsea Hospital for Women on Tuesday. It is a red-brick structure of Georgian design and located within a few minutes' walk of the old hospital, close to St. Luke's Church. On one side of the way the houses have been recently demolished and the new hospital will form an important part of one of the many improvements which have gradually transformed the locality beyond recognition during the last forty years. Her Majesty had, as usual, a hearty reception from large crowds of people as she drove by and was received at the hospital by the Bishop of London, the Marchioness of Londonderry, the Countess of Ilchester, the chairman, the honorary treasurer, the senior surgeon, and a guard of honor of Chelsea pensioners in their old-fashioned scarlet coats. A bouquet was presented by the ladies' committee and Her Majesty proceeded to the board room, where the rector, the mayor and mayoress, and various officials were presented. The ceremony of inauguration took place in the out-patient department, where a great gathering of friends were assembled. The address of welcome having been read, the Bishop of London offered prayer and the choir sang a hymn which was composed by Sir Arthur Sullivan for the foundation ceremony of the old hospital thirty-six years ago. The Queen then formally declared the new building open, afterward making a tour of inspection of the wards, one of which is named after her, "Queen Mary Ward." At the old building excellent work was done for many years, but in course of time its accommodation was too restricted. The new effort was made possible by the gift by Earl Cadogan of the site, valued at £22,000, the promise of £10,000 from the Lunz trustees, and the release of a mortgage of £4,000 by the chairman, Mr. Dyer Edwardes, a dinner which realized £8,000, and a matinée £2,000. A sum of £30,000 is still required to set the establishment on a firm footing. The building is constructed according to the latest scientific ideas. On the walls the distemper used in the Lariboisière of Paris has been employed, which is said to last for eight to ten years. This is the first time of using it in England. The building of a new nurses' home must now be undertaken.

Professor Keith announces in the report of the Museum of the Royal College of Surgeons, of which he is the conservator, that at present it is closed except for those engaged in research. Donations to the collection have been nearly as many as during peace. The working staff has been reduced to three men. Last year the college undertook at the request of the Director-General A. M. S. the collection and preservation of specimens illustrating military surgery as met with in the present war. Over 800 specimens judiciously selected have, accordingly, been added to the War Office collection, classified by Dr. Colin Mackenzie. Last month members of the U. S. Army and Navy medical services visited the museum and examined the collection and the means of preservation employed. Dr. Cabot of Harvard also visited the museum with twenty-five medical men about to serve under him in France. Prof. J. M. Thomson has presented the collection of his father, Allen Thomson, to the museum. Professor Parsons has presented a series of clavicles and Professor Symington preparations showing how far the arrangement of the convolutionary pattern of a brain can be reduced from a study of endocranial casts.

At the first annual meeting of the National Council for Combating Venereal Diseases on June 23, Sir T. Barlow reviewed the work of the provisional executive committee. The council had been fortunate in the support accorded to it in all directions and meeting no opposition worth mentioning. Dr. Frederick Taylor, chairman of the medical committee, remarked that although the subject had been obscured by the closing of some special wards, as soon as certain promised facilities were afforded by the provision of treatment centers, the whole profession would rise to the occasion. Lord Sydenham was elected president and said that he had urged the election rather of a medical man, but had been overruled by those who preferred a layman with what was called an "open mind." The commission was indebted to the medical members, particularly to Dr. Mott, for much original matter in the report, which appeared at an opportune moment when it was most important to remove every preventable cause of racial deterioration. Moreover, all experience warned us of the danger of an outbreak of venereal disease at the close of a war. Some of the recommendations of the commission must await legislative action, but he hoped would not be forgotten, especially the suppression of quack advertisements and the modification in some degree of the marriage law. The council would remind the government of the necessity for the provision of centers at which diagnosis and treatment would be facilitated, and he gratefully acknowledged the presentation by the Grocers' Company of a syphilis ward at the London Hospital, which was the more commendable inasmuch as it could make no sentimental appeal. The council should also arouse and maintain the interest of the people and act as a general center of enlightenment, a task requiring no little influence with hospital committees and municipal authorities. Sir Rickman Godlee, chairman of the military committee, gave an account of the propaganda among the troops; there had been 1000 delivered to some 800,000 men in the various commands. Sir M. Morris paid a tribute to Lord Sydenham's chairmanship and said the report was likely to have a

more practical result than the report of almost any other Royal Commission.

The Calcutta School of Tropical Medicine bids fair to be a success. It includes a laboratory and a hospital; the latter, it is hoped, will be ready within a year, and the new eye hospital of the Bengal Government is to be erected opposite. Sir Leonard Rogers, I.M.S., is the first director of the institution, which owes its existence to so great an extent to his labors. To commemorate his services a committee has been formed in Calcutta to provide and place a bust or portrait of him in the school.

Dr. William Anderton of Ormskirk died on June 12 at 69. He held several medical appointments in the town and was chairman of the local Beekeepers' Association and had been appointed to act as judge at the coming show at Manchester.

Dr. William Alexander of Bournemouth died very suddenly of angina pectoris just as he had closed a hard day's work. He was 53 years old; took M.B., C.M., Aberdeen in 1887. Owing to ill health he went to South Africa, but returned at the opening of the Boer War and settled at Bournemouth, where he practised for the last 16 years.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 27, 1916.

1. Hemoptysis as a Symptom. Frederick T. Lord.
2. Common Sense and Consumption. John B. Hawes, 2d.
3. Sprains and Sprain-fractures of the Wrist Joint. A. C. Burnham.
4. A Study of Peptic Ulcer from the Diagnostic Point of View. Roscoe H. Philbrick.
5. The First Case in which Abdominal Surgery was Suggested for the Relief of Epilepsy. Hale Powers and Frank H. Lahey.
6. Prolapsus Ani in Adults. T. Chittenden Hill.
7. Scientific Research in Chronic Medicine from the Physiological Point of View.

1. Hemoptysis as a Symptom.—Frederick T. Lord has reviewed 549 clinical cases of hemoptysis and 307 instances of hemoptysis with autopsy taken from the records of the Massachusetts General Hospital. He states that judging from these cases it may be taken as a clinical rule, subject only to rare exceptions, that hemoptysis out of a clear sky, or when cough and scanty expectoration alone cloud, it is due to pulmonary tuberculosis. The rule seems to hold as well in those cases in which the hemoptysis occurs during a mild acute respiratory infection after exertion, moderate injury, or without any apparent cause. Exertion of itself cannot be regarded as an adequate cause of hemoptysis, but it may lead to bleeding earlier than would otherwise occur in a patient with tuberculosis owing to the added strain on the walls of blood vessels already weakened by disease. Initial hemoptysis, even though the only symptom, without subsequent manifestations of pulmonary disease and the maintenance of full health until life is terminated by some other cause, is to be regarded as of probably tuberculous origin. Of the various causes of hemoptysis in the probable order of their frequency pulmonary tuberculosis undoubtedly occupies the first place. It occurs in about 60 per cent. of all cases at some time in their course. It is represented among the 307 autopsy cases above referred to by only 27 cases, owing to the usual exclusion of patients in the active stage of the disease from the wards of the hospital. Chronic passive congestion probably occupies second place, but heads the list of the autopsy series with 105 cases. Then follow lobar (not broncho-) pneumonia, with 100 cases, pulmonary infarction with 48 cases, nontuberculous pulmonary suppuration with 14 cases, aortic aneurysm with 7 cases, new growths of the lung with 5 cases, and ulceration of the trachea and bronchi due to syphilis in one case. These records are of further interest in a negative sense because of their failure to confirm the still too prevalent belief that vicarious menstruation is an adequate cause of hemoptysis, no example of which was found in the autopsy series. Hemoptysis in the course of disturbances of the nervous system, in patients with the so-called "arthritis diathesis," and in those with high blood pressure, is likely to find its true explanation in one of the above mentioned groups. With reference to the influence of hemoptysis on the course and termination of the tuberculous cases the writer finds that for the most part the bleeding is intercurrent and without any appreciable influence upon the course of the underlying disease, but in certain cases the hemoptysis is a direct cause of the fatal termination; this was the case in five instances in this series. The danger of the retention of infected blood and consequent spread of the tuberculous process is constantly to be borne in mind in the treatment of hemoptysis due to tuberculosis, and it seems highly undesirable to use morphia as a routine as is so generally the custom in these cases.

2. Common Sense and Consumption.—John B. Hawes, 2nd, thinks that pulmonary tuberculosis is often wrongly diagnosed, and as a result many nontuberculous patients are sent to sanatoria and health resorts, where they run a grave risk of "catching" tuberculosis. He insists that the physician must always remember that he is dealing with a human being, and not merely a set of lungs normal or abnormal. While the diagnosis may justly be made on signs in the lungs alone, or on constitutional signs alone, in the vast majority of cases there is a combination of both. It is usually the careful study of the patient's history, his habits, surrounding occupation, and the constitutional signs and symptoms that he presents which is of paramount importance and which is most often neglected. In doubtful cases, it is possible and often wise to institute proper treatment without definitely stamping the patient as tuberculous. Above all things it should be remembered that from the patient's point of view, it is better to be "safe and sorry," better to undergo a few weeks or months of treatment and to gain physically by so doing, than to linger along in false security until the chances of cure are gone.

5. The First Case in which Abdominal Surgery was Suggested for the Relief of Epilepsy.—Hale Powers and Frank H. Lahey report a typical case of epilepsy operated on on September 17, 1914, a colectomy having been performed by Dr. Lahey. They believe that this operation undoubtedly assisted in the cure of this patient, though perhaps the patient would have been relieved had he been willing to submit to the régime upon which he was finally placed and which has produced equally good results in other cases. The reason for the resort to surgery and to the medical treatment outlined is based on the belief that in so-called idiopathic epilepsy the essential lesion is not in the nervous system but is dependent on gastric and intestinal stasis. The medical treatment consists in a diet excluding fried food, fresh white bread, pastry, beans, milk, except in moderate quantities only with meals, and uncooked fruit, except oranges, figs and dates. The diet list bears directions to the patient to chew thoroughly, eat slowly, never hurry after eating, and never to eat too much. The medication consists in bromides, thymol, and sodium bicarbonate when there is flatulency or abdominal pain. The author urges conservatism in the employment of colectomy in epilepsy and believes it should be reserved for cases in which rational non-operative treatment, with painstaking attention to de-

tail, directed toward the relief of the intestinal condition, has failed, and for cases in which, because of mental enfeeblement or for other reasons, the cooperation of the patient in the treatment cannot be secured.

6. **Prolapsus Ani in Adults.**—T. Chittenden Hill describes an operation for this condition which he has used with entire satisfaction for twelve years. The procedure is a modification of that of Mr. Goodsall of London. Local anesthesia is produced by infiltrating the structures with novocaine all around the anus to a level well above the internal sphincter, caution being exercised not to infiltrate within the muscular wall of the rectum, as this renders it difficult to estimate how much should be removed at the operation. The prolapsed fold of the right side is slightly elevated with a couple of hemostats and an incision made with scissors at the muco-cutaneous juncture about a quarter of an inch deep. While making moderate traction in a downward direction, the three curved needles, which have been previously threaded on a linen ligature a yard long, are passed in at the line of incision and brought out at the upper part of the prolapse in the following manner: The middle needle is first passed in the center, and the other two needles are inserted on either side of the middle one, thus dividing the fold into four equal portions. The four loops are now identified, the needles cut off, and each loop in turn tied very tightly. In this way the entire fold is completely strangulated, and as the ligatures are not interlocked, there is no occlusion of the anal canal. The operation is completed by excising a goodly portion of the mucous membrane below the ligatures, care being taken to leave enough so that they will not slip off. When the prolapse is bilateral the same procedure is carried out on the other side. The advantages of this operation are that it can be painlessly performed under local anesthesia, that it is short, that there is absence of hemorrhage, that the end results are always satisfactory, and that this method of applying the ligatures brings about a more normal repair than any other operation.

The New York Medical Journal.

July 29, 1916.

1. Medical Women, in History and in Present Day Practice. Mary Sutton Macy.
2. Anaphylactic Food Reactions in Skin Diseases, with Special Reference to Eczema. Albert Strickler.
3. Reflexions on Predisposing Factors in Infantile Paralysis. Max Talmey.
4. Early Pulmonary Tuberculosis. The Signs and Symptoms. Robert Abrahams.
5. Urinary Toxemia. Willard H. Kinney.
6. Tuberculous Infection and Tuberculous Immunity. Albert C. Geyser.
7. Early Syphilis. Its Clinical and Microscopical Diagnosis. Oscar L. Levin.
8. Six Months' Work in Anesthesia. From the Second Surgical Division, New York Hospital, 1915, with a Report of Endotracheal Cases to Date. Alma Vedin.
9. Bursitis Subacromialis. Treatment of the Acute Form. Heinrich F. Wolf.
10. Unilocular Cyst of the Kidney. Maximilian Schulman.
11. Laboratory Facts in Poliomyelitis: Observed in the Willard Parker Hospital. S. R. Klein.

2. Anaphylactic Food Reactions in Skin Diseases.—Albert Strickler has studied 46 cases with eczema, a great majority of them being kept under observation for some weeks. Their plan had been, whenever possible, to withhold local treatment entirely to see what benefit, if any, diet exerted on the course of the eruption, as to both subjective and objective phenomena. From a study of the table presented it is shown that 50 per cent. of the patients were in a greater or lesser degree benefited by the changed diet, as shown by the anaphylactic food tests. In 26 per cent. the food tests were entirely negative, and in the remainder the correction of the diet, as shown by the food tests, did not have any bearing on the disease. In addition to the 46 cases of eczema, 10 patients with urticaria, 13 suffering with acne vulgaris, and 3 with acne rosacea, were studied. From these observations the conclusion is warranted that anaphylactic food tests are of value in the etiological diagnosis and in the treatment of various diseases of the skin. These reactions find their greatest value in eczema, where the development of a strong positive reaction holds out great hope for an improvement or cure in the skin condition, and in some instances an amelioration of the associated gastrointestinal disorder by exclusion of the incriminated articles of food. In chronic urticaria, acne vulgaris, and psoriasis the results of these tests are disappointing, inasmuch as the information secured from the cutaneous tests has not as a rule led to therapeutic success. A very weak reaction obtained by the endermic injections is not of convincing value, although it is advisable to correct the diet according to the findings. In chronic eczema the anaphylactic food tests offer hopes for the patient so far as the possibility of rapid improvement or cure is concerned and also with regard to conferring immunity against future attacks by the employment of prophylactic measures. It will no longer be necessary to starve the patient with eczema.

5. **Urinary Toxemia.**—Willard H. Kinney suggests that before making a diagnosis or prognosis in a case of suspected urinary toxemia the following questions be considered: 1. What pathological condition underlies the clinical picture? 2. Is the condition restricted to the kidneys, or is any other system involved? 3. What is the functional capacity of the kidney; is it permanent or temporary and subject to change? 4. Is the condition amenable to treatment? Clinical or functional studies alone are inadequate from the standpoint of prognosis. A perfectly normal urine may be excreted by a congenitally deficient kidney. Postoperative renal infection is more frequent than was formerly believed. Miller and Cabot have found the phthalein output usually diminished, especially after laparotomy and operations for cancer. Generally speaking, the diminution is proportionate to the amount of ether used and the length of the operation. Shock decreases the elimination of phthalein, while postoperative albuminuria is not in proportion to the phthalein reduction. In summarizing the treatment of urinary toxemia the author states that success depends upon one factor—elimination. He recommends calomel and high colonic irrigations. Hypodermoclysis and intravenous saline transfusion are indicated in certain cases. Diaphoresis is best accomplished by the dry hot pack, preceded by some cold acidulated drink and the application of an ice cap to the head. For the dry, furred tongue nitroglycerine, 1/100 of a grain every three hours, seems to be the best drug. Sparteine has taken the place of digitalis both as a diuretic and a heart stimulant. When hiccoughing occurs the administration of sodium bicarbonate or Hoffman's anodyne seems to be of use. In some instances there is a condition of apathy, with slight muttering delirium, and when these symptoms manifest themselves it is well to get the patient out of bed and into a wheeled chair. When drainage has been instituted careful watching for obstruction is imperative. It sometimes becomes necessary to perform bilateral decapsulation of the kidneys in order to restore renal function. In concluding the writer emphasized the following points: Prophylactic care before operation, careful clinical study corroborated by functional tests of the renal output, comparative studies of toxic retention in the blood as well as in the urine, careful selection of the anesthetic and speed in operating, close attention to maintenance of drainage when indicated, and to the renal output after operation.

8. Six Months' Work in Anesthesia.—Alma Vedin makes this report from the Second Surgical Division of the New York Hospital. The cases comprise general and gynecological surgery, as well as a small percentage of tonsils and adenoids. The routine method employed has been ether by the drop method, preceded by nitrous oxide in adults and ethyl chloride for young children. In head and neck cases, endotracheal or pharyngeal insufflation has been used, and in minor cases nitrous oxide and oxygen, or ethyl chloride. Chloroform has seldom been employed. In 656 cases in which careful records have been kept there has been no conscious vomiting in 334, or 50.91 per cent.; 210, or 32.01 per cent., had slight vomiting, whereas 112, or 17.07 per cent., had prolonged vomiting. Seventy-seven suffered from headache and 269 from varying degrees of thirst. Forty-five complained of cough; 13 of these were coughing before operation. It is generally thought that without a preliminary hypodermic of morphine and atropine the patient will suffer much with mucus, but this was found not to be the case. The postoperative pneumonias have been studied by Dr. Frederick Bancroft, who says that ether is the safest anesthetic, and its administration by the open drop method the safest and most practical method for the general hospital clinic. During the year 1915 there have been 15 cases of pneumonia among 1413 operations, or 1.06 per cent. Of these 46.6 per cent. proved fatal. One of the greatest factors in the etiology of postoperative pneumonias is the operative nightgown. The endotracheal method was used in 115 cases, and is considered as being especially indicated for operations in which it is inconvenient for the surgeon and the anesthetist to occupy the same field, as in thoracic surgery, brain surgery, and operations about the neck. It is particularly useful in thyroidectomies. Pharyngeal insufflation, while it may be satisfactory in the majority of cases, is not always absolutely smooth, as the catheters may become clogged with mucus and blood if the operation is in the mouth.

9. Bursitis Subacromialis. Treatment of the Acute Form.—Heinrich F. Wolf expresses the opinion that there exists an acute form of bursitis subacromialis, and that it is produced by various etiological factors analogous to those of acute articular rheumatism. A treatment which seldom fails consists of wet dressings kept on day and night, changed every twelve hours, high doses of aspirin, 50 to 60 grains daily, and very gentle massage.

Journal of the American Medical Association.

July 29, 1916.

1. The Care of Children's Teeth: The Most Neglected Feature of Pediatric Medicine. Thomas C. McCleave.
2. The Prognosis in Infantile Paralysis. Walter G. Stern.
3. The Necessity of Revising the Nomenclature of the Anatomy of the Brain. William Fuller.
4. Perforated Ulcers of the Stomach and Duodenum. Raymond P. Sullivan.
5. Pseudo-Appendicitis. F. Gregory Connell.
6. Plastic and Reconstructive Surgery. John Staige Davis.
7. Conjugal Paresis: Report of a Case. H. H. Drysdale.
8. A Bacteriologic Study of the Causes of Some Stillbirths: Preliminary Report. Joseph B. De Lee.
9. Treatment of Amebic Dysentary. John Pelham Bates.
10. Discission of Crystalline Lens. Edward Jackson.
11. Preliminary Capsulotomy in Immature Cataract. William Evans Bruner.
12. Retinal Detachment in Hydrophthalmia. Arnold Knapp.
13. A Case of Cerebrospinal Syphilis Associated with Pneumococcic Meningitis. E. M. Hammes.

1. The Care of Children's Teeth: The Most Neglected Feature of Pediatric Medicine.—Thomas C. McCleave. (See MEDICAL RECORD, June 17, page 1116.)

2. The Prognosis in Infantile Paralysis.—Walter G. Stern states that the death rate of epidemic infantile paralysis is as high as that of any of the most serious diseases of childhood. While a few perfect complete cures are authentically reported, the vast majority of patients make only a partial recovery of muscle power, with a more or less imperfect functional result. Spontaneous cure unassisted by treatment is at its maximum in from three to six months. Careful treatment—physiologic rest, graded massage, stimulating electric applications, resistance exercises, muscle training, etc.—improves greatly the chances for partial recovery and lengthens indefinitely the period in which such recovery can take place. Misuse, overwork, overstimulation, overexertion, contractures, and deformities are particularly harmful and detract from the power of recovery and often destroy what little muscle power has been gained. The prognosis for recovery in a given case depends on many factors, most of which represent unknowns, and only one being under the direct control of the physician. These are: 1. The amount of actual permanent destruction of the ganglion cells of the anterior horns, or of the brain. 2. The amount of nerve cell congestion and edema, and neuritis. 3. The regenerative and reconstructive powers of the nervous system. 4. The amount of muscle degeneration and overstretching (loss of tone). 5. The presence of bone and joint deformities. 6. The curative effect of proper treatment. The prognosis should always be guarded, conservative, and truthful, lest the parents, expecting too much, should in their disappointment throw away all rightful gain in strength, power, and function, while seeking the chimera of a perfect cure. With proper treatment, followed by braces, orthopedic operations, and the like, almost every patient with infantile paralysis should, so to speak, "be put on his feet" and acquire independent and useful function of the afflicted member.

3. The Necessity of Revising the Nomenclature of the Anatomy of the Brain.—William Fuller makes a plea for simplicity in the study of anatomy as in other branches of science. The use of generalizations and the elimination of numerous proper names would be a great help to the student. Structure and its supposed function should be considered together in giving a name to any part of the body, so that one reading the history of medicine might be able to compare the progress of one age with that of another. When found necessary names could be changed to conform with the understanding without much confusion by writing the old names in parenthesis. The change could gradually be made in this way with but slight embarrassment. The essayist cites two of the many absurdities of the present nomenclature. The cingulum (girdle) properly named should be called the superior internal logitudinal commissure, one of the four great longitudinal commissures associating the memories with the frontal lobe of the brain. This large tract arises in front from the olfactory and marginal convolutions, passes backward over the corpus callosum, then downward and forward, and terminates in the hippocampal lobe. A different name is applied to each of the three different parts of its course. As nearly all parts of the brain encircle the bundles of the internal capsule in the same manner, why select this particular girdle as the cingulum, when they could all be represented together in a single generalization? Again, there are the "forceps major" and "forceps minor"; the writer has dissected many brains and has failed to find them. Multiplicity of names could be avoided and simplicity attained by the adoption of a systematic generalization of the parts of the central nervous system in connection with that of the whole body. When the attempt is made to associate the knowledge acquired of the anatomy and functions of the nervous system with psychology or psychiatry we are in the presence of technical words and phrases of uncertain significance, and the situation might be

greatly cleared up if the science of mind can be reduced to a few basic principles easily understood, and from which all the phenomena relating to mind are evolved as the result of reflex action.

4. **Perforated Ulcers of the Stomach and Duodenum.**—Raymond P. Sullivan. (See MEDICAL RECORD, July 1, 1916, page 38.)

5. **Pseudo-Appendicitis.**—F. Gregory Connell. (See MEDICAL RECORD, July 1, 1916, page 39.)

6. **Plastic and Reconstructive Surgery.**—John Staige Davis. (See MEDICAL RECORD, July 1, 1916, page 38.)

8. **A Bacteriologic Study of the Causes of Some Stillbirths: Preliminary Report.**—Joseph B. De Lee reports a case of a child of a healthy mother born with a temperature of 101° Fahr., which within a few hours rose to 103°. The child died of streptococcus septicemia, the mother showing no signs of infection. Later a physician's wife came under his observation who, after a mild pharyngitis, developed albuminuria and eclampsia. Artificial delivery was performed. Out of the child's nostrils pure pus exudated in which the pneumococcus was found. He reports additional cases that indicate that the child can become ill independently of its mother, and may even die, the mother being only indirectly affected, or not diseased at all. The writer thinks that this discovery opens up an immense field for study and that we may find that the cause of many cases of so-called "habitual abortion" and repeated premature labor after viability and before term, and that we may come on new problems of immunity, focal infections, nephritis during pregnancy, eclampsia, puerperal sepsis, blood-borne transmissions, and new aspects of the transmutations of bacteria.

10. **Discission of Crystalline Lens.**—Edward Jackson calls attention to the great variations that occur in the behavior of the eye following this operation, which he illustrates by extracts from a series of case histories. He concludes that for monolateral cataract up to middle life, discission is to be considered as a proper procedure; and in many cases the patient will prefer it to extraction. The first discission should make only a short opening in the capsule; but may well penetrate to the center of the nucleus, so that disintegration of the nucleus may begin as soon as possible. The amount of swelling from a given interference will be proportioned to the size of the opening in the capsule, and the absence of previous change in the lens substance. Severe reactions and surgical shock are provoked by the presence of large masses of lens substance in the anterior chamber. Possible hemorrhage, from making puncture through the vascular limbus, causes no danger to offset the greater safety from infection secured by this point of entrance.

The Lancet.

July 8, 1916.

1. Hunterian Lecture on the Development of the Structures Associated with the Roof of the Primitive Mouth. J. Ernest Frazer.
2. An Investigation into Some of the Effects of the State of Nutrition of the Mother During Pregnancy and Labor on the Conditions of the Child at Birth and for First Few Days of Life. G. F. Darwall Smith.
3. Report on the Casualties from the Jutland Coast Action Received at Royal Naval Hospital, South Queensferry. W. M. Ash and C. P. G. Wakeley.
4. Some of the Uses and Abuses of Massage. E. Bellis Clayton.
5. An Experience of Galyl at Royal Naval Hospital, Chatham. Sheldon F. Dudley.
6. Two Cases of Penetrating Wounds of the Abdomen Involving the Inferior Vena Cava. D. C. Taylor.
7. On the Use of Tuberculin in General Practice. J. Linton Bogle.
8. The Use of Ammonia in the Chlorination of Water. Joseph Race.

2. **An Investigation into Some of the Effects of the State of Nutrition of the Mother During Pregnancy and Labor on the Condition of the Child at Birth and for the First Few Days of Life.**—G. F. Darwall Smith has investigated 6,162 cases obtained from the lying-in hospitals of London and Dublin. He concludes that his statistics do not absolutely prove anything, but they suggest that a state of bad nutrition of the mother at the time of labor due to insufficient food greatly increases the percentage of dead births and of premature births; it slightly decreases the average weight of the full time baby at birth; definitely increases the post natal infantile mortality; has little if any effect during the first eight or ten days of the progress of babies who live during that time, and possibly increases the death rate of babies during the first three or four days of life. A state of good nutrition of the mother at the time of labor, on the other hand, considerably increases the average weight of the full-time baby at birth and increases the percentage of mothers who are able to suckle during the first eight or ten days of the puerperium quite apart from any effect from the use of ample diet during this time. The figures also suggest that on the whole a state of average nutrition of the mother is the most favorable condition.

5. **An Experience of Galyl at Royal Naval Hospital, Chatham.**—Sheldon F. Dudley relates his experience with galyl, which he has substituted for neosalvarsan in the treatment of syphilis, having given about 1,500 injections. Taking the results as a whole, he finds that neosalvarsan seems to have slightly more power in producing a negative Wassermann than galyl. Clinically galyl seems to be almost as valuable as neosalvarsan, ordinary chancres and ulcerative lesions generally clearing up within ten days, but it must be confessed a few cases a month or so after injection still have the remains of a rash, and more rarely an unhealed sore, an event which in the writer's experience was exceptional with neosalvarsan. Still it can exhibit the same dramatic cures as the older drug. This fact points to arsenic as the important element in these drugs. The dose 0.4 gm. galyl contains just one-half as much arsenic as 0.9 gm. of neosalvarsan, which probably accounts for the slightly less therapeutic effect and lesser toxicity of galyl. It would seem that though excellent results have been obtained with neosalvarsan and mercury with a month's interval between the intravenous injections, this interval is unnecessarily long in the case of galyl. As the dose recommended has only half the arsenic content of neosalvarsan, the interval could be halved without any more likelihood of the occurrence of cumulative arsenical poisoning, and if this were done galyl would probably be as good an agent for the cure of syphilis as neosalvarsan.

7. **The Use of Tuberculin in General Practice.**—J. Linton Bogle reviews the general principles of tuberculin administration and calls attention to certain errors that are to be avoided. It is necessary to remember in passing from one dilution to another the strength is ten times greater, so that in changing from a smaller injection of greater strength the increases should be small. Again, dilutions newly made are stronger than old dilutions, and the extractive toxin tuberculin dilutions are less stable than those made from the ground bacillary bodies, such as T. R. It is desirable to make fresh dilutions every two or three weeks in the former case, and every four or six weeks in the latter. A nervous patient, tending to high temperatures or hemorrhage, requires smaller doses and of a slowly acting preparation, such as B. E., and hence the course will be lengthened. Although experts, with their knowledge and wide experience, may be able to use tuberculin in most cases of tuberculosis with benefit and without injury, there are cases in which the general practitioner would do well to avoid the use of this remedy. In mixed infections, catarrhal or bronchial;

in tuberculosis complicated by disease of the heart or kidneys; in rapidly advancing or extensive disease; in cases of high fever and quick pulse; in anemia associated with little power of resistance; in those in whom there is a strong hemorrhagic tendency, and in cases of infantile tuberculosis, tuberculin as a rule does no good. It is only in conjunction with rational general treatment that the striking results of this special treatment are manifest.

The British Medical Journal.

July 8, 1916.

1. The Care of the Pregnant Woman. Archibald Donald.
2. Tuberculins and Vaccines: From the General Practitioner's Point of View. E. Hayling Coleman.
3. The Transfusion of Whole Blood: A Suggestion for its More Frequent Employment in War Surgery. L. Bruce Robertson.
4. A Simple Technique for Intravenous Injections in Infants. Ann Martin.
5. Acute General Hemorrhagic Peritonitis. Arthur J. Nyulasy.
6. A Case of Pneumococcic Conjunctivitis. J. Cropper.

1. The Care of the Pregnant Woman.—Archibald Donald expresses the opinion that the supervision of all pregnant women would mean a great deal of unnecessary trouble, as in the majority of cases in which danger threatens during pregnancy the patient will voluntarily apply for help. His experience leads him to believe that even if supervision were greatly increased the results in the saving of infant life would be comparatively small. There are several much more important causes of fetal death than the diseases of pregnancy, and these would not be dealt with in a scheme of supervision during pregnancy. Under these the writer mentions particularly abortion and stillbirths caused during delivery. Furthermore, it must always be borne in mind that sterility, either absolute or relative, has a most important effect on the birth rate. If any improvement is to take place as regards stillbirths, it ought to be on the lines of the further development of those institutions which already exist. While the writer believes that the cooperation of the medical officers of health and the health authorities generally with the medical profession is most important, much more good would be done at much less cost if the cities were to subsidize maternity hospitals instead of creating a new system. If found advisable, smaller centers might be established under the hospital control in various parts of the town. The greatest stress should be laid on education. The pregnant woman should be taught how to take care of herself and warned of certain dangers that may arise. Midwives and medical students should receive a more thorough training. More facilities should be given for the medical practitioner to have postgraduate instruction. The study of the pathological problems connected with abortion and stillbirth should be stimulated by the provision of well-equipped clinical laboratories in connection with maternity hospitals. The solution of the matter is not in statistics and notification, but in education and research.

2. Tuberculins and Vaccines.—E. Hayling Coleman, writing from the general practitioner's point of view, says that in making a decision whether or not to use a vaccine, cases may roughly be divided into four groups: 1. Those in which a vaccine is usually successful and much more likely to succeed than other remedies. 2. Those in which ordinary remedies have so far failed and we know that a vaccine may cure, though not so frequently as in the first group. 3. Cases of serious disease, in which the use of a vaccine can do no harm, and may decidedly increase the patient's chance of recovery. 4. Cases in which, though vaccines often fail, yet other remedies do so almost invariably. Among the conditions belonging to the first group are recurring boils and carbuncles, chronic nasal and post-nasal catarrh when due to the pneumococcus, chronic tracheitis of old people, cystitis due to infection of the bladder by *B. coli* and chronic gleet; in all of these autogenous vaccines rarely fail. Under group 4 the writer discusses rheumatoid arthritis, and says that the most promising cases are those due to septic absorption from the pus about the teeth in pyorrhea. The vaccine should be prepared from this pus. His experience with this class of cases has not been very hopeful, and he feels inclined to believe that the difficulty is due to the dense tissues and poor vascular supply of the parts which are affected in this disease. In chronic suppuration of the middle ear he has also found the vaccines to fail. In discussing the use of tuberculins the essayist brings up the matter of mixed infections and says that most failures of tuberculin are due to this not being recognized. He has had some of his best results by combining Dr. Curle's nascent iodine treatment with B. E. He believes the iodine acts on the adventitious infection, and the B. E. then has a fair chance with its own bacillus. He has also seen good results from the use of a vaccine made from the adventitious organism along with tuberculin. Another point which is emphasized is that in treating a patient with tuberculin the sputum becomes less infective, the tubercle bacilli often completely vanishing, even though from the symptoms and physical signs it is evident that the disease still has a strong hold. This is of great value in preventing the spread of infection. Some fear giving tuberculin in cases with hemoptosis, but the writer has never known harm to follow provided the tuberculin is properly employed.

5. Acute General Hemorrhagic Peritonitis.—Arthur J. Nyulasy reports three cases of this condition which have come under his observation, two of them resulting from criminal abortion and coming to autopsy. One of these presented a striking lividity of the skin, involving the whole body. The third case, which is described in detail, is remarkable because of the absence of serious symptoms. This is accounted for partly by a preliminary diarrhea, and partly by the large quantity of blood which escaped from the engorged peritoneal vessels. The conditions found at the operation suggest that acute infective inflammation of the peritoneum is not *per se* nearly so serious as appears to be commonly supposed, and that, providing the focal factor and any free toxic fluid be removed from the abdomen, and that there is no paralytic ileus, the patient may recover with comparative ease from a most extensive acute infection of the peritoneum.

Acute Mammary Carcinoma. — Learmonth gives the large number of synonyms in use for this affection. In 1911 Schumann collected notes of forty-five cases from literature. Of 579 cases of cancer of the breast in the Johns Hopkins material, eight were of this nature. Rodman personally has seen seven cases. Leitch encountered two cases in five years' pathological work in London, and also saw four cases in Glasgow and one in Dundee. But one five-year recovery is on record (Bloodgood's case). As is well known the affection simulates a fulminating mastitis, and early in its course differential diagnosis is impossible. The disease occurs especially during pregnancy and lactation. The exact number of cases of these types is not stated. It is possible that certain cases of cancer of the nursing breast belong here (two are mentioned by the Mayos). Leitch found in his cases that medullary cancer predominated. Owing to the frequency of erroneous diagnosis, the outlook for this type of cancer is highly pessimistic.—*The Canadian Medical Association Journal.*

Insurance Medicine.

Typhoid Vaccination for Policyholders.—The following is from a letter to the policyholders of the Southland Life Insurance Company of Dallas, Tex., by Dr. W. A. Boyce, associate medical director: "It is not our purpose to prescribe what rules should be followed regarding the prevention of typhoid. This is fully covered by the bulletins of the various health departments and the federal authorities. We do wish to call attention to the fact, however, that, supplementing the precautions as advised by the health authorities, it is most desirable that everyone be immunized against this disease by being vaccinated with antityphoid vaccine. That antityphoid vaccination is successful in almost absolutely preventing the disease and, in any event, lessening the severity of it, has been clearly demonstrated in the tests of the vaccination made at San Antonio in 1911 upon enlisted men in the U. S. Army as well as in the French Army and the British Army in India, and other places. As antityphoid vaccination has met with such success, the Southland Life Insurance Co. offers to all of its policyholders the advantage of this vaccination free of charge. Our physicians will be on duty for this purpose from 2 to 4 p. m. each business day except Saturdays. We will endeavor to handle all cases as expeditiously as possible, but to avoid unnecessary delay it is requested that those desiring to take advantage of this offer notify this company in advance, so that proper arrangements may be made. Assignments will be made in the order of application for treatment."

The Obligation of the Medical Examiner.—Dr. Henry Wireman Cook, in a paper with this title, read before the Section on Life Insurance, State Medical Association of Texas, said that the obligations of the work of life insurance examining might be divided for study under three general heads: (1) Moral obligation; (2) Business obligation; (3) Professional obligation. With regard to moral obligation the confidence implied in an appointment as examiner should not only guarantee the best professional service, but should bring loyalty, interest, and cooperation. The medical report should be absolutely unbiased by the importunities of the agent, the demands or threats of the applicant, or the appeal of the prospective widow or orphans.

An for the business obligation, in insurance underwriting, promptness is a most vital factor. A delay by the examiner of twenty-four hours in completing an examination may cost the agent several hundreds of dollars, which he has earned by weeks of hard work. All the ordinary business demands must be observed in insurance work: Courtesy, tact, promptness, rapidity, and accuracy on the part of the examiner are of equal importance to scientific requirements.

The scientific obligation is the part of the service that is most clearly recognized and understood, and yet it is frequently covered in a careless and indifferent manner. The work of a general practitioner, owing to the insistent demands upon his time, is apt to become superficial and hurried. In insurance work the one examination is final, and on its representation must be risked a liability for thousands of dollars. Careless methods which may be corrected in practice are disastrous in insurance work. The examination must be approached in an orderly manner, and each detail given systematic attention.

The personal history of the applicant is a very important factor. The difference in attitude of a patient and an applicant cannot be too strongly emphasized. The patient is fluent in the description of his symptoms, his indiscretions in habits, his previous illnesses. The admission of such impairments must often be drawn from an unwilling applicant by patient and skillful questioning. This, of course, is particularly true of an impaired applicant who is attempting to obtain standard insurance, and in such a case a correct history is vital. A true history of alcoholic excess or venereal disease is naturally extremely difficult to obtain, as few men hesitate to misstate these answers. In the physical examination proper, a physician has an opportunity to use to the utmost his skill and knowledge.

The applicant will not submit to such an examination as we can give a patient. The work must be done quickly, and a judgment based on a single interview. It is therefore particularly important that the examination should be made systematically, carefully and thoroughly. There may be no second opportunity to correct mistakes and omissions. The general condition of the applicant must be carefully noted. An impaired risk frequently "looks" impaired without any definite lesion being discoverable. General tendencies should be borne in mind: for example look especially for signs of tuberculosis in young light weights, where there is history of indigestion, recent change of climate; look for thickened arteries, high blood pressure, casts and albumin in men over 45, in the obese, in high livers, in applicants with short family history and with several cases of apoplexy, heart disease, or Bright's disease in the immediate family.

No part of the physical examination furnishes less satisfactory data in proportion to its importance than the urinalysis. The average physician fails in this work because of the neglect of a few simple requirements. There must be a strong bright light, a dark background, clean test tubes, properly prepared reagents, and a little care and time. The Ulrich modification of the heat and acid test is recommended for this purpose.—*Texas State Journal of Medicine.*

Dilatation of Heart Following a Cold Bath.—Where an insured holding an accident policy indemnifying him against bodily injuries which, independently of all other causes, are effected solely and exclusively by external, violent, and accidental means, suffers an injury due to the dilatation of the heart, following the voluntary taking of a cold-water bath, it is held in New Amsterdam Casualty Co. v. Johnson, L.R.A., 1916, B. 1018, that the injury will not be considered as the result of an accident, where, under the circumstances attending the dilatation, there is no evidence that anything occurred which the insured had not planned or anticipated, excepting, of course, the dilatation and its consequences.

False Statements in an Insurance Application.—Where the secretary of an insurance order knew of the falsity of statements as to physical health contained in a member's application, and the medical examiner must have discovered their falsity, yet the insurer, for over two years having continued the membership and accepted the premiums, was held, by the Colorado Supreme Court, to be estopped in an action on the certificate to set up the falsity of the statements in the application.—McRory v. Independent Order of Puritans (Colo.) 154, Pacific 92.

Book Reviews.

Hay-fever. Its Prevention and Cure. By W. C. Hollopeter, A.M., M.D., LL.D., Attending Physician St. Joseph's Hospital; Pediatrician to the Philadelphia General Hospital; Professor Pediatrics, Emeritus, Medico-Chirurgical College; ex-President of the Association of American Teachers of the Diseases of Children; ex-Chairman of the Section on Diseases of Children, American Medical Association; Member of American Academy of Medicine, etc. Price, $1.25 net. New York and London: Funk & Wagnalls Company, 1916.

After careful perusal of this work, it is found that the neurotic element is still considered to play a large part in the causation of hay fever, and that a keen mentality in the victim likewise seems to be a happy coefficient. Dr. Hollopeter may therefore have high hopes that between sneezes and the carrying out of his many-sided and detailed treatment, the patient may have the opportunity to read about the numerous theories of hay-fever to be found in this volume of 347 pages.

Judged from the medical standpoint the book shows the work of years, for it is practically a compilation of each and every theory and mode of treatment that has ever been advanced for hay-fever. The majority of theories and treatments are stated in the words of the originators, which means an enormous amount of quotes in the text; but this rather adds to the value of the book. While the author's own theory and mode of treatment cover but a small portion of the text, they are so definitely stated that one cannot fail to comprehend them. The bibliography, extending from the years 1565 to 1916 and covering forty pages, is another valuable contribution to hay-fever literature. The book is beautifully printed, but somewhat loosely bound. The cover is a work of art being of a soothing, dark green color, and having *gold* golden rod as a decoration. If the psychic element plays such a strong rôle in the production of hay-fever, was it not a daring stroke to put this beautiful, but dangerous weed where it must meet the eyes of the suffering victim?

When one has finished the book there is a realization that it is well-written, well-compiled. The author's treatment includes local—upon which he lays great stress—systemic, and hygienic measures. He adheres strictly to medicines in his local treatment and has nothing to do with the pollen or bacterial vaccines, or autoserums. However, a feeling of disappointment creeps over one that after all Dr. Hollopeter's book brings out the fact, perhaps unconsciously, that there is no cohesion in the various treatments of the different theorists, each one working out his ideas irrespective of the theories of other workers in the field. Will there ever come a physician who will be broad enough to give a thoughtful combined treatment to the same patient, both pollen and bacterial vaccine, and at the same time investigate his intestinal, nasal, and nervous conditions? The intestinal theorist will have none of the vaccines, the laboratory man refuses the medicinal or surgical aids, and the internist relies solely on his drugs. It it not to be wondered at that each stickler for his pet theory can hope to cure only a certain proportion of hay-fever victims.

Handbook of Massage for Beginners. By L. L. Despard, Member and Examiner, Incorporated Society of Trained Masseuses. Price, $2.00. New York: Oxford University Press, American Branch, 1915.

Despard's book is a very satisfactory one. The war and the consequent rapid pressing into service of those previously untrained in massage has been the immediate cause for the publication of the book. It is frankly a shortened and simplified edition of his text-book, and is intended for those who have time or opportunity for only a short course of training. All the study of anatomy included in the text-book is omitted. The various movements and manipulations of massage are well described and excellently illustrated. The immediate and indirect effects of massage are explained and the values of their effects to the general economy. After presenting the subject from a general standpoint, Despard gives the special treatment indicated in various special conditions. The manipulations and exercises are properly balanced, and reasons for choice of movements and their order are given, so that the student has continual emphasis laid in the condition which he is attempting to improve. The last forty pages are given to an exposition of medical electricity. This is very clear and goes into enough detail in regard to electricity, so that the student should handle the apparatus with intelligence. Strength of current and length of treatment to be given for various conditions are stated.

Hysteria and Accident Compensation. Nature of Hysteria and the Lesson of the Post-litigation Results. By Francis X. Dercum, M.D., Ph.D., Professor of Nervous and Mental Diseases, Jefferson Medical College, Philadelphia; Consulting Neurologist to the Philadelphia General Hospital; President of the Philadelphia Psychiatric Society; ex-President of the American Neurological Association and of the Philadelphia Neurological Society; Foreign Corresponding Member of the Neurological Society of Paris, and of the Neurological and Psychiatric Society of Vienna; Member of the Royal Medical Society of Budapest, etc. Philadelphia: The George T. Bisel Company, 1916.

In the light of the present interest in workingmen's compensation, Dr. Dercum's extremely interesting book is of especial value. Dr. Dercum is in position to have first-hand knowledge of the "litigation hysteria" of which he writes. He holds that the hysterical person is "born, not made," that injury and fright are not responsible for the hysterical condition for which compensation is sought, since these conditions do not arise and persist unless there is the possibility of obtaining compensation. He says that "fright hysteria is of immediate onset, its symptoms supervene at once at the time the fright is experienced, and as a rule it is of short duration and usually rapidly subsides. . . . Very frequently the history of the hysteria of litigation is that of a slow and gradual development," really developing under the hands of the lawyer and medical experts who are called in to determine that he should have compensation. Dr. Dercum says that the final proof of the fact that litigation is the determining factor is the rapidity with which recovery without treatment takes place after settlement is finally made. His conclusion is sound: "To deny compensation would seem to be the only way in which the question can be solved. If it be not possible to recover for litigation hysteria, litigation hysteria will have no existence. To deny compensation has already been advocated in Germany, and in France one of the courts, in a given case, declared that the plaintiff was suffering not from the accident alleged but from an erroneous opinion which he had formed as to the rights to which he was entitled, and ruled that he could not recover."

Year-Book of Pharmacy. Comprising Abstracts of Papers Relating to Pharmacy, Materia Medica, and Chemistry, Contributed to British and Foreign Journals from July 1, 1914, to June 30, 1915, with the Transactions of the British Pharmaceutical Conference at Its Fifty-second Annual Meeting, Held in London, July 14, 1915. Editor of the Abstracts, J. O. Braithwaite. Compiler of the New Remedies Section, Thos. Stephenson, F.R.S.E. Editor of the Transactions, Reginald R. Bennett, B.Sc., F.I.C. London: J. & A. Churchill, 1915.

The index of this work contains about 2,500 titles, including subjects and proper names. All the British Pharmacopœia revisions are comprised in a special section. Of the 400 pages of actual text about one-half are devoted to excerpts on chemistry and over one-fourth to pharmacy. The section on New Remedies and New Uses of Old Remedies is very brief. Under the heading "Notes and Formulæ" we find many non-proprietary cosmetics. American special literature is well represented, while abstracts from German litera-

Précis de Médecine Opératoire. Par A. Broca, Professeur d'Operations et Appareils à la Faculté de Médecine de Paris. Avec 510 figures dans le texte. Prix, 9 francs. Paris: Masson et Cie., Editeurs, 1916.

This work is of a very old type, comprising solely the technique of ligation of vessels, amputations, and disarticulations. The number of pages is less than 300, and all the illustrations are in the text. It is virtually an atlas, and one, moreover, of pocket size and flexible covers. It seems singular that the preface contains no reference whatever to the present war or to military surgery. One must, however, read between the lines that, despite the absence of any authorization from the government, such a work would be extremely timely for thousands of physicians at the front, who are operating without special training. If an authorized work of this type is not already in use in the army, we venture the prediction that the latter will be made official. Its excellence is quite beyond criticism.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-first Annual Meeting, Held in Washington, May 9, 10 and 11, 1916.

THE PRESIDENT, DR. SEWALL OF DENVER, IN THE CHAIR.

(*Concluded from page* 264.)

Thursday, May 11—Third Day.

The Effects of Exposure to Cold upon Experimental Infection in the Respiratory Tract.—Drs. JAMES ALEXANDER MILLER and WILLIS NOBLE made this contribution. They stated that a widespread medical belief was that exposure to cold was an important factor in the incidence of many diseases. Since the development of modern bacteriology the importance of this factor had gradually diminished and at the present time there was considerable difference of opinion as to whether such exposure played any part whatever in the causation of disease. Experimental evidence was conflicting and as a great many of the animal experiments had been conducted with pneumococcus with which there had been considerable difficulty in producing experimental disease with regularity in animals, the results were not conclusive. The present experiments were carried out with rabbits inoculated with *Bacillus bovisepticus*, which was an organism which caused the well known laboratory disease in rabbits commonly designated as "snuffles." It was selected for experiment because these conditions produced in rabbits were so similar to those caused by some of the respiratory infections in man, particularly pneumococcus, and because of the relative difficulty of producing pneumococcus pneumonia in rabbits. The experimental animals were kept in a warm temperature for periods of time varying from twenty-four hours to a week and were then inoculated by spraying the nose and throat with virulent cultures of the "snuffles" bacillus. They were then immediately chilled by exposing them to outside weather, the temperature of which was 45° F. and lower. The experiments were carried out in the winter of 1914 and 1915 and another series in the winter of 1915 and 1916. The totals for both series showed that of 37 experimental animals 15, or 40.5 per cent., reacted to the infection, while of an equal number of controls, nine, or 24.3 per cent., reacted. The striking difference between the two groups in the first year's experiments led very strongly to the belief that the exposure must be an important contributing factor. The second year's series, although a much smaller number, distinctly modified the strength of this opinion, as an equal number of experimental and control rabbits reacted to infection in this series. Taking both series together, however, the conclusion seemed justified that exposure to cold after previous subjection to warm temperatures rendered rabbits somewhat more liable to infection with the *Bacillus bovisepticus*.

On the Expectorant Action of Ammonium Chloride.—Dr. WARREN COLEMAN of New York presented this paper. He said that experiments had been made on the action of ammonium chloride on dogs, but there were a number of factors influencing results which could not be properly controlled in animal experiments with reference to the expectorant action of drugs, so he determined to try the effects of this drug on human beings. His subjects were a house physician, a nurse in training, four other physicians and himself. With the first subject he began with 0.02 mg. and increased the amount up to 0.05 mg. In a second subject he went up to 0.06 mg. He himself took the drug in one-half grain doses every two hours, the last dose between seven and eight o'clock at night, and he found that the next morning the taste of the drug would appear. This had a two-fold significance. It identified the form in which the ammonium nitrogen was present and its relation to the conversion of ammonium chloride in the liver. It seemed that the ammonium chloride left the body in the form that it entered. It also had the effect of relieving the soreness and dryness of the respiratory tract. As to its action a plausible explanation was that it carried water with it and thus softened the mucous and that a softening action was due to the salt also, and that with a softening of the mucous membrane the normal mechanism of secretion came into play.

Dr. ABRAHAM JACOBI of New York said that as a matter of history he would like to take the liberty of telling them that when he had lectured before the students of the College of Physicians and Surgeons, not fifty years ago, but some time ago, he told them that ammonium chloride was an inert drug, that it did not have as stimulating an action as the carbonate. In Germany physicians used to give as a placebo, when they were unable to make a diagnosis, a prescription calling for two drams of ammonium chloride and two drams of licorice. He used ammonium carbonate in chronic bronchitis with viscid secretion and found it would do something toward liquifying the secretions.

Dr. SAMUEL J. MELTZER of New York said he believed they had two kinds of expectorants. One kind increased the secretions and the other was the cause of irritation, and one prescribed one kind or the other according to the action desired. What Dr. Jacobi said with reference to ammonium carbonate must have been a slip. Ammonium carbonate does not have the action he had attributed to it. It should be remembered that drugs did not always act directly, that they sometimes had a catalytic action. They underwent changes, entered the circulation and in that way produced a local effect. The experimental study of medicine was absolutely necessary and the only good evidence was that of man himself. These personal experiments were practical, but one must have the faculty of observation and of analysis.

Dr. MAX EINHORN of New York said he was delighted to hear Dr. Coleman say that he had tried this drug on human beings to see what effect it produced. That was the right way to proceed. Trying it on himself was better than trying it on anyone else. In his experience in the treatment of gastric conditions he had found ammonium chloride of great benefit.

Dr. COLEMAN in closing the discussion said that in reply to Dr. Erlanger's question as to whether the ammonium chloride appeared to be in the sputum or the saliva, they were planning experiments in which they would furnish specimens of the saliva and of the sputum and investigate the matter. As for himself he never got the taste of the ammonium chloride from the saliva, but only in the sputum from the bronchial tubes. As to the stage of the disease when the drug was effective, he found that it gave relief when there was dryness with irritation and a non-productive cough. As to whether the effect of the drug was brought about by a central or a peripheral action, he believed its action depended upon its elimination by the bronchial mucous membrane, but did not believe it had any action upon nerve centers.

Coagulation Time in Lobar Pneumonia, with Statistics and Experimental Study of the Coagulation Process.—Drs. J. M. ANDERS and GEORGE H. MEEKER of Philadelphia presented this communication. They stated that undoubtedly microorganisms did have an influence upon the coagulation time of blood but their true significance was undecided. It had been said that acute infections tended to retard the process of coagulation. They made their tests on blood taken from the lobes of the ears and the finger tips both before and after the crisis in pneumonia. The blood was taken one and two hours after meals. They found that the coagulation time was somewhat shortened, on a mean average, of about two minutes. The hypothesis was suggested that the pneumococcus circulation in the blood might liberate thrombokinase from the walls and that this gained access to the circulation. There was no laboratory evidence that could be accepted as proof of this. Dr. Anders said that he believed that the percentage of leucocytes circulating in the blood might be the cause of the somewhat shortened coagulation time of the blood in this disease. It was possible that prothrombin was liberated more rapidly and had an effect upon the coagulation time. This theory lacked support, since it had not been shown that there was an increase in the calcium salts in the blood in pneumonia. Dr. Meeker had made quantitative study of the amount of calcium salts in the blood of pneumonia patients and found that the amount of calcium in the blood of these patients was practically the same as that in leutic infection. They concluded that the coagulation time of the blood was shortened in lobar pneumonia; that the influence of pneumonia on the coagulation time, though trivial, was constant and that from their experiments in regard to the calcium content of the blood in pneumonia the influence of the calcium salts must be quite considerable.

Dr. SAMUEL J. MELTZER of New York said he wished to mention that in experimental pneumonia there was a difference in the amount of calcium in the blood in the virulent and the non-virulent forms of the disease.

In the non-virulent form there was not much calcium.

Dr. RUFUS I. COLE of New York called attention to some observation published by Dochez in which he showed that there was much increase in fibrogen in the blood in pneumonia and yet the coagulation time was delayed. Where there was a large amount of calcium in the blood we could not have this phenomenon.

Dr. MAX EINHORN of New York asked Dr. Anders if he had watched the amount of sodium chloride retained in the blood and the elimination through the kidneys. The sodium chloride retention might have some effect on the coagulation time of the blood.

Dr. ANDERS said that since seeing these experiments he felt that in the case of pneumonia they encountered a paradox, it seemed that the coagulation time was shortened, yet they knew that after death the large vessels were occupied by large thrombi and this would indicate that post mortem the coagulation went on slowly.

A Study of the Action of Certain Diuretics in Chronic Nephritis. — Dr. HENRY A. CHRISTIAN of Boston said that on this occasion they would report on the action of theocin. He said that a considerable number of drugs considered to be active diuretics had been shown to shorten the life of animals with severe nephritis and that as a consequence our faith in active diuretic drugs was decreasing. He described the experiments that he had made by means of a series of charts. The first four of these charts showed the effect of theocin on active nephritis as regarded the sodium chloride excretion, and nitrogen urea, and diuresis. He concluded that as a rule theocin produced a marked diuresis in inverse ratio to the degree of renal function. Often when there was an active diuresis there was a decrease in renal function, probably indicating fatigue and suggesting that it was better to give a diuretic intermittently rather than continuously. Another point that was brought out was that one might have an active output of urine but no increased output of nitrogenous substances. So that it was a question how much the drug affected the patient where there was no uremia. In uremia which had a definite relation to the retention of nitrogenous substances it was a question how much effect diuresis had towards detoxifying the patient. In some patients there was no diuresis and no increased output of nitrogenous substances; in these there was a decreased renal function and in these cases the drug was probably really harmful. Basing their opinion on their observation of acute and chronic nephritis and cardiorenal diseases as influenced by diuretic drugs the indications were that one should exercise great caution in the use of diuretic drugs.

Dr. WILLIAM S. THAYER of Baltimore said he considered this quite an important piece of work and one quite in accord with his clinical experience. In cardiorenal disease where the heart begins to fail diuretic might be indicated, but in chronic renal disease the administration of diuretic was a dangerous and serious procedure.

Dr. JAMES M. ANDERS of Philadelphia said that this paper had a very practical bearing. On cases of kidney impermeability with more or less cardiac involvement, one should make the phthalein test for renal function and if one found a degree of renal function of less than 30 per cent. in two hours one should avoid the employment of a laxative containing members of the purin group. To promote the elimination of poisons in such cases as Dr. Christian had described large draughts of water might be used. He felt sure that water employed in this manner often changed the scales in the direction of improvement.

Dr. CHRISTIAN in closing the discussion said that as to the phthalein test as an indicator of the degree of kidney function we should distinguish between the output due to chronic passive congestion and that due to renal insufficiency. In passive congestion one might use a diuretic and digitalis and a low phthalein output was no contraindication if one used the diuretic combined with digitalis. As to water a large intake of water shortened the life of animals with very acute nephritis; this subject had been studied very little and what was obviously needed was a study of the effect of water on the renal function.

Toxic Effect of Urea on Normal Individuals.—Dr. A. W. HEWLETT, Drs. GILBERT and WICHETT of Ann Arbor, Mich., contributed this paper in which they recorded their observations with reference to the effects of the administration of urea on animals. They found that to get effects they had to introduce large amounts of urea very much beyond the amount that was present in clinical uremia. Doses of 100 grains every few hours were given until the urea in the blood rose to the level of that in the blood of uremic patients. There was likewise a rise in the Ambard coefficient to nearly double what it was before the administration of the urea. When there was 75 per cent. urea nitrogen per 100 c.c. of blood the symptoms began to show themselves by headache, dizziness, prostration, drowsiness. They had what was known as the asthenic type of uremia. There was no vomiting, the appetite was good and there was no rise in blood pressure. There was a tremendous output of urea in the urine, but in 24 hours the larger part of the urea that had been administered was out of the body. From these observations it seemed that urea might be a cause of asthenic symptoms.

Dr. WARREN COLEMAN of New York cited a case which seemed to indicate that to some extent urea might be a factor in the production of uremia, but said that there were other cases in which it could not enter as a factor.

Experimental Endocarditis, Its Production with Streptococcus Viridans of Low Virulence.—Drs. H. K. DEFWEILLER and W. L. ROBINSON or Toronto made this presentation by invitation. They stated that the cultures of streptococcus viridans obtained from the blood from cases of chronic endocarditis reported a year ago had been inoculated into a series of rabbits and endocarditis was produced in a number of cases. The inoculations were all intravenous and consisted of enormous quantities of the organisms suspended in saline. The autopsy findings led them to believe that this organism had a special affinity for the heart, and especially for the heart valves. Evidence was forthcoming to show that the streptococcus viridans obtained from the normal mouth was equally productive of heart lesions, and any grade of endocarditis might be produced by any one organism, depending upon the amount injected, the number of injections, and the length of time between the first inoculation and the death of the animal.

Blood Sugar Estimations as a Test of Carbohydrate Tolerance.—Dr. LOUIS HAMMAN of Baltimore read this paper. He stated that frequent examinations of the blood and urine after the administration of glucose to fasting persons revealed four types of reaction. The normal reaction was a rapid rise in the blood sugar to a level not exceeding 0.15 per cent. From this point it again rapidly declined, the whole reaction being over in less than two hours. In the diabetic the blood sugar rose more slowly but reached a higher point, 0.2 per cent. and over. The high point was maintained for some time, and the decline occurred gradually, the whole reaction lasting three hours and longer. If the blood sugar rose above 0.175 per cent. sugar appeared in the urine. The third type of reaction was the renal reaction. This occurred in a small number of persons, in whom, although the blood sugar curve was in all other respects like the normal reaction, still sugar appeared in the urine. In severe cases of diabetes this same low thread shape was often found. In the fourth reaction, the nephritic, the blood sugar rose to a high level, often exceeding 0.2 per cent., and the blood sugar curve resembled the diabetic reaction: however, no sugar or only a trace of sugar appeared in the urine. The writer concluded that the blood sugar reaction after the administration of glucose and relation to glycosuria gave valuable clinical data in diabetes and in other conditions.

The Vital Capacity of the Lung and Its Relation to Dyspnea in Heart Disease.—Drs. FRANCIS W. PEABODY and A. WENTWORTH of Boston read this paper in which they showed that the production of dyspnea in patients with heart disease depended in part, at least, on inability to increase the minute volume of air breathed to as great extent as the normal person. This was due to a decrease in the vital capacity which limited the depth of breathing. The tendency of a patient to become dyspneic on exertion varied closely with the degree of the decrease in vital capacity. The determination of the vital capacity gave an indication of the amount of exercise which would produce dyspnea, and was a guide to the severity of the functional disability of the case.

Gastrohydrorrhea in Cirrhosis of the Liver Accompanied by Pyloric Stenosis.—Dr. MAX EINHORN read this paper. The term "gastrohydrorrhea," he said, signified the flow of a watery fluid from the stomach containing neither hydrochloric acid nor rennet or pepsin ferments. Such a flow to the amount of one to one and a half quarts a day was encountered in a patient suffer-

ing from cirrhosis of the liver accompanied by a pyloric stenosis. No ascites had developed. At autopsy a typical cirrhotic liver and a pyloric tumor (cancerous) were found. The gastrohydrorrhea was explained by a transudation process relieving the venous congestion in the stomach and was akin to an accumulation of ascitic fluid from the intestines in cirrhosis of the liver without pyloric obstruction.

The Immunizing Effect on Swine of Desiccated Sensitized Hog-Cholera Virus.—Drs. C. W. DUVAL and M. J. COURET of New Orleans state that the method hitherto used of preparing a sensitized virus for hog-cholera had been expensive, involving the sacrifice of two animals. They had devised a method by which the virus can be prepared with a smaller quantity of blood and which is equally effective. They gave one-fourth to one mg. as a first dose and repeated it three weeks later by a dose of five to ten mg. This conferred immunity for at least ten months. Some of the animals immunized with this virus had withstood large doses of virulent virus at the end of ten months.

Action of Opium Alkaloids and Their Combinations on the Vomiting Center.—Dr. DAVID L. MACHT of Baltimore related his experience with the opium alkaloids. He said that the opium alkaloids, morphine, codeine, papaverine, etc., might be divided into two groups. Morphine produced vomiting when administered in small doses and the others did not, so morphine was in a class by itself and the others formed a second group. He had tried administering these drugs in various ways, subcutaneously, intramuscularly, intravenously and the only one that produced vomiting was morphine. If apomorphine was given after morphine no vomiting was produced because the apomorphine paralyzed the vomiting center. The remarkable phenomenon in connection with the administration of combinations of these drugs was that they did not produce vomiting. On the average a combined dose of morphine and one of the others of 0.5 of a grain did not produce vomiting, but a dose of 0.3 of morphine did produce vomiting. They had found that 5 mg. or 1/12 grain of morphine produced vomiting in some instances whereas as much as 20 mg. of pantopon could be given without any nausea. The writer offered an explanation of the difference in the action of morphine and the other alkaloids of opium based on the fact that they were members of different chemical groups.

The Rôle of the Liver in Acute Pylocythenia. — Dr. PAUL D. LAMSON of Baltimore, Md., presented this contribution. He recorded his experiments by which he had tried to find the course of the increase of red blood cells in polycythenia. They produced experimental polycythenia in animals by huge doses of epinephrin and then by removing various organs tried to find which one was responsible for the increase of the red cells. There were two theories to account for the increased red cells. One was that they were tucked somewhere in the body and the other that the increase was a result of the division of cells. No signs of new cell formation had been found. After excluding all the other organs as the possible source of the increased red cells he had tied off the circulation of the liver and found that the liver was the organ responsible for the increase of red cells in polycythenia. Thus far they were unable to give an explanation of the process by which this increase was brought about.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting—Held May 4, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

An Explanation of Some Disorders Supposed to Have an Emotional Origin. — Dr. WALTER B. CANNON, George Higginson Professor of Physiology, Harvard Medical School, Boston, Mass., delivered this address, in which he said that during the past four or five years many of the researches of the Harvard Physiological Laboratory had been concerned with the bodily changes which accompanied strong emotions, such as fear and rage. These were fundamental experiences in man and the lower animals, so much so that their expression constituted a sort of common language. The studies which had been carried on had revealed interesting relations between these emotions and certain glands of internal secretion, and had suggested also a way in which emotional excitement might occasion pathological states. When a cat became infuriated, the pupils were dilated and the hair was erect from the neck to the end of the tail. But besides these surface manifestations there were internal changes; for example, the heart beat rapidly and the activities of the stomach and intestines were stopped. Both the internal and the external changes were due to the passage of nerve impulses to viscera along the neurones of the sympathetic division of the autonomic system. The relation of the fibres connecting the central nervous system with these neurones was such as to provide for diffuse action on all the viscera that were innervated by this division. The adrenal glands were supplied with nerves from the sympathetic division; and also the secretion of the adrenal medulla affected all structures innervated by the sympathetic division precisely as if they were being stimulated by its impulses. They had found that the adrenal glands secreted adrenin in times of great excitement, that there was an increased liberation of sugar from the liver so that glycosuria might result, that there was an abolition or prompt lessening of muscular fatigue, and that there was a very much more rapid clotting of blood. It was known also that adrenin caused a redistribution of blood in the body so that it was sent away from the alimentary canal whose activities were inhibited, to the heart, the lungs, the central nervous system and active skeletal muscles. It was known, also, that adrenin caused dilation of the bronchioles and it was known that it increased the number of red blood corpuscles per cubic millimeter—an increase which Lamson had shown occurred also to a marked degree in cases of emotional excitement. These changes, as true of man as of the lower animals in times of great emotional stress, were significant when the conditions which would give rise to the emotions were considered. Fear was associated with the instinct to flee; rage with the instinct to fight. These were the emotions and instincts underlying the struggle for existence. They were also the emotions and instincts into which all other instincts might be readily turned when they were thwarted. The internal changes were all directed towards increasing the efficacy of the organism for physical struggle. The increased blood sugar provided a source of muscular energy. The altered distribution of blood and the increased number of red blood corpuscles arranged for carrying an abundance of oxygen to the active structures. The dilated bronchioles allowed ready ventilation of the lungs when oxygen was greatly needed and carbon dioxide was being produced in large amounts. The provision for lessening muscular fatigue was directly useful in muscles likely to be employed in continued action. The rapid coagulation of blood tended to preserve that precious fluid in case of injury to blood vessels. The organism in which these changes most promptly occurred had the greatest reinforcement of its abilities and was most likely to be favored in physical struggle. These arrangements for reinforcement accounted for the great power and endurance which were exhibited in times of intense excitement. Other glands than the adrenal were not so readily studied because of the difficulty of recognizing their secretions. It had long been known, however, that physiological activity was accompanied by the presence of an electrical difference which might be observed by connecting an active part with an inactive part of the body through a sensitive galvanometer. Justification of this method of studying glands could be obtained by applying it to the submaxillary gland. It had been found that the electrical change began before the external secretion appeared, disappeared as secretion stopped, and was not related either to flow of fluid in the ducts or a change of blood flow in the capillaries. Since the only feature that could not be abolished without abolishing the electrical change was secretion, the electrical effect was a true indicator of a secretory process. When this method, therefore, was applied to the thyroid gland, the positive testimony of the galvanometer was evidence of thyroid secretion. The electrical method showed that the thyroid gland was subject to impulses from a part of the sympathetic division of the autonomic system, i.e. the cervical sympathetic. The secretion came promptly—after a latent period from 5 to 7 seconds. The vagus nerve was without control, and pilocarpine, as a stimulator of vagus endings, was likewise without control. The influence of the sympathetic was not due to anemia, for shutting off the blood supply had no such effect as was produced by sympathetic stimulation. Control by the sympathetic implied that adrenin might be effective in stimulating the thyroid. This, in fact, was the case, for a marked electrical change was produced when adrenalin (0.1 c.c. of 1:100,000) was in-

jected intravenously into a cat. Furthermore, the action current of the thyroid appeared if the nerves to the adrenal gland were stimulated, an effect which did not occur if the adrenal glands had been previously removed and which was delayed if the return of blood from the abdominal cavity was delayed until the blood was again allowed to flow. Thus a hormone relation between the adrenal and the thyroid was clearly demonstrated. This electrical evidence, which was obtained in cooperation with Dr. J. McKeen, Cattell, had been confirmed by the observations of Dr. Robert L. Levy. He had found that both stimulation of the cervical sympathetic trunk and injection of stimulating doses of adrenalin greatly augmented the effects of small doses of adrenalin in raising blood pressure. This increase of efficacy of adrenalin was not produced if the thyroid glands had previously been removed. The proof that the thyroid responded rapidly to sympathetic stimulation and that it was effective in combination with adrenal secretion showed that there was another bodily change to be added to those already mentioned as occurring in times of great emotional excitement. In the course of this work two questions had arisen. First, why were organs which were disturbed in times of emotional stress not disturbed at other times? It seemed probably that they were protected from interference by a high neurone threshold interposed between the central nervous system and the visceral cells. Consequently only when great excitation was present in the central nervous system was this threshold crossed and the changes in the viscera brought to pass. The second question was, why, in certain pathological cases, was there apparently frequent or continuous disturbance of these same viscera? It seemed possible that this might be due to a wearing down of the high threshold here or there from frequent or great emotional experiences. Thus the situation would be like a break in a dike, and only a slight disturbance in the central nervous system might then be needed to result in a pouring through of impulses at the low point and consequently a fairly frequent or continuous disturbance in the viscus innervated by this region. Thus dyspepsia, tachycardia and probably persistent glycosuria, reported as having an emotional origin, might be accounted for. To test the effect of continuous stimulation the phrenic nerve was fused with a peripheral portion of the cut cervical sympathetic. This operation, done with the aid of Dr. C. A. L. Binger, resulted in some animals in tachycardia, increased excitability, loose movements of the bowels, exophthalmus on the operated side (in one case) and, as Dr. Reginald Fitz showed, in great increase of metabolism (in one case an increase of 130 per cent.). These phenomena had disappeared on removal of the thyroid gland on the operated side. The adrenal glands in two animals that had died of the disease had been greatly enlarged. The changes thus produced resembled in many respects the symptoms of exophthalmic goitre and supported the view that this disease might be primarily due to overactivity of that part of the nervous system disturbed in emotional excitement,—possibly, as suggested above, a local stimulation in the cervical region. Two vicious circles might be operative: one through the nervous system due to increased excitability from increased thyroid secretion and resulting thus in increased nervous stimulation of the gland; the other through the blood stream due to increased adrenal activity from overaction of the thyroid and stimulating the thyroid in turn in the manner indicated above. The evidence previously presented showed that besides any routine function, the adrenal gland had an emergency function brought out in times of great excitement. It was not unreasonable to suppose that the thyroid gland likewise had an emergency function evoked in critical times, which would serve to increase the speed of metabolism when the rapidity of bodily processes might be of the utmost importance, and besides that augmenting the efficiency of the adrenin which would be secreted simultaneously.

Dr. Henry Rutgers Marshall opened the discussion by invitation. He said that he was led to his view as to the result of reading Charles Darwin's "The Expression of the Emotions in Man and the Animals," in which he conclusively showed that the activities commonly called the expression of the emotions were instinctive activities that had been inherited because of their racial value. This point was very effectively corroborated by Dr. Cannon's experiments. This was the view commonly held and as such deserved some study. For it was not at all clear on the face of it, how instinctive reactions, which always arose automatically, and immediately, upon the receipt of a definite stimulus could be caused by emotional states. Now, William James held, on the contrary, that the instinctive reactions caused the emotions, which were what Lloyd Morgan had aptly called "back strokes," which were resultant from the automatic instinctive reactions which we called expressions. To put the matter in the vivid language which Mr. James used, we did not flee because we were afraid, but we were afraid because we fled. We did not strike because we were angry, but we were angry because we struck. In other words, he held that the emotions of fear and anger, for instance, were after results of the purely automatic instinctive activities involved, directly or indirectly, with the running away, or with the striking of the enemy. In his more mature view the speaker said he had come to hold that the causal relation was not involved at all between the mental and the physical. All that the evidence pointed to was the existence of a strict one to one corresponding between the two. This was an important point, and Dr. Cannon's experiments seemed to corroborate it. Some of the results of such a view, both physiological and psychological, he had attempted to point out in an article published in the April number of *Mind*, in connection with the study of retentiveness, and of Bergson's and Freud's theories of dreams. Under such a view it would be seen that they no longer held that there existed a causal relation between the emotion and its expression; that they were no more warranted in saying with Professor James that they were afraid because they fled, that in saying with the common man, that they fled because they were afraid. All that one was warranted in saying was that the specific form of the instinctive reaction necessarily involved the equally specific form of the emotion, and *vice versa*. To put this in another way, what might be called an instinctive action was a relatively immediate reaction to a selective definite stimulus, and was based wholly, or in large part at least, upon inheritance. Man displayed a countless variety of such instinctive actions, varying greatly in complexity. The extreme limit in one direction was the simple reflexes, and the so-called emotional expressions were examples in the direction of complexity. Corresponding with the more complex instinct-actions changes were noted in the consciousness which might be called instinct-feelings. These differed as the instinct-actions differed. One felt such an instinctive feeling when quite automatically he rushed forward, and again when he jumped back suddenly to escape an automobile. And the instinctive feelings in the two cases were as distinctly different as the instinct actions were distinctly different. Now most of our instinct-actions recurred but seldom in anything like a definite form. Certain of them, however, did recur frequently, and were relatively constant in form. In such cases one came to recognize them and describe them as Darwin, and as Dr. Cannon had done. In like manner the corresponding instinct-feelings recurred for the most part, infrequently in any thing like a definite form; but some of them did, and these were recognized and given names. In the speaker's view it was the instinct-feelings of this latter type that were what we called the emotions. Thus it would be seen that this general conception taught us that a definite type of behavior necessarily involved a definite attitude of mind, and *vice versa;* and that each change of an individual's behavior necessarily involved a corresponding change of the individual's mental attitude; and *vice versa*. As nations were merely aggregations of individuals, this meant that definite changes of national attitude of mind must necessarily go with changes of national habits of action; a fact which, in the speaker's view, we were overlooking at the present moment. Perhaps this distinction might appear of little importance, but to him it seemed very important indeed. For, under the view which he had defended the emotions, as types of mental states, could not be looked upon as causally related with what we called their expressions; but merely as symptomatic accompaniments of these instinctive activities. It made all the difference in the world which position we took. For if we treated our mental states as causally related with physical states, the physician was tempted to step outside the real sphere of his work. While if we treated our mental states as symptoms of physical states, the mental states he employed merely and properly as aids to the discovery of such physical conditions as the physician was called upon to deal with. The speaker said he was especially interested in the

impressive evidence furnished by Dr. Cannon of the marvellously intricate coordination of minor systemic parts necessary to the very existence of the high organisms; evidence that had been accumulated in large measure in the last decades, and which led us to abandon the study of the physical organism as though it were a quasi atomic collection of separate organs; leading us rather to study it as was now being done, as a whole system of enormous complexity, in which each organic path had its place as a minor system. The biologist was thus coming daily to look upon problems relating to organization as of greater and greater importance, as was indicated, for instance, in the last book from the pen of the eminent English physiologist, Haldane. And correspondingly in the realm of consciousness psychologists had discarded psychological atomism and were treating the mind as an immensely complex system of psychic systems. This fact that the physiological and mental structure and functioning were to be considered as single wholes was surely often overlooked on the physiological side, for instance, by those pedagogues who urged intensive specialization in any particular field to the abandonment of broad culture. They forgot that this specialization tended to involve a loss of such balance of judgment as was required if real advance in thought was to be made. It had led in the scientific world to a great amount of pleading which passed without protest. The physician could be said to have escaped altogether the dangers involved in the forgetfulness of the fact that each part of the body was essentially related to the system as a whole. It was certainly overlooked if a surgeon operated where these was no urgent need, and where there was at the same time no little hope of a readjustment of functioning, by natural processes, which would leave the system intact and newly balanced. He seemed to observe this same forgetfulness when he heard his friends say, "My doctor tells me this drug will make me sleep, and has no after effects," or "My doctor says the medicine may help me and cannot in any event do me any harm." No one who was impressed with the import of the facts brought to their attention by Dr. Cannon could be guilty of such thinking, and he had dared make these critical remarks because he felt that they could not possibly apply to those present, except as they might urge them to take note of these things in the guidance of their pupils.

Dr. Charles L. Dana said that he was not a physiologist and he could not criticize but only accept Prof. Cannon's data. He accepted also as most reasonable the theory of the mechanism of defense which had been described. The speaker said that he subscribed to the laboratory work and the deductions presented by Dr. Cannon, and he did so in spite of a very critical attitude which he had begun to feel towards laboratories in general. They were doing splendid and constructive work, but they were also enslaving and in a way enfeebling the clinician; and they were sending out occasionally misleading and incomplete announcements. The laboratory often needed a humanizing influence, and should be more dominated by clinical spirit. He said that he had one practical suggestion to make bearing on Prof. Cannon's observations. There were emotional states which came on acutely, but lasted very intensely for weeks and months. These were cases of acute mania, or hypomania, in which the patient was joyously exhilarated, alert, talkative, had violent bursts of anger and was intensely active physically and mentally under the pressure of the emotional state, which some morning suddenly left him, or a contrary state of agitating depression occurred. These emotional states might be like those brought on by shock. The question whether they were brought on or kept up by periodical explosions of pluriglandular activity would be worth examining. We knew that in hyperthyroidism there was often a distinct excess of emotional tone.

Dr. Harlow Brooks spoke from the standpoint of the internist, and said there were two points that should be thus considered. First, how could they explain the influence of the emotions in the development of organic disease. In the clinical study of hypertension, of angina pectoris, and allied conditions, there was no clinician but realized the influence of the emotions in the development of organic disease. In the clinical study of hypertension, of angina pectoris, and allied conditions, there was no clinician but realized the influence of the emotions in the etiology of the disease In bronchial asthma, and in fact, the whole range of cardiac renal and vascular disease, they recognized this. This was one side of the question which touched the clinician. Secondly, there was another field which was more potent so far as clinicians were concerned, and that was in the treatment of disease. All recognized how much the emotions had to do with the patient's convalescence. Also the important condition of "lack" of over emotion in the care of certain conditions such as cardiac and renal diseases. He wished they could carry away with them the idea that it would be of great help to them if they would study more how the emotions controlled disease, how discipline and rest helped them to actually cure disease. By controlling the emotions, the habits, etc., they might be able to actually cure many of these conditions. He thought that they had been given this evening the explanation of many of the problems confronting them in every day practice.

Dr. Walter Timme said that he believed that emotional complexes had as reactions, disturbances of the normal state in the three nervous levels, the psychic, the sensori-motor and the vegetative. It was the vegetative that had engaged them at the present moment. As this vegetative level combined both the sympathetic and the extended vagus systems, and as these were interactive, it was hardly possible to consider one without the other. Emotions, such as anger, stimulated the sympathetic, but such emotions as depression, chagrin, or worry, stimulated the vagus and produced physiological changes which were constantly seen, notably, visceroptosis. One possible objection to Dr. Cannon's conclusions regarding the effect of the increased adrenalin in the adrenal veins of an animal that had been frightened, was that these same veins also depleted the adrenal cortex as well as the medulla. The adrenal cortex in human beings comprised almost nine-tenths of the gland, while the medulla which produced the adrenalin was only one-tenth. In animals the cortex was notably smaller proportionately than in human beings, and in acerebrate humans and idiots the cortex was almost entirely absent. It was noteworthy that with such absence the individual had much less inhibition of his emotional discharges in anger and fright. It might therefore be presumed that the cortex secretes a substance which was possibly antagonistic to adrenalin, and whose activity must be taken into account in such experiments as Dr. Cannon had described. An interesting problem was propounded in considering the mutual relations of adrenalin and the sympathetic system, namely, that they were mutually stimulating; that was, adrenalin irritated the sympathetic system, which in turn stimulated the adrenal gland to a future production of adrenalin. This newly formed adrenalin again effected the sympathetic with the secondary effect upon the andrenals, and so on, ad infinitum. And yet this was not so in fact, for it seemed that the adrenalin was immune to sympathetic stimulation produced by adrenalin. As for the interrelation of thyroid and adrenalin, he thought it had fairly well been proven that thyroid acted as a sensitizer to adrenalin just as it did to cocaine, enhancing its effects. In conclusion, he said their thanks were due Dr. Cannon for his elaborate work in establishing upon a firm basis what heretofore had depended upon empiricism. He had helped to transfer the entire system of internal glandular activity from the realm of the art of medicine to the realm of the science of medicine.

Dr. John Rogers remarked that none could doubt an emotional cause for many diseases, nor the physical effects of emotion. Excitement had often caused him while hunting to forget all sense of fatigue. Dr. Cannon had shown how emotion caused an increase in the circulation of adrenalin, or of the secretion from the adrenalin gland; also, that an increased activity on the part of the adrenal caused an increase in the activity of the thyroid. This was directly applicable to the clinical phenomena observed in Graves' disease. Here emotion or physical fatigue intensified the symptoms of over-activity of the thyroid. The adrenal gland was a very important part of the chromaffin or sympathetic nervous system. A few years ago no one had heard of the autonomic system; now it appeared that these two groups of nerves, or the sympathetic and autonomic, supplied every important organ in the body. They seemed to convey to each organ opposing influences. The autonomic fibers in the main appeared to convey secretory and motor impulses which some recently published experiments showed were activated by the products of several endocrine glands. This activation could apparently be inhibited by an extract of the whole adrenal gland or by adrenalin. This sug-

gested that normally there was a perfect balance between the adrenal or chromaffin, sympathetic system and the autonomous with their activating endocrine glands. When this balance was disturbed there arose the manifestations of disease. The adrenal was supposed to be supplied by the vagus which should have a secretory influence. Stimulation of the vagus stimulated the secretory activity of all the endocrine glands, including the adrenal. But the adrenal activated the sympathetic and so tended to inhibit the activity of the other endocrine structures. When this balance was disturbed there ought to arise the manifestation of disease, as above stated, and which now passed under the name of sympatheticotonic or vagotonic. Dr. Timme had hinted that adrenal was not the normal product of the entire living adrenal gland. If this suspicion proved true and adrenalin was some day found only in the stable part of some complex labile substance, it might then be possible to demonstrate the mechanism of the complicated diseases of which exophthalmic goitre was an example.

Dr. SAMUEL J. MELTZER said that he wished to assure Dr. Dana that Dr. Cannon had a very efficient clinician and physician associated with his laboratory in the person of Dr. Cannon himself. It had been most instructive and enjoyable to hear such closely packed facts as were contained in Dr. Cannon's address, all being the result of his own observations. He offered facts and when he offered theories they were a tight fit with his facts. Dr. Cannon's experiments pointed to the effect of the adrenals on the emotions of fear and hatred, but there was a further field for experiment in the discovery of the source of the softer emotions, such as the love of mothers for their children, for music, and for beauty. Perhaps those responsible for the fighting in Europe had very large adrenals. Dr. Cannon's animal used in experimenting on the harsher emotions was a cat. It was to be hoped that his choice of his next animal for experimentation further along these lines would rest on a pigeon, for instance, when he would perhaps find the controlling factor of the softer and desirable passions.

Dr. THOMAS DARLINGTON said that the presentation of facts gathered in laboratory experimentation was frequently so complicated by technical details as to cloud the main issue, and he felt that everyone shared his appreciation of the simple and lucid manner in which Dr. Cannon had clothed his address. It had been said at another meeting at the Academy that the greatest accomplishment of the laboratory was in aiding the practitioner to benefit and cure his patients, and it was certain that such experiments as Dr. Cannon's could be verified by any practitioner who realized that the first step toward a cure of disease was to relieve the mind of the patient of fear. As Oliver Wendell Holmes had said:

"Ah! sad and sick the suffering ones who miss
The touch and presence of a man like this,
Whose thrilling magnetism and cheerful laugh
Add to the remedies their better half,
And reinforce the courage and the will
And give sure virtue to the doubtful pill."

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

THE UNIVERSITY OF THE STATE OF NEW YORK.

May, 1916.

(*Concluded from page* 222.)

OBSTETRICS AND GYNECOLOGY.

1. Give the etiology of hemorrhage appearing externally after the birth of the child.
2. Describe the management of the third stage of labor in normal delivery.
3. What is placenta prævia? Give its varieties and its management.
4. What is concealed accidental hemorrhage? Give its etiology and its diagnosis.
5. Describe methods of examination of the female organs of generation.
6. What is the recognized normal position of the uterus? By what means is it retained in this position?
7. Describe the separation of the placenta.
8. What is erosion of the cervix? Give its etiology and its management.
9. What hygienic care should be observed at the period of puberescence?
10. What is accouchement forcé? When is it indicated?
11. Describe uterine polypi. Give their origin and their histologic composition.
12. What are the causes of venereal warts? Give treatment.

PATHOLOGY.

1. Describe ophthalmia neonatorum.
2. What portion of the uterus is the most common initial site of malignancy?
3. Give the technic of making a red blood count.
4. Give the pathology of erysipelas.
5. Give briefly the urinary findings, both chemical and microscopical, in chronic parenchymatous nephritis.
6. What changes take place in an inflamed part, causing redness and swelling?

BACTERIOLOGY.

7. Describe in detail how you would examine spinal fluid for meningococci, morphologically and culturally.
8. How would you determine whether or not a sore throat is caused by the diphtheria bacillus? Give details of procedure.
9. Describe a method of staining tubercle bacilli. How could you isolate the bacilli from chest fluid?
10. What is a typhoid carrier? How can it be ascertained bacteriologically that an individual is a typhoid carrier?
11. What is meant by active immunization? Give an example in which this principle is applied to the prophylactic immunization of man.
12. What is the principle underlying Pasteur's method of treatment of an individual who has been bitten by a mad dog?

DIAGNOSIS.

1. What are the symptoms of intracranial hemorrhage (apoplexy)?
2. Differentiate a syphilitic mucous patch from an aphthous ulcer of the buccal mucosa.
3. Describe the physical signs produced by pulmonary tuberculosis in its incipient stages.
4. Differentiate between aortic stenosis and mitral insufficiency.
5. Describe the renal conditions resulting from arteriosclerosis and give their symptoms.
6. Describe the symptoms and the clinical course of alcoholic cirrhosis of the liver.
7. Give the symptoms produced by deflections of the nasal septum.
8. In what disease conditions is there an increase in the number of leucocytes in the blood (hyperleucocytosis)? Mention *three* common disease conditions in which the number of leucocytes is stationary or lessened (leucopenia).
9. What symptoms indicate a perforation of the bowel in the course of typhoid fever?
10. What are the symptoms of myxedema and of what is it significant?
11. Mention *two* conditions in which wrist drop is an important symptom.
12. Describe the physical signs present in lobar pneumonia and the modifications to be noted in the different stages of the disease.

ANSWERS.

OBSTETRICS AND GYNECOLOGY.

1. *Postpartum hemorrhage.* Causes: Anything interfering with the firm contraction of the uterus after the expulsion of the child; retained placenta, or membrane, or clots; weakness of the uterine muscle; rapid labor; delayed labor; poorly developed uterine muscle; inflammation or disease of uterus; lacerations; imperfect separation of the placenta; mismanagement of the third stage of labor.

2. In the *third stage of labor* the physician should seize the fundus of the uterus through the abdominal wall and knead and rub it until it contracts vigorously; then he should press it down in the direction of the axis of the pelvic inlet. This should last for about a quarter of an hour after the child is born. The placenta, after it is expressed, should be carefully taken by the physician so as to be sure that it is *all* expelled; at the same time care must be taken that no particle of membrane remains behind. Fluid extract of ergot may be administered.

3. *Placenia prævia* is the condition in which the placenta is attached in the lower uterine segment and may be near or over (partially or completely) the internal os. *Varieties:* (1) *Central*, when the placenta completely covers the os. (2) *Partial*, when the placenta overlaps the os. (3) *Marginal or lateral*, when the placenta reaches the margin of the os but does not overlap it. *Treatment at term:* (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation, turn the child and make the breech engage in the os; or, if the head presents, the forceps may be used, if speedy delivery is necessary. Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version and immediate extraction of the child.

4. *Concealed hemorrhage* is one form of hemorrhage in premature detachment of the placenta. The blood dissects its way between the placenta and membranes, but does not escape externally (or only very slightly). *Cause:* Separation at center of placenta, the edges still being adherent; detachment of placenta at upper margin only; plugging of parturient canal and thus hemorrhage from any cause cannot escape. *Symptoms* are pallor, syncope, thirst, rapid and weak pulse; the uterus is soft and enlarged.

5. The patient should be free from corsets and constricting bands; the bladder and rectum should be empty. *External palpation:* The patient should be in the lithotomy position, on a suitable table or bed. The examiner stands on one side, and palpates the lower abdomen to determine any enlargement of the uterus. *Inspection* will show the presence of parasites, discharges, caruncle, chancre, condylomata, and lacerations. *Vaginal touch:* The examiner separates the labia with the thumb and finger of one hand; and two fingers of the other hand well lubricated are introduced into the vagina. Pressure is made on the perineum until the posterior fornix is reached, when the palmar surfaces are turned forward and the size, position, and condition of the cervix are determined. Then with the palmar surface of the external hand gentle pressure is made on the abdomen and the two hands are approximated. A *digital vaginal examination* will show: (1) The condition of the perineum, whether torn or not; (2) the size, shape, dilatability, temperature, discharges (if any) of the vagina; (3) the presence of cystocele, rectocele, prolapsed uterus, or other abnormal conditions of vagina; (4) position, shape, size, consistence of cervix, with presence of absence of erosions, lacerations (5) condition, shape, size, location, and mobility of uterus; (6) sometimes presence of abnormalities in tubes, and ovaries, and uterus (such as tumors, inflammations, etc.) *Rectal examinations:* In virgins and in some cases of extreme retroversion one finger is introduced into the rectum and with the other hand on the abdomen a more satisfactory bi-manual examination can be made. *Instrumental examination:* in the lithotomy position, by the use of a bi-valve, a tubular or Ferguson speculum, the condition of the cervix can be inspected. This is best accomplished in some cases by use of the Sims position and the Sims speculum. At the same time in rare and selected cases by steadying the anterior lip of the cervix with a bullet forceps the uterine sound may be passed to determine the size and position of the uterus.

6. The recognized normal position of the uterus is one of slight anteflexion, with its long axis at right angles to the long axis of the vagina. The anterior surface of its body rests on the bladder, and the cervix points backward toward the coccyx. The uterus is not fixed, but moves freely within certain limits. It is held in place by ligaments.

7. *Separation of the placenta* from the uterine attachment is due to the retraction and contraction of the uterus which brings about a disproportion between the placenta and its site: the attachments between the two are torn through. In the intervals between the contractions a moderate hemorrhage takes place behind the placenta, and this is a factor in bringing about the separation.

8. *Erosion of the cervix* is a condition in which the vaginal portion of the cervix uteri has on its surface a mucous patch consisting of a layer of columnar epithelium and newly formed glands; these replace squamous stratified epithelium. The condition was formerly described as an ulcer but a true ulcer is characterized by loss of tissue, and there is no loss of tissue in an erosion. The *causes* are unknown; erosions are found in virgins, nulliparous, and parous women. *Treatment* consists in cleanliness, mild astringent douches, cauterization of the cervix, general improvement of the health and surroundings of the patient; in severe cases Emmett's operation, and amputation of the cervix have been recommended.

9. *Hygiene of puberty:* "The period of puberty should be taken as extending not only over the few months required for the establishment of menstruation, but as including the time necessary for full physical development. During this time the energy of the girl is taxed by the rapidity of sexual development, by the great liability to circulatory disturbances, by the physical and mental strain of education, and by the conventionalities of society. The necessity, therefore, for great care is apparent. Nutritious and simple diet, frequent rest, moderate amusements, and adequate exercise are essential, Study, especially during menstruation, should never be pressed to the point of fatigue. Inasmuch as passional life now begins, and the whole nervous organization is therefore subject to new impulses and requirements, books and associates should be selected carefully, and whatever may unduly excite the emotions should be excluded. Errors committed now may have grave consequences, such as malnutrition, psychoses, sterility, menstrual and other functional disorders, and may make the woman a hopeless invalid. One of the most serious errors is premature marriage." —(Dudley's *Gynecology.*)

10. *Accouchement forcé:* "By this term is understood the forcible dilatation of the intact or partially dilated cervix, followed by version and extraction of the child. *Indications:* In this country the most usual indication for *accouchement forcé* is threatened or actual eclampsia. Occasionally it becomes necessary in concealed or accidental hemorrhage, and also in the rare cases of acute edema of the lungs, or broken cardiac compensation complicating pregnancy, as well as in certain cases of placenta prævia."—(Williams' *Obstetrics.*)

11. *Uterine polypi* are pedunculated tumors attached to the uterine mucous membrane. *Mucous polypi* "grow most frequently from the cervix. According to some authorities they occur only as a result of inflammatory changes, being a mere local hypertrophy and hyperplasia. These polpi vary from a pea to a hen's egg in size. They are made up of the elements of the mucosa and are very vascular, usually of a cherry-red color. Often more than one are found. They are covered with columnar epithelium; when growing near the os externum, they may be partly or, sometimes, entirely covered with stratified squamous epithelium. They are made up of spaces lined with columnar or cubical epithelium, lying in a delicate connective tissue stroma, rich in capillaries; often blood is found diffused among the fibrils. In some cases, where the spaces are somewhat distended, the lining epithelium may be considerably flattened. They contain thick or thin mucus. As these polypi grow and descend they dilate the cervix. Sometimes those growing in the body do not tend to work their way down through the cervix. They sometimes tend to recur; in some cases there is a malignant tendency. Sometimes these growths may have a covering of stratified squamous epithelium, through growing from the cervical mucosa."—(Webster's *Diseases of Women.*)

12. Venereal Warts. *Causes:* Gonorrhea, syphilis, irritating discharges, want of cleanliness, and (sometimes) the congestion and leucorrhea of pregnancy. *Treatment:* Excision of wart by curved scissors, followed by cauterization; application of calomel and salicylic acid; douches; cleanliness; tonics; and removal of the cause, if possible.

PATHOLOGY.

1. *Ophthalmia neonatorum* is an infectious, purulent inflammation of the conjunctiva in the newborn, due to the gonococcus or other pyogenic germ; produced by contact of the eye with the vaginal secretion of the mother during labor, or infected fingers, or instruments, etc.

The treatment is (1) *Prophylactic.*—Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 or 2 per cent. solution of nitrate of silver, immediately after birth. (2) *Remedial.*—Wash the eyes carefully every half-hour with a saturated solution of boric acid; pus

must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of sliver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burned.

"The disease, if untreated, declines spontaneously, and the discharge almost ceases in about six weeks, the palbebral conjunctiva being left thick, relaxed, and more or less granular. Cicatricial changes identical with but less severe than those resulting from chronic granular lids, and analogous to those which occur in stricture of the urethra, sometimes follow; considerable permanent thickening of the ocular conjunctiva may also occur. There is a great risk to the cornea in this disease, partly from strangulation of the vessels, partly from the local influence of the discharge. If within the first two or three days the cornea becomes hazy and dull, like that of a dead fish, there is great risk that total or extensive sloughing will occur. In many of the milder cases ulcers form a little below the center and rapidly cause perforation. In other cases clear, deep ulcers form close to the edge of the cornea. There is less risk of ulceration of the cornea in the purulent ophthalmia of infants than in that of adults."—(Nettleship's *Diseases of the Eye.*)

2. The *cervix* is the most common site of malignancy of the uterus.

3. *To make a red blood count:* "The finger is cleansed and punctured. As soon as the blood is flowing freely a red-blood pipette is brought into contact with the drop, suction made, and the blood drawn up to the mark 0.5. In the case of an extremely anemic patient draw it up to the mark 1. If the mark is slightly over-reached, touch the point of the pipette against the towel till the column is brought back to the 0.5 mark. When the blood is drawn to the proper mark, and that on the outside of the tube wiped off (being careful not to touch the point), the pipette is immediately plunged into the diluting solution and suction made as soon as it is below the surface. This is drawn up until the mark 101 is reached. The pipette, held in the horizontal position, is tapped rapidly with the fingers in order to mix thoroughly the blood. Next blow out the diluting fluid and place a medium-sized drop of the diluted blood upon the small glass cylinder in the counting-chamber. The next step is the careful adjustment of the cover-slip over the drop of diluted blood. The drop should now nearly cover the central glass slide; there should be no air bubbles in it; it should not overrun the gutter. If the slide be held up to the light on a level with the eyes, a play of colored rainbow rings may be seen. This indicates that the technique has been correct. A few minutes should elapse before counting to allow the corpuscles to settle. The counting-chamber is exactly one-tenth of a millimeter deep. The ruled square used for counting reds is a square millimeter divided into 400 small squares, so that each small square is 1/400 square millimeter. Use the low dry lens, with most of the light shut off. It is well to adopt the rule of beginning with the lower right square and counting upward. Every fifth square above and to the left is subdivided by an extra line to facilitate the counting. The corpuscles lying on the upper and left lines are counted; those on the lower and right are not. Continue this upward course till five squares are counted, then take the next square to the left and go down five, then the next to the left and go up again five squares, and so on till the number of corpuscles in 200 small squares is counted. This sum is divided by 200, thus giving the number in each small square. To calculate the number of corpuscles per cubic millimeter, multiply by 100, because the blood has been diluted 100 times; then by 400, because each small square is one four-hundredths of a square millimeter; then by 10, as the square millimeter is only one-tenth of a millimeter deep. This gives the number of corpuscles in a cubic millimeter. In short, with a dilution of 1:100 the number of corpuscles in each small square is multiplied by 400,000. If the dilution has been 1:200, multiply by 800,000." (Arneill's *Clinical Diagnosis.*)

4. *Pathology of erysipelas:* "Sections of the affected skin reveal an infiltration with granular leucocytes and serum, often including many micrococci, and involving the subcutaneous cellular tissue and to a variable depth the fat. The leucocytes are most numerous in the capillaries and lymph-spaces of the outer zone, where the disease is advancing; they are also numerous around the hair follicles and sweat glands. Pus is formed in the worst cases. The edema is most pronounced in loose cellular tissue, as beneath the eyelids and the prepuce. Abscesses and infarction are occasionally found in the lungs, spleen, and kidneys." (French's *Practice of Medicine.*)

5. In *chronic parenchymatous nephritis:* "The quantity of urine is diminished, it is cloudy from urates; the specific gravity may be high in the early but is low in the later stages. Albumin is abundant, sometimes more so than in any other disease. The heavy sediment contains large numbers of nearly all the varieties of tube casts, hyaline, epithelial, granular, and fatty. The latter are especially characteristic. Occasional red corpuscles, many leucocytes, and numbers of degenerated epithelial cells are also found. The amount of urea is decreased." (Butler's *Diagnostics of Internal Medicine.*)

6. The *redness* is due to the hyperemia which is present in inflammation, the hyperemia being caused by the dilated vessels of the part.

The *swelling* is caused by the excess of blood present in the part, by the leucocytes brought to the part, by the exudate within the tissues, and by the newly-made tissue cells.

BACTERIOLOGY.

7. *To examine spinal fluid for meningocci:* The fluid should be received in a sterile container, and then centrifuged. The sediment is stained with Gram's stain; the diplococcus intracellularis meningitidis is a diplococcus, very small, with no capsule, non-motile, non-flagellate, Gram-negative, but staining by ordinary methods. A culture must be made very promptly; it grows at body temperature, on Loeffler's blood-serum mixture or glucose ascitic agar neutral to phenolphthalein. Transfers must be made frequently as the diplococcus is readily killed by heat, drying, sunlight, or disinfectants.

8. A sterile swab is rubbed over any visible membrane on the tonsils or throat and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appears as short thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts. *Methods of culture:* The bacillus of diphtheria grows upon all the ordinary culture media, and can be readily obtained in pure culture. Loeffler's blood serum, particularly with the addition of a little glucose, is an admirable medium for the rapid growth of this bacillus. The medium should be alkaline and not less than 20° C.

The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are nonmotile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene blue.

9. To demonstrate the existence of *tubercle bacilli* in the sputum: The sputum must be recent, free from particles of food or other foreign matter; select a cheesy-looking nodule and smear it on a slide, making the smear as thin as possible. Then cover it with some carbolfuchsin, and let it steam over a small flame for about two minutes, care being taken that it does not boil. Wash it thoroughly in water and then decolorize by immersing it in a solution of any dilute mineral acid for about a minute. Then make a contrast stain with solution of Loeffler's methylene blue for about a minute; wash it again and examine with oil immersion lens. The tubercle bacilli will appear as thin red rods, while all other bacteria will appear blue.

The chest fluid should be treated with antiformin, which kills most bacteria but not the tubercle bacilli; it is then centrifuged, and from the sediment the tubercle bacilli may be cultivated on blood serum. On account of the difficulty of obtaining material free from other bacteria (which grow more rapidly than the

tubercle bacilli), it is often necessary to inoculate guinea pigs subcutaneously with the sediment, and then obtain cultures from these animals as soon as the tuberculous infection has developed.

10. A *typhoid carrier* is a person who is not suffering from the disease, but whose excreta contain the typhoid bacilli and who, therefore, is capable of giving the disease to others. The finding of the typhoid bacilli in the feces (and urine) of such a person is proof of his being a typhoid carrier.

11. *Immunity*, or the power to resist invasion by microorganisms with the subsequent development of disease, is *active* when the cells or tissues of the invaded individual bring about this immunity, either by destroying the bacteria or by neutralizing their poisonous products. Such an immunity may be acquired in several ways; one is by inoculation, another is by vaccination; this latter is used as a prophylactic measure against smallpox.

12. *The principle underlying Pasteur's treatment for rabies:* "It consists of an active immunization with virus, attenuated by drying, administered during the long incubation period in doses of progressively increased virulence. By the repeated passage of street virus through rabbits, Pasteur obtained a virus of maximum and approximately constant virulence which he designated as *virus fixé*. He then ascertained that such *virus fixé* could be gradually attenuated by drying over caustic potash at a temperature of about 25° C., the degree of attenuation varying directly with the time of drying. Thus, while fresh *virus fixé* regularly caused death in rabbits after six to seven days, the incubation time following the inoculation of dried virus grew longer and longer as the time of drying was increased, until finally virus dried for eight days was no longer regularly infectious and that dried for twelve to fourteen days had completely lost its virulence. The method of active immunization which Pasteur used consisted in injecting, subcutaneously, virus of progressively increasing virulence, beginning with that derived from cords dried for thirteen days and gradually advancing to a strong virus. Thus the patient was immunized to a potent virus several weeks before the incubation time of his own infection had elapsed." (Hiss and Zinsser's *Bacteriology*.)

DIAGNOSIS.

1. *Symptoms of intracranial hemorrhage (apoplexy):* There may be prodromal symptoms such as vertigo, pain in the head, or impairment of memory; but as a rule the attack is sudden with vertigo and unconsciousness; there may be retention or incontinence of urine, the urine has a high specific gravity and may contain albumin; hemiplegia generally ensues; the tongue protrudes toward the affected side; asphasia (either motor or sensory) may be present; the face is flushed, breathing is stertorous; the body temperature is first subnormal and then elevated; the pulse is slow and full; in severe cases the pulse becomes weak, and the respirations become of the Cheyne-Stokes type; the reflexes are abolished.

2. *Apthous ulcers* are sharply defined, extremely sensitive, and evanescent in character.

Mucous patches are rounded or oval, flat, slightly elevated or depressed, grayish or pinkish in color, and slightly painful.

3. The early manifestations of pulmonary tuberculosis are: (1) *Physical signs:* Deficient chest expansion, the phthisical chest, slight dullness or impaired resonance over one apex, fine moist rales at end of inspiration, expiration prolonged or high pitched, breathing interrupted. (2) *Symptoms:* General weakness, lassitude, dyspnea on exertion, pallor, anorexia, loss of weight, slight fever, and night sweats, hemoptysis.

4. In *aortic stenosis*, there is a systolic murmur heard loudest at the base of the heart, and transmitted into the carotid arteries; the pulse is characteristic, being small and slow. In *mitral insufficiency*, there is a systolic murmur heard loudest near the apex and transmitted to the left axilla and sometimes to the angle of the left scapula; there is frequently an accentuated second pulmonic sound; the pulse shows nothing that is characteristic.

5. The renal conditions resulting from arteriosclerosis are those found in chronic interstitial nephritis. The symptoms are: Increased arterial tension, enlargement of the left ventricle and then of entire heart, accentuated second aortic sound, retinitis, choked disc, anorexia, nausea, vomiting, diarrhea, uremia, dyspnea, dry and itching skin; the urine is increased in quantity, and has a low specific gravity, albumin is either absent or present in very small quantity; a few hyaline casts may be present.

6. *Alcoholic cirrhosis of the liver.* "Obstruction of the portal circulation first causes congestion and catarrh of the stomach, hence the initial symptoms are anorexia, fetor of the breath, fullness and distress after eating, eructations, nausea, vomiting of mucus, flatulence, and constipation. For months, and even years, these phenomena may be the only evidence of the disease. As the pressure in the portal system increases, the collateral vessels enlarge, and as a result the superficial abdominal veins become prominent and hemorrhoids develop. Engorgement of the portal system also leads to ascites and swelling of the feet, to enlargement of the spleen, and not infrequently to copious hemorrhages from the stomach or bowel. The size of the liver varies; it may be increased or diminished. There is a gradual loss of flesh and strength. The skin is muddy in appearance, but conspicuous jaundice is not common and occurs only as a complication, nervous symptoms—delirium, stupor, convulsions, and coma—occasionally appear toward the end of the disease. They are probably due to the retention of poisons that the liver is unable to convert or to eliminate. The majority of cases terminate fatally in from three to five years, or in from one to two years after the compensatory circulation fails. Death results from exhaustion, hemorrhage, pulmonary edema. intercurrent disease, or toxemia."—(Stevens' *Practice of Medicine.*)

7. *Deflections of the nasal septum* may cause: Obstruction to inspiration; catarrh of the nasopharynx; hypertrophy of middle or inferior turbinated bone on the non-obstructed side; atrophy of turbinated bone on the obstructed side; interference with hearing; mouth-breathing.

8. The *leucocytes are increased* in: Inflammatory diseases, abscesses, certain infectious diseases (such as erysipelas, pneumonia, meningitis, diphtheria), lymphatic leukemia, splenomedullary leukemia.

Leucopenia is found in: Pernicious anemia, typhoid, and miliary tuberculosis.

9. *Intestinal perforation in typhoid fever:* Sometimes there is severe, sudden pain localized in the abdomen, and sometimes there is little or no pain. Marked tympanites, great weakness, collapse, anxious look, small, rapid pulse, and difficult breathing are present. The legs are apt to be drawn up, and nausea and vomiting may ensue. Hepatic and splenic dulness disappear, and leucocytosis may be present.

10. *Symptoms of myxedema:* The body becomes swollen and edematous, but does not pit on pressure; the skin is dry and rough; the hair is brittle, and tends to fall out; wrinkles are obliterated, and the face assumes a stolid expression; the muscles become flabby; movement, mental processes, and speech become slow; the temperature of the body is subnormal.

The condition is significant of lack of thyroid secretion.

11. *Wrist-drop is an important symptom* in: Paralysis of the musculo-spiral nerve due to lead poisoning or multiple neuritis.

12. *Physical signs of lobar pneumonia:* "*Inspection* reveals during the first stage deficient movement of the affected side, due to pain. The apex-beat is normal in situation, and the interspaces do not bulge. In the second stage the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal respiration). *Palpation* during the first stage shows the vocal fremitus to be more distinct than normal, especially over the diseased portions. In the second stage, the vocal fremitus is markedly exaggerated, except in those rare instances of occlusion of the bronchi by secretion. The cardiac impulse is felt in the normal position. *Percussion*—In the first stage, the percussion note is slightly impaired at times, having a hollow or tympanitic quality. In the second stage there is dullness over the affected parts, with an increased sense of resistance. Over unaffected adjoining areas the resonance is increased (Skoda's resonance). *Auscultation.*—In the first stage there is heard over the affected part a feeble vesicular murmur, associated with the true vesicular or crepitant (crackling) râle, heard at the end of inspiration only. In the second stage there is harsh, high-pitched, bronchial respiration, at times resembling a to-and-fro metallic sound, except in those rare instances in which

the bronchi are more or less filled with secretion. Bronchophony, or distinctly transmitted voice, is present and at times pectoriloquy, or distinct transmission of articulated sounds, may be heard. In the third stage, the breathing changes from bronchial to bronchovesicular and the crepitant râle (crepitatio redux) returns. As resolution proceeds, the breath sounds are associated with large and small moist and bubbling râles."—(Hughes' *Practice of Medicine.*)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	
Arizona*	J. W. Thomas, Phoenix	Phoenix	
Arkansas	T. J. Stout, Brinkley	Little Rock	Nov. 14
California	C. B. Pinkham, Sacramento	Los Angeles	Oct. ?
Colorado	David A. Strickler, Empire Building, Denver	Denver	Oct. 3
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	Nov. 14
Delaware	J. H. Wilson, Dover	Dover	Dec. 12
Dist. of Col'bia	E. P. Copeland, Washington	Washington	Oct. 10
Florida*	E. W. Warren, Palatka	Palatka	Dec. 5
Georgia	C. T. Nolan, Marietta	Atlanta	Oct. 10
Idaho*	Charles A. Dettman, Burke		Oct. 4
Illinois	C. S. Drake, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 9
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Lebanon	Oct. 10
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. L. Leckert, New Orleans	New Orleans	Nov. 30
Maine	F. W. Searle, Portland	Portland	Nov. 14
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 12
Massachusetts*	W. P. Bowers, State House, Boston	Boston	Sept. 12
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing	Oct. 10
Minnesota	T. McDavitt, St. Paul	Minneapolis	Oct. 3
Mississippi	J. D. Gilleylen, Jackson	Jackson	Oct. 24
Missouri	J. A. B. Adcock, Jefferson City	Kansas City	Sept. 18
Montana*	Wm. C. Riddell, Helena	Helena	Oct. 3
Nebraska	H. B. Cummins, Seward	Lincoln	
Nevada	S. L. Lee, Carson City	Carson City	Nov. 6
N. Hampshire	Walter T. Crosby, Manchester	Concord	Dec. 18
New Jersey	A. MacAlister, Trenton	Trenton	Oct. 17
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York Albany Syracuse Buffalo	Sept. 19
N. Carolina	H. A. Royster, Raleigh	Raleigh	
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 1
Ohio	Geo. H. Matson, Columbus	Columbus	Dec.
Oklahoma	R. V. Smith, Tulsa	Oklahoma City	Oct. 10
Oregon	B. E. Miller, Portland	Portland	Jan. 2
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia Pittsburgh	
Rhode Island	G. T. Swarts, Providence	Providence	Oct. 5
S. Carolina	H. E. Boozer, Columbia	Columbia	Nov. 14
S. Dakota	P. B. Jenkins, Waubay	Deadwood	
Tennessee	A. B. DeLoach, Memphis	Memphis Nashville Knoxville	
Texas	M. P. McElhannon, Belton	San Antonio	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
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DOGMATIC PHYSIOLOGY.

BY J. ALLEN GILBERT, PH.D., M.D.,

PORTLAND, ORE.

THE average physician has but little interest in psychology. He knows comparatively little in regard to it and gives it comparatively little importance among the various branches of science. In fact he is loath to accord it any existence at all as a separate science and classifies it for convenience as a branch of physiology. For him mind is but a product of brain, sensation a modification of the brain cell, consciousness a mere effervescence from nerve matter and thought in general a side issue having reference only to the brain that gave it birth. The ultimate fact is functioning matter. Psychic data are but shadows of the real thing. The atom is his God and force his mainspring. With these two fundamental realities he spins off with infinite satisfaction the whole series of physical and psychological phenomena, always withholding from psychology a standing in any way equivalent to that of the objective sciences. He rides over contradictions in his statements with a complacency which is admirable for its audacity. Materialistic in his tenets he is nevertheless ultra-idealistic in his actions and in his demands upon the actions of others. Though he may not adhere to any definite rule of action he always demands it of the other man. In his daily life he belies the tenets which he defends so vigorously on theoretical grounds. Psychological inquiry is reserved as a sort of mental gymnasium, but the real work of life is to be found in the more tangible phenomena of physics and chemistry, which he looks upon as stable and abiding. The laws of perception do not bother or worry him in that he knows but little of them.

In a sense one feels prompted to apologize for bringing up anew a subject which has been so thoroughly discussed in years gone by, and yet after years of work in a psychological atmosphere it makes one shudder to observe the boldness with which physiology asserts herself in medical circles. Has psychology no relation to metabolism and general therapeutics? Is the physical organism a mechanism with no kinship to the higher emotional aspects of man's nature? Is there nothing of man but the chemical process known as physiology? Whatever answer we may give to such questions it is evident in medical circles that physiology has usurped the throne and hands down its dicta with a positiveness which is far less critical in its fundamental tenets than the old-time dogmatic theology.

Not all physicians boycott the psychic. However, the average physician's training is confined to dealings with the material side of man and in the absence of supplementary interest in psychology he sees only the physical and rules out as irrelevant all phenomena that can not be subjected to his pet atomic theory. He begins his studies in the dissecting room. Here he finds what are to him fundamental facts in the shape of nerve, muscle, and bone. They are what is left of a former physiological mechanism worn out and yet sufficiently intact to suggest the *modus operandi ante mortem*. He begins where psychology leaves off, and failing to find the higher emotions, he naturally assumes their effervescent nature and subsequently wastes but little time upon them. Working backwards his whole aim is to learn how the machine ran down. Physiological processes are no longer apparent except in the foul odor which fills the room. The process of decay attracts his attention, but he little realizes that here the same chemical forces are at work as those he later encounters in the test tube or in the blood coursing through the arteries of a vivified organism. Later study of the physiological processes which account for the metabolism of the body gradually leads him up to and prepares him for the climax of organic chemistry, viz., the process of reproduction. Clinging to the criterion of visible change for his recognition of reality the higher emotions escape his attention because of the all-absorbing attractiveness of the changes he can trace and put his finger upon. Like the child who quickly differentiates the moving light from the confusion of stimuli which fill his limited mental horizon he fastens his faith upon *that which moves*. Very quickly his system of thought is hinged upon the motion of things and nothing so thoroughly enlists his admiration as that form of motion which is manifest in reflex or automatic processes as if in them were to be found a spontaneity of activity most nearly akin to motion *as such*. He is finally satisfied with explaining all reality upon the basis of the atom in motion.

On the accouchement bed, later in his experience, he delivers the new-born child as a mere bundle of reflexes into which he at times literally breathes the breath of life. It never becomes more to him than a bundle of reflexes which automatically develops a machine of infinite intricacy, wears out, and suffers dissolution. He spends his last futile efforts upon the post-mortem investigation, trying to discover why the machine ran down and with the tabulation of a pathological finding upon the death certificate dismisses the whole affair from his mind, with possibly no acquaintance whatever with the true man whose inner life was a sealed chapter to him.

Psychological phenomena persistently intrude themselves upon his attention and in the majority of instances they are with equal persistence pushed aside as irrelevant. They merely serve to help him locate the difficulty with the machinery. Of their

true significance he has but little conception. Medical terms are not made to fit them. They destroy the harmony of his theories. He identifies them with hysteria, which, to the average physician, is a sort of psychological dumping ground for all phenomena which disorder his materialistic postulates. They are uncanny, mystical and superfluous so far as his interpretation of the mechanism of the universe is concerned. Except for an occasional plea of hysteria or insanity he has no need of them. They are in his way. With an authoritative wave of the hand he dismisses them as mere products of the brain and proceeds with his physiological investigations.

This attitude toward psychic phenomena continually compels him to confront contradictions and difficulties which he is unable to explain. Physiology answers his queries with a dogmatism characteristic of the so-called objective sciences. Without investigation the objective thing with its corresponding function is posited and accepted as the fundamental fact, little realizing the difficulties to be encountered in accounting for the intangible facts of consciousness which are as obstinate as any that science has to deal with. Whether he will or not he must face certain conceptions which daily experiences thrust upon him.

In the following paragraphs it is desired to discuss briefly a few of the problems which continually drive the materialistic physician into contradictions and to which physiology has no answer except by way of a dogmatism without ground or explanation.

Is Mind an Entity?—The answer that one gets to this question in medical circles is often amusing. Physiology answers with a derisive grin. Loyalty to what she conceives to be scientific methods urges the necessity of subjecting all reality to the various methods at the disposal of the so-called objective sciences. One does not advance very far, however, on such a postulate until he finds himself in a hopeless tangle of contradictions. But contradictions seem to have no effect upon the mental equilibrium of those materialistically inclined. The usual mode of escape is simply to deny any existence to mind as such, referring all phenomena to a physiological process or to a mechanical result of atoms in motion. The explanation contains more difficulties than the thing to be explained.

In the light of modern progress it would be folly to emphasize the value of laboratory research because it is universally recognized. Everybody realizes its importance, but to hope that all phenomena may eventually be subjected to the methods of physics is to reverse utterly the true order of things. Physiology and biology fail altogether to explain the difficulties which a physician faces daily: and when one forces psychology into the realm of physics it is inconsistent and unscientific to demand that she shall assert and defend herself in terms of a science entirely foreign to her true nature in their fundamental tenets. Men have always demanded proof that they exist, whereas the fundamental principle of psychology—in fact of all thought—must be accepted without proof or question. To question its existence is in fact one of the best proofs of the incorrectness of the tenet which affirms its nonexistence. Absolute doubt leaves no ground for proof.

He who attempts either to define or to explain himself will continually find himself falling back upon the unexplained in his explanation. He must accept himself to start with. This is the only point upon which psychology dogmatizes, if dogmatism it be to accept your own existence without question. The physiologist by way of contrast posits the universe in space and then proceeds to try to get himself out of it, little realizing that through perception he has been instrumental in delineating external stimuli into an objective spread-out world capable of interpretation in terms of motion. He balks at the conception of a continuum of self as a basis for experience simply because, so far as he can observe, there seem to be breaks in consciousness. For him, that only persists which gives continuous objective evidence of its existence. He must be able to check it up and keep account of it. So far as personal experience is concerned, it matters but little whether there are breaks in the continuity (as the physicist views that term) so long as the experiences of the past are linked to or unified with those of the present. Experience knows no gaps. Because there are so-called gaps in consciousness is no argument against the continuity or identity of self. He who picks up his past and identifies it as his experience is but realizing his own identity. He identifies himself, as it were, by the persistence of a given perception group. He thus becomes a unit in the great social scheme upon which civilization itself is dependent. Other men learn to know him as an individual—not merely as an individual animal organism with certain anatomical and physiological attributes or functions, but as a subject taking his position in a certain social scheme where morals, esthetics, ideals, and relation in general hold sway. But what will physiology do with an ideal? How can it classify an ambition? How will it evolve a conscience or a noble determination? Where is the beauty of a landscape except in that unity of consciousness which asserts its own identity? Let a man lose that identity of self and he is immediately and justly dealt with as a mere physiological mechanism until such time as he can "give an account of himself" again. When he does he again becomes a vital force in society politic. We may trace out the infinite complexity of nerve ramifications as an explanation of psychic content and yet the personal equation slaps back at us with a resiliency which upsets all our calculations. We find ourselves face to face with a psychological resistance which refuses to be explained away by any lengthy disquisitions on "matter in motion." The self-assertiveness of the individual is a phenomenon which fails to find its *raison d'être* in a concatenation of atoms and molecules, while sociologically the psychological unit is an indispensable entity. Out of that unity of self-consciousness springs the long list of ideals upon which man builds his social structure. From that unitary entity known as self we build all our more general conceptions of the universe which lead us back in our thought to a unitary basis for all reality. While such mental gymnastics in search of a Kantian "Ding an sich" may not prove of practical value, yet it verifies the persisting entity upon which all such speculations depend. All men reason backward to some such all-embracing entity. The religious enthusiast calls it God and endows it with all his anthropomorphic emotions; philosophy, perhaps more staid in voicing its creed, resorts to the impersonal by choice of a more general abstract term such as the "absolute"; science with her breadth of differentiating classification calls it "nature"; physics sees in it pure "force," while psychology interprets in terms of her own

vernacular and calls it "mind." It makes but little difference what you call it. All such names lead to a common source, viz.: the self-conscious entity which we know ourselves to be. It is the unit to which all experience has reference and on which all scientific knowledge rests. Physiology herself, as a science, is impossible without it.

The Necessity for Unity.—Science is but a classification of accumulated data and every science requires its fundamental unit. If it has none it creates one upon a hypothetical basis. It must have one. In most cases it is a borrowed conception. The only real unit is to be found in psychology and from the unity of consciousness other sciences build up or posit a unit purely hypothetical in nature. The physical sciences have struggled for years to obtain an absolute unit upon which to base their deductions and inductions. The only thing they have is a manufactured product based upon the unity of consciousness. Instead of reducing the multiplicity of separate elements to be dealt with in physiology the laboratory has only multiplied their number. The farther chemistry goes the more so-called units she is compelled to add to her list of elements. The fact is that objective science has no real unit. The atom of physics is purely and simply a transference of self into a foreign science. The same is true of the unit of mathematics. The mere process of counting begins with the positing of self as the unit from which we start. Addition and subtraction are but a duplication of the unity we conceive and know ourself to be. Not only do we duplicate our unity in things but all relations of things can have meaning only as they are referred to this unit for consideration, comparison and classification. Any individual object is one only as we give it a separate existence—a selfhood as it were—analogous to our own. Unless we do this the external world has no unit. Division and subdivision finally drive us to the indivisible and thus by a leap into the dark we posit the indivisible atom which is in reality only a hypothetical unit based by analogy on the unity of self. Ignoring all perception the physiologist posits the atom as the real abiding unit, and through interaction of atoms he evolves the physical organism and consciousness with all its complexity. The unity of consciousness from which the atom as a basic unit got its birth is relegated to an unimportant position as a mere product of the interaction of atoms. Nothing could be more completely reversed than such a conception. The reality of self is sacrificed to a mere abstraction which is based upon the very reality of the self whose existence is denied. As investigation proceeded the atom became insufficient to explain all phenomena and the daring scientist took another leap into the dark and fastened his faith upon the ion of which we are told there are thousands in one atom. It would have been safer to posit millions of them instead of thousands. How long will it be before the imagination becomes dissatisfied with the ion and makes another leap into the dark? No unit is divisible. Back again we go to the I that is always I—the only real unitary entity of experience.

Science is dependent upon a unit as the basis of classification and is impossible and inconceivable except as it refers to a unitary basis which makes classification possible. Classification is not explanation, but it does at least force one back to an admission of the underlying unity of personality which makes classification possible. So, eventually every ultra-scientific medico, it matters not how materialistic he may be, must pay his respects to a psychological principle and at least admit the validity and reality of his own unitary perceptive consciousness.

The Atom.—This mighty mite has dominated the medical mind with a relentless hand. It is the physician's Frankenstein creation. Built from his own deductions it has turned upon him and dominates all his researches. He has built it up and endowed it with his own perceptions till at the present time it well-nigh controls medical postulates. Having posited the atom as the source of the objective world and endowed it with all the possibilities of physiological processes he finds no difficulties in building up a harmonious universe explicable in terms of physiology or atoms in motion. Nothing could be more contradictory. In the first place the atom is only hypothetical and in the second place motion can have no significance except as it refers to some unitary entity capable of throwing things in relation one to the other. Relation means nothing when divested of its conscious content. Any quality or any phenomenon the physiologist finds hard to harmonize in the world about him he ascribes to the inherent nature of the atom itself. Thus all difficulties are swept away by merely assuming their solution in the inherent nature of the atom. Naturally one is able to draw out anything he puts in. More and more inexplicable phenomena have been packed into this indivisible and yet elastic hypothetical unit until it has finally burst, releasing thousands of ions which now stand at the horizon of man's imagination. Such a process gives breathing space to the imagination for a time, but one fails to see wherein any advantage has been gained by shifting the finality one step farther back. To back-water is always embarrassing and since the atom is but a hypothetical basis of explanation it would seem advisable to fortify ourselves against any possibility of attack by positing an ultimate unit sufficiently flexible or absorptive to embrace any possibility that might arise. The atom is but the outward demonstration of the effort of the human mind to settle upon some unit as a starting point in explanation. Physics has no other way of reaching unity except by dividing and redividing till a thing (?) is reached which is so small that you can not make two out of it—a purely spatial conception.

Explanation.—Explanation is, strictly speaking, only relative. It begins and ends in the unexplained. Certain axioms of thought have to be accepted without explanation and the final explication of any phenomenon has within it the original inexplicable postulate. We accept many things as self-evident merely because they are of daily occurrence, but when we stop to explain even the simplest of them we find it wholly as difficult as to explain the universe itself. Physicians hold up their hands in horror at anything like dogmatism and yet no class of scientists is more dogmatic than they. They are sticklers for explanation and yet thrust upon you certain postulates which you are expected to accept. To question their validity brands you as unscientific. What can be more dogmatic than the positing of an atom as the basis of all physics and physiology when all admit that experience is the source of all scientific knowledge. Physiology merely dogmatizes on the fundamentals and expects us to admire her as she juggles the various facts of experience in an attempt at explanation. No one ever saw an atom or handled one. Metaphysics is decried by the physiologist as sophistry

and yet what could be more metaphysical than this fundamental atom? The real unit of thought which makes theory possible is ignored and reality is bestowed upon a thing that is theoretical and metaphysical through and through. Physiological changes are undoubtedly chemical in nature and where processes are seen to work out to a definite end or desired result we immediately recognize a systematic organization of forces and tend to personify the process, as it were, and forget the real underlying fact of experience. After all, psychology, with all her self-confidence, is but a process. The chemical and mechanical changes which take place in a physical organism represent the true activity and are called physiology when worked up into a system of chemical changes to a certain end. Hence physiology as a science is teleological in nature and is scarcely fitted to dogmatize upon the results of chemical changes or upon the nature of the elemental agencies at work in the process.

Scientific explanation is but accurate classification. Certain qualities are grouped according to their similarity. When we chance upon an element simple in nature and at the same time persistent in its uniformity of action we say we have an original element. On the basis of these we then proceed to *"explain."* Such explanation can be nothing but a narration of perceptions regarding the activity of so-called things and physiology's only method of noting activity is in terms of motion. Hence, by a reverse process, physiology argues that all phenomena are but matter in motion—a conception thoroughly saturated with contradictions.

One *must* dogmatize on the knowledge of self. Every theory of knowledge has in it that element of dogmatism which asserts knowledge of self without explanation or question. Through perception a so-called knowledge of things other than self is attained. Not that the perceptive process is a thing tacked onto the mind as such, but in the knowledge of self mind and things fuse with an intimacy which defies ultimate analysis. To the average physician such a conception has no meaning. By a biochemical activity of the cortical centers of the brain, mind is evolved by him; and even after it is thus produced it is denied any reality other than a non-abiding effervescence from brain commotion. Dogmatism? Not only dogmatism but a complete reversal of the path along which science has advanced. The very brain itself is dependent upon perception for its proper position or classification in the scientific world. As a thing belonging to the so-called objective world it must submit to certain categories of mind before it can assume its position as head of a nervous system in a general classification of histological structures. No—*explanation must begin with the grounds of explanation.* Knowledge is axiomatic.

Relation of Mind and Body.—Nowhere are the physiologist's difficulties more pronounced than in his attempts to explain the relation of mind and body. In one breath he denies that mind is an entity at all and in the next speaks of the effect of mind on body. Physiology always offers something tangible, but in mind the physiologist finds nothing to put his finger upon and hence he gives it no reality.

On principles of physics and physiology by what right does he call mind a product, for a product must still have the physical properties or qualities of matter and contain within it the constituent elements which produced it. At times to extricate themselves from such a dilemma they assert bodlly that *"mind is the cortex,"* regardless of the contradictions involved. After the smoke of such an argument has cleared away one's self always comes back with a vividness all the more striking because of the acuteness of self-consciousness engendered b the psychic resistance involved in such a struggle. One becomes all the more convinced of one's own reality and in the same relative degree suspects that possibly the difficulty lies in one's own conception of the nature of body rather than in the nature of mind. Physiology catches herself dogmatizing in regard to things of which she knows nothing and to extricate herself always falls back inconsistently on experience which is essentially psychological in nature.

Things are not the dead inert masses we are sometimes prone to consider them. They have an activity of their own and an individuality revealed by their own spontaneous activity. Under existing conditions there is an interdependence between mind and things which defies analysis. Neither exists without the other—in fact both dip back into the same throbbing sea of activity which we call reality. Take from so-called things all the elements having a conscious content and there is nothing left but an abstraction. The fact that external stimuli are built up into things by a conscious process does not make them any less real but only adds to them the qualities and attributes which make them spatial objects to be dealt with in terms of physics. This conception does not reduce things to subjective realities but merely does away with all antagonism between so-called mind and matter which in fact blend with an intimacy which defies analysis. To explain the relation of mind and body is then the same problem as to explain our relation to each other or to explain the relation of things one to the other. Neither is the product of the other. Thus it is folly to waste time denying existence to either one or the other. Both must be accepted, but the nature of the two for scientific classification must depend upon the grounds of knowledge of the two. Matter, as physics depicts it, is devoid of any characteristics which make knowledge possible, whereas psychology presents a basis of knowledge which is accepted by all men whether civilized or savage. No two men will agree as to the nature of matter but all men agree to the fundamental knowledge of self, which is the *sine qua non* of all scientific thought. Thus all men find common ground in the acceptance of the facts of consciousness. To prove that that which is known as the external world also reacts in terms of consciousness would be difficult, if not impossible, but it leaves us at least with the conviction that those activities known as things in some way carry on an existence comparable to our own.

Structure and Function.—"Structure" and "function" are terms with but little ultimate difference in meaning and are used for convenience to define different aspects of the same thing. In one sense a discussion of such terms is the same old query as to "which is first, the hen or the egg?" and yet physicians dwell upon structure as the essential element while function, as they see it, is but a play of forces secondary to and dependent upon the underlying anatomical basis called structure. It is readily admitted that if you remove structure (assuming that to be possible) there would be no function, but it is equally true that if you take function from structure (assuming that also to be possible—which

it is not) there is no structure left. Both suppositions are impossible. Any entity without its active principle is an abstraction—such suppositions are not only ridiculous but impossible. Structure and function are literally synonymous. To function is the very essence of existence and structure is but the visible evidence of function rather than the basis of it.

Within the kidney of the living animal are taking place certain chemical and mechanical changes which result in the formation of urine. The kidney which has ceased to secrete urine is nevertheless functioning with exactly the same chemical stringency as before cessation of the flow of urine. The tender vine rotting on the rubbish heap, torn from its roots, is as active and cogent as it was with all the possibilities of a fruitful harvest ahead of it. Its activities have simply changed direction, due to a change in surrounding circumstances. To speak of living and dead material is but figurative. The changes going on in a mammary gland have their exact equivalent in the granite crumbling on the hillside. The gland literally becomes milk. By a truly chemical process there is a changing combination of the elements of the cell by which it breaks down and the resultant of the chemical forces at play is milk. The gland has literally given up itself to make milk. Here, then, the processes of secretion and decomposition become identical. The only difference lies in the psychological interpretation. Teleology has crept in. It is as truly the function of iron to secrete rust as it is the function of the mammary gland to secrete milk or of the kidney to secrete urine. Is an oxygen atom dead in water and alive in blood, inert in iron and active in the plant? The activity of iron in forming rust is as spontaneous as that of the mammary gland in secreting milk. The only difference lies in the psychology of the affair. To ascribe life to one form of reality and deny it to another is but to change words without a distinction. Actual transformation of the mineral into the vegetable and animal goes on daily before our eyes and vice versa. A boundary line is absolutely impossible. Chemistry knows no "dead." To place a structural atom back of the atomical function which we experience is but a metaphysical substructure for function to rest upon, whereas function was the reality with which we began and which alone we know. Here is where the dogmatism of physiology becomes most manifest. Structure is postulated and function is tacked onto it.

The Possibility of Psychotherapy.—Here the difficulties of physiology become even more manifest. Our answer as to whether psychotherapy is possible must depend entirely upon what significance we grant to psychic processes. If mind is to be looked upon as matter, or as matter in motion, or as a product of matter, then the possibility of interaction is not denied by any one, for all admit the action of one particle of matter upon another. If we find it impossible to identify mind and body, the only alternative left to him who clings to the materialistic hypothesis is to look upon consciousness and all psychic phenomena as a sort of hybrid effervescence from brain tissue incapable of organizing itself sufficiently to react upon the brain which gave it birth. There is still another escape left to the materialist and he frequently avails himself of it, viz., to deny the existence of consciousness *in toto*, which is simply intellectual suicide. This would preclude the possibility of any discussion whatever.

To assume the possibility of psychotherapy at all forces upon us the admission that mind must have or be an entity in some sense comparable to the reality we call matter, else action and reaction would be impossible. It is immaterial what names we apply to the various aspects of reality so long as we admit the reality of anything which we introduce into our scheme of action and reaction. If we hold that mind is but a product of matter, we are forced either to the conclusion that mind as such a product has no activity of its own and hence can not affect matter; or else we must admit that the material product (mind) is a handiwork of another part of matter. This, however, is impossible according to physics. If consciousness is a function of matter, the product or result of that function according to physical laws must be a physical product; which is again contrary to the ultra-materialistic idea of consciousness. If mind is matter then mind should, yes must be an object of perception, for matter is by nature an object of experience. Hence one part of matter perceives another part of matter which again is contrary to physics, though in reality it is not far from the truth.

One could cite an indefinite number of contradictions in the physiological postulate, but all are based upon the fundamental error in refusing to admit our own existence as the starting point of all scientific attainment. Matter must be interpreted in terms of consciousness and consciousness of self must be accepted without question and without explanation. Accepting consciousness as our starting point, all reality must be interpreted as in some sense conforming to the rules governing conscious life; and this postulate is easy of acceptance when we vivify all nature into one huge acting and interacting maelstrom of reality.

From the standpoint of physiology the product of cerebration would still be a physical entity, but no physiologist looks upon the product of cerebration as still physical or as even having the qualities of matter. He assumes the brain as ultimate material abiding fact and consciousness is looked upon as secondary, non-material, and evanescent with no abiding essence to give it the right of existence as such. He refuses to give it any further significance or causative efficacy though he repeatedly escapes his own inability to explain the facts which confront him by ascribing them to the effects of mind on body. The fundamental error lies in the assumption of a structure preceding function, whereas structure and function are synonymous from the standpoint of explanation. Action and interaction are identical except in the psychological or teleological interpretation we put upon them. In the same way mind and matter are but terms to designate certain activities in certain conditions and their relation only calls for explanation in determining the nature of the phenomena encountered in experience. The kernel of the dispute lies in the nature of so-called matter rather than in the nature of mind which every man knows by direct experience. The average physician assumes accurate, definite knowledge of the objective world and feels called upon to account for the existence of consciousness after accepting matter as an assumed fact, whereas consciousness is the basis of explanation and objective things call for explanation.

This tenet does not deny reality to objective things nor does it preclude the possibility of faithful adherence to scientific methods. It is only an

appeal for the recognition and classification of any fact whatever its nature may be, and if there is any fact known to science it is the primal fact of consciousness. Either that existence of a mental process must be denied *in toto* or else we must admit the mutual interaction of so-called "matter" and so-called "mind." A discussion of the nature of mind does not come under the present discussion.

Sanity and Insanity.—Pray tell, what can sanity or insanity mean in the light of physiology or physics? Nature slips no cogs. She knows no freaks. A freak is a freak only from the standpoint of classification, and classification is psychological and not physiological. Exceptions arise from faulty or inadequate classification. The very essence of sanity is self-consistency and if all phenomena, mind included, are but a mechanical outcome of atoms in motion, then consistency *must* follow. No mere mechanism is crazy. As the astronomer peers into the sky and discovers the comet with its unusual action, he does not presume to assert that it is crazy merely because he can not properly classify it or explain its actions. The general balance of the heavenly forces compels him to accept a universal concert of action and the comet only emphasizes his limitations in knowledge. On the same grounds physiology notes the chemical changes and, in consistency with the laws it observes, every datum should merely be accepted and classified. Judged by the laws of physiology no act could be called insane. As an act it merely calls for classification. Its consistency with what goes on about it is a fact to be accepted on the basis of the fixed postulates of physiology. Once having dogmatized on the mechanical nature of the process underlying all phenomena, physiology surrenders her right to judge any act as regards its fitness, adaptability, or teleological significance. The fact carries its own qualifications with it, viz., its existence. It is a unit in a mechanical process, the chain of which would be broken and meaningless without it.

Insanity carries more with it than the mere fact that the anomalous has presented itself. There is in it the element of *consistency with self*. Any act must be judged sane or insane not with reference to the community or general laws governing the actions of men, but with reference to the man himself. Any act which takes its place in a series of logical and self-consistent acts must be looked upon as sane. This necessarily infers a unitary basis or ground of action, and a diagnosis of insanity assumes the entity and reality of mind as a basis for consistency. A disconnected isolated fact can neither be sane nor insane. It must have reference to a unitary continuum of consciousness. What, I repeat, can insanity mean in the light of mere cerebration? To adjudge an act insane on grounds of physiology merely convicts us of inadequate classification. Popular methods adjudge a man insane who does not act as other men do, whereas the true diagnosis of insanity rests, not upon a comparison with the general consensus of opinion, but upon the consistency or inconsistency of one's own acts with reference to each other. Man has within himself his own conviction of insanity or the means of defending his sanity in the absence or presence of self-consistency. One thing would seem self-evident, viz., sanity, to mean anything at all, must refer to mind and not to body. It must be diagnosed by means of the psychic manifestations of the subject. Mind has no histology and no anatomy and therefore no pathology as that term is generally used. That insanity has correlated with it a pathological nervous condition probably no one will deny. Every psychic act has its counterpart in the nervous system. However, to mistake a morbid anatomy or an abnormal physiological process for insanity is to confound consciousness with nervous activity and a neuron with sensation. A diseased brain is not a crazy idea, nor an insane man. At present but little is known of the morbid brain anatomy accompanying insanity, and at best it is known post mortem; but should even the most astounding morbid anatomy be present we must still appeal not to physiological processes but to the individual before pronouncing insanity or sanity. Could we know thoroughly the pathology and histology of the brain we could with certainty describe the mental condition of the patient and yet for a diagnosis of sanity or insanity an appeal must be made to the man. The diagnosis of sanity or insanity must rest upon the psychological examination of the man in question.

Ethics.—Every physician has his system of ethics. He may not be willing to live by it himself but he is sure to demand a certain rule of life from other men. It is difficult, however, to find any place for ethics in a system of philosophy where the entity of mind is denied and where all phenomena are but chemical change. This, however, is another of the physiologist's contradictions which apparently does not affect his devotion to his pet philosophy. Theoretically he makes ethics impossible but in practice his theoretical speculations are submerged beneath a stringent demand for what *ought* to be. In his calculations and deductions of laws psychic life has been looked upon as a by-product and hence is not incorporated in the laws he has deduced. If a law of universal application is to be established, then the fact that men *ought* to do so and so must have equal force with the fact that men *do* do so and so.

One hesitates to break in on the apparent harmony of the forces of nature by the expression of a wish that anything might be otherwise than it is, to say nothing of suggesting that certain things *ought* to have been different from what they are. The accuracy with which sets of experiments work out to a definite end can not fail to attract the attention of even the most ignorant observer. We notice the systematic consistency of the activities going on before us. Soon we find ourselves deducing a series of laws expressing that harmony of concerted action, but in our admiration for the accuracy of the workings of nature we forget that we have deduced the laws and, overawed by the universal application of the laws we have deduced, we reverse the true order of things and come to look upon these laws as governing the activity of things, whereas they merely express activity and never govern it in any sense. The act is the thing in question, and the law is but a convenient formula by which we keep track of the activity of things. Physiology as such knows nothing of laws. The chemist may go into ecstacy as he watches the transformation of substances one into another and yet the different elements entering into the combinations are but acting their individual parts subject to surrounding conditions. That an oxygen atom should respond in different ways under different stimuli from without is quite natural and yet its individual action is always that peculiar to an oxygen atom if such a statement may not seem tautological and ridicu-

lous. Any variation in what previously seemed to be unwavering persistent consistency of activity merely calls for readjustment of laws to fit the new fact or act if such it proves to be.

Hence human conduct introduces an uncertainty not because we have entered a realm whose phenomena are lawless but because our present laws are too narrow to include it. This uncertainty is due to the intrusion of an element omitted in our formulation of laws and unknown in the physical realm, viz., the personal equation. It cannot be counted upon with any degree of accuracy. While the activity of things, if analyzed thoroughly, is manifestly spontaneous in character and in its essentials does not differ from that sort of activity known as human conduct, yet in the latter conception we find a conception not to be found in the realm of physiology. It is the principle "I ought—you ought." It is incompatible with the atmosphere of the physiological laboratory. Misconduct is never considered as a possibility in the crucible or test tube. If human conduct is but the result of the interaction of atoms of the brain, why do we insist upon misconduct within the cerebral mass boiling and bubbling within the cranial crucible? No one rests satisfied with the fact that a man has done so and so. He is praised or blamed. He did what he "ought" to have done, or he "ought" not to have done what he did. No one seems willing to sit by and wait to see what a man will do. He is exhorted to do this or not to do that in accordance with the principle of "ought."

If man admits that moral obligation is a fact and not a fallacy, then our laws must be so revised as to admit this disturbing element or else the conception of human conduct and the principle of "ought" must be reduced to terms in harmony with the facts already included within the law. Either human conduct must be reduced to a physiological process stateable in terms of the atomic theory or else the action of things must be looked upon as in some way in harmony with the acts we classify as human conduct and to which we attach praise or blame. Either human conduct, courts, law, justice and rights in general are a farce or things must be given an interpretation which is broader than the present physical view will permit. The difficulty lies in a faulty conception of things. Men perceive the *relation* of things, and conduct as such is based upon this characteristic. Individual initiative is a characteristic of all activity whether it be in a post or in a man, and the only thing which differentiates human conduct is the power to see things in their relation one to another and evolve from their relation a rule of action.

Nowhere is the conflict of theories more troublesome and at the same time more manifest than in the medical mind. To the great majority of physicians the mind is a product of brain and sensation, is but a modification of cortical centers, and yet no class of men is so firm in its demands for a professional ethics, even though they may not adhere to any such code of laws. The Code of Ethics issued by the American Medical Association is their court of appeal, and no document could be more thoroughly saturated with the conception of "ought" and "ought not" than this guide to the physician's conduct. Are these precepts advising the cortex what to do? No class of men guards their professional rights with more jealous care than do these very adherents to the automatism of psychic action. In one breath they will refer all moral action to changes in brain substance, and in the next complain of the "injustice" or rascality of some fellow physician. They tell us that a certain member of the medical fraternity "ought" to be expelled from full fellowship with the elect because he did what he "ought" not to have done. To be sure, if there is no such thing as rights or justice, then the man of straw is easily knocked down; but here again no class of men is more insistent on its rights than these same advocates of the absolute dependence of consciousness on modifications of brain tissue. It is useless to waste time trying to prove that personal rights are to be admitted. Physicians not only admit it but are persistent and at times bitterly insistent upon the maintenance of their professional rights, dignity, and honor. They deem themselves consistent in it also. But, what can be meant by rights, dignity, and honor, in terms of cerebration or physiological metabolism? By what corollary to the general law of equality of the physical elements does a brain cell don the garb of selective rights and honor and pose as superior to any other cell within the body? What can be meant by development, better, higher, lower, inferior, superior, et cetera, in the realm of physiology? Such terms refer to an "ideal" which can scarcely be identified with the cortex. The ideal is based upon principle and there is no place for principle in the atomic theory. The law of tooth and claw is universal except where the ideal leaves its imprint and duty holds sway.

Either we must admit that our present physical laws are too narrow to include all data or else we must hold that all psychic life is a phantasmagorical farce made up of delusions, illusions, and hallucinations. The latter conclusion gives relaxation and peace of mind for a time, but at once there looms up before us out of the universal farce at least one fact that the farce we are enacting is real, and then the whole mental wrestle begins over again. The delusion and hallucination at least demand some consideration as entitled to reality. It has merely been an attempt to argue ourselves out of existence. Nor will we be satisfied with imaginings, phantasms, and farces. If all is farce, the consciousness of that farce still stands out as a surviving fact to belie our assumption that all is farce.

What is the elaborate Code of Ethics issued by the American Medical Association as a guide to all its members? Is it a code of predictions as to what the cortex is going to do? Is it even a list of things the cortex "ought" to do? Is it an attempt to invade the nervous system with the principle of duty? Or is it an appeal to a self-conscious personality, not only capable of initiating activity but of guarding and granting personal rights based upon the "ideal"? One thing is certain, the Code of Ethics as issued by the American Medical Association is not a dissertation on physics or physiology. It is an appeal not to the cortex but to the man.

However vigorously physicians may attack the entity of mind and the reality of morals, they seldom if ever act out their own speculations. There is a standard of morals among deterministic physicians just as cogent and binding as among any other classes of men. Though we may by mental gymnastics rob ourselves of personal rights, yet when the mental tension required in the process relaxes, our own conviction of obligation to an ideal slaps back at us with a vividness which leaves no

doubt as to its reality. Our joys and our sorrows face us with a stubbornness born of action. We quit our cogitations and proceed as before, sacrificing our rights here and demanding them there, censuring to the right and praising to the left with an inward conviction that certain things "ought" and others "ought not" to be.

The Code of Ethics then is an embodiment of the principle of rights. It is an ensemble of principles. Ideals are held up, self-respect is urged, others must be considered and selfsacrificed to their welfare. Strange reactions these to emerge from a physiological laboratory! Men must learn to be men. He who lacks *self*-respect can not be reached by a code of ethics and it is useless to enact laws unless the general *esprit-de-corps* of the profession is able to find itself reflected in them. Hence, the prerequisite of ethics would be self, not illusory, imaginary, and farcical, but real and abiding. What can physiology do with a code of ethics? Rules and men must both embody principle, and physiology as such has neither man nor principle. In order that we may respect others and their rights we must realize a self-respect which makes us subservient to principle. *i. e.* to the ideal, and ideals have reference only to personality.

SOME RECENT MEDICAL OBSERVATIONS IN THE EUROPEAN WAR ZONE.

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After a sojourn and travel of some months' duration in the area of European war activities one should not be lacking in some impressions. A few of these impressions—confined to the field of medicine, I will endeavor to recite briefly. Reaching England May the first, and armed with letters of introduction to the heads of various European Red Cross Associations, no difficulty and but little delay was experienced in obtaining invitations to visit such military hospitals and similar institutions as was desired, although the great number of these available made it quite impossible always to select the most interesting ones. This early experience, coupled with the fact that during the greater part of the time I was busily engaged in the pursuit of other professional investigations, made it necessary to select certain types of hospitals for study, if one wished to see a variety of cases, to note the methods of treatment, and view the classes of hospital buildings and their equipment. First-aid and Field hospitals I did not have the opportunity of inspecting, but receiving hospitals, distributing hospitals, general, convalescent, and special hospitals were made freely accessible in the countries of England, Ireland, Scotland and France.

The first and perhaps most striking impressions one had, on visiting the wards of one of the large general hospitals, was the preponderatingly large number of wounded being cared for as compared to the number seen suffering solely from diseases strictly medical in nature.

Thus, in some of the hospitals visited fully 90 per cent. of all officers and men were being treated for disabilities of a surgical nature. Judging from the extent of my observations in this respect, as also from the numerous conversations had with medical officers, one would be justified in placing the general average of the wounded admitted to hospitals at 90 per cent. or above, and the medical cases at 10 per cent. or less. This low admission average of medical cases bears witness in the highest degree to the efficiency of the army sanitarians, in maintaining the soldiers' environment, whether in field, barracks, or trenches, in a high sanitary condition, and thereby maintaining the incidence of communicable diseases at the lowest possible figure. In fact, this is one of the marvels of this great war, where we realize for almost the first time in history that medical science has outwitted disease, that the former order of things has been reversed, and that more lives are being destroyed by bullets than by disease.

The types of wounds one saw in hospitals, of course, varied much. Wounds caused by shrapnel greatly predominated. Following these, and perhaps next in frequency, came those caused by machine guns, grenades, infantry rifle, and larger projectiles. Shrapnel wounds and compound fractures were seen most. Bayonet wounds are generally fatal, terminating promptly in death, so that I cannot recall having seen a single wound of this nature.

The parts of the body most frequently wounded are the arms, head, neck, and lower extremities, although shrapnel wounds of all parts of the body are seen.

I saw one soldier who had 157 wounds caused by shrapnel, and these were all over his body. He had lost one foot and a part of a leg, had a permanently stiffened and contracted arm from lacerated and torn muscles and nerve destruction, still he was anxious to get out of the hospital and again serve his country. I was told of another soldier who had received over 300 shrapnel wounds and had recovered. The most helpless lot of wounded one sees are perhaps those with injuries of the spine and cord, with loss of control of both bowel and bladder, and frequently paralysis of extremities.

For these cases radical treatment so far holds out but little hope, and apparently little was being done beyond keeping them as clean as possible and attempting to make them comfortabe. The resort to the use of hand grenades has resulted in the injury and destruction of many eyes. Many eyes have also been destroyed by shrapnel.

I was much impressed with the general results obtained in hospital treatment. The mortality has been low. When one has survived his wound until he reaches a hospital his chances of ultimate recovery, thanks to the skilled treatment and nursing received, are good. I had the opportunity of inspecting the records of a number of the hospitals visited. In one large general hospital with 1300 beds, with an admission of 11,000 cases since the beginning of the war, the mortality was seven-tenths of 1 per cent. from all causes. Another smaller hospital, with some 450 admissions since opening, gave a still lower mortality rate. The death rate in hospitals should be even lower in the future because of the fact that tetanus, which existed among the wounded last fall and winter and caused numerous deaths, has been reduced to a minimum by the timely administration of antitoxin a short time after the wound is received.

Typhoid fever and dysentery, the scourge of former armies, so far are almost unknown in the West. The protection afforded the troops in the field by the timely administration of the prophylactic vaccine, on the one hand, and the results so far achieved on the other by sanitation are simply marvelous. Rules are rigid; a soldier drinking unsterilized water is courtmartialed and punished severely. It

has been demonstrated that men can live in trenches for a prolonged period and still maintain good health if but due regard is paid to the warding off of diseases. So far, also, cholera and typhus fever have not reached the western area of the war, although showing a decided increase in parts of eastern Germany, Austro-Hungary, and Russia, in spite of all that is being done to prevent their spread. When the time comes, as it doubtless will, when it will be necessary to move large bodies of troops quickly from the east to the west, or vice versa, without first having undergone proper quarantine and without the customary disinfection of clothing and individuals, and these troops occupy trenches and camps hastily vacated by the opposing army and left in unclean and unsanitary condition, then will come the grave danger of introducing these diseases among the hitherto healthy soldiers; and this fear on the part of sanitarians was more than once communicated to me while traveling in the war zone. The occurrence of such a condition could only tend to increase greatly the danger of the ultimate introduction of these diseases into the United States.

One method of treatment noted, "the open-air treatment of the wounded," was especially interesting. At Cambridge, England, an asbestos-board pavilion hospital, with wards enclosed only on three sides, with openings protected by louvres for free circulation of air, was erected early in the war.

On the south side the wards had been left entirely open to sun and air, except ordinary sunblinds hanging from the top; at first the building was designed for a limited number of beds, but the success of the open-air treatment was soon so pronounced that the building was extended to a capacity of over 1200 beds. The hospital is open at every point to the sun and air, the two most powerful allies the surgeon can have in dealing with wounds in war. The wounded are transported there frequently direct from the trenches in northern France. The wounds in many instances are septic, having been soiled with earth and mud, and the organisms are those that flourish most in these surroundings. Therefore they have the peculiar characteristics that they can grow only in the absence of air. These organisms are not those with which the surgeon has usually to deal. It was very soon found that to cover such wounds up deeply and treat them in closed hospitals was fatal to the patient.

A surgeon related to me some of his experiences in handling this class of wounds near the front in the early days of the war. The stench in the wards after a few days was awful. In despair the unfortunate men were removed, for the sake of the others, to tents outside, as they thought, to die. In forty-eight hours the wounds had ceased to smell, the surfaces looked cleaner, and, except in a few cases where the organisms were too virulent, the patients recovered. It was thus found that the admission of fresh air to the wounds caused these bacteria to perish rapidly and from a state of appalling sepsis the wound was reduced to one of comparative cleanliness, to the great benefit of the patient. I was shown wounds of this nature which, when admitted to the hospital a short time previously, were septic but had cleaned up in a marvelously short time and were in a healthy condition.

The patients in this hospital also presented a freshness and vigor in their convalescence which are generally absent among those who have been for some time in an ordinary hospital. The pallor and weakness usually noticeable in a man recovering from a serious wound or illness were more or less absent. The conception of the open-air treatment of disease is not a recent one. The idea has of late years been elaborated and practically applied in the adoption of open-air hospitals or sanatoriums for the treatment of tuberculosis, and now the well-thought-out design, equipment, and nursing which distinguish the Cambridge hospital, and its adaption for the treatment of the wounded, are distinct advances in the same direction.

The devastating effects of the constant bursting of huge shells over men in the trenches, even when no actual injury is caused by the flying projectiles, is one of the many unexpected results of modern warfare. Although not actually hit, some of those so exposed suffer for a varying length of time from loss of memory, from eye trouble, ranging from blindness to dimness of vision; loss of sense of taste and smell, impaired hearing, and physical upsets. Some never recover but go on into a marked state of mental decline. Various terms have been applied to this condition, such as "battle shock," "nerve shock," "mental shock," and "wounds of consciousness." Scores of men, both in the ranks and among the officers, while apparently fit to the outward eye, nevertheless suffer in a marked degree from this condition, which perhaps can best be described as "nerve fatigue," as a result of the wear and tear of a war of high explosives. The effects of severe shell fire are very complicated; but it may be said simply that they tend to show themselves in a dazed state which may, on the one hand, be developed with complete unconsciousness or, on the other, lightened till a condition comparable to neurasthenia is observed.

The individual, having passed into this state of lessened control, responds easily to small stimuli; is emotional, at one moment at the height of mental exhilaration and the next in the depths of despair. At night insomnia troubles him, and such sleep as he gets is full of visions of past experiences on the battlefield. The quality of the individual's nerve fibers and nerve cells counts for much when subjected to such strains, and the weaker give way first. The part that heredity plays in these cases is well exemplified. Fully 80 per cent., I was informed, of all of these patients have a neurotic family history. Special hospitals are provided for their care, with quiet, rest, comortable and cheerful homelike surroundings, with the use of electricity, massage, and dieting, and in a few instances psychotherapy.

The effects on the troops of gases when released in large amounts have revealed another demoralizing and destructive agent which the medical officers have to contend with in the present war. Being heavier than air, the gas tends to settle in the trenches and overcomes and kills those who are unfortunate enough to inhale it in sufficient quantity. A favorite way is to discharge it when the direction of the wind is favorable and allow it to be disseminated among the opposing forces in that way. Chlorine gas is the active principle of this gaseous compound and is very destructive to life. Many are killed outright, while others are rendered unconscious, some to succumb later. The irritation caused by the inhaled gas sets up an intense inflammation of the bronchopulmonary tract, and one is literally drowned in his own secretions. Some of those who survive the first serious effects of the gas are left with a chronic inflammation of the respiratory tract. Those who have fortunately inhaled air but slightly

mixed with gas soon recover. I had the opportunity of seeing a limited number of these cases. Protective masks against the gas are now used by the troops.

One still saw in the hospitals soldiers suffering from the results of last winter's exposure in the trenches, such as frost-bitten feet. Conservatism in the treatment of these cases has been the rule, and every bit of the extremity that is possible is saved. Another winter should see far less of such injuries to deal with. The trenches of to-day are places of comparative comfort and luxury as compared to those of last winter. They are now roofed over in many instances, with concrete floors or shelves to stand on, and are drained and properly policed.

The *x*-ray apparatus plays a valuable part in the military hospital of to-day. Even the field hospitals are equipped with portable outfits. No military hospital would be considered complete in equipment without such an apparatus. The large hospitals are supplied with elaborate machines, and they have proved invaluable in the armamentarium of the surgeon in fracture work and in the locating of bullets and fragments of shells. The surgeon in war could not work without it.

I was able to visit a considerable number of hospitals of all classes in the United Kingdom and France, and on the whole I found them thoroughly equipped, some luxuriously so, to furnish every aid and comfort to the wounded and sick. Many of the private improvised hospitals are models of perfection in all departments. One of the best of this class in England is that of Mr. Mortimer Singer, an American by birth at Steventon, near Oxford.

The present war, with the use of high explosive shells, producing frightful wounds, with great destruction of bone tissue, has developed numerous mechanical appliances for the treatment of these injuries. Of these perhaps the two first used are the Balkan splint, for leg wounds requiring extension and suspension, and the hip-brace splint, for wounds of the upper arm. The former consists of a firm wood frame about 3 feet broard and 6 feet high, extending centrally over the length of the bed. The limb is ingeniously suspended by means of a metal splint, cords, pulleys, and weights. This splint first came into use during the Balkan War, hence its name. It has since been improved upon and is now extensively used.

The hip-brace splint is supported from the hips by metal uprights connected with a covered metallic belt. The upright braces are attached at the top to a metal splint strapped to support the upper arm in a horizontal or inclined and flexed position. This splint is also much in use.

A survey of the hospitals visited showed them on the whole to be well supplied with competent doctors and nurses. In fact, some of the hospitals visited had a surplus of both.

The high explosive type of shells now used, causing extensive shatter of bones, with great destruction of soft tissues, will furnish abundant bone and nerve surgery in the countries involved in war for the next ten years, and thousands of the wounded and incapacitated will continue as wards of their respective nations for the remainder of their lives.

The Present Status of the Argyll-Robertson Pupil.—Max W. Jacobs concludes that there is at present no reason to doubt the close relationship between lues and the Argyll-Robertson pupil, although the latter has been seen now and then in non-luetic alcoholics, due, perhaps, to a gliosis.—*Journal Missouri State Ass'n.*

BONIME'S MODIFICATION OF KOCH'S TREATMENT OF TUBERCULOSIS.

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PERHAPS nothing can be more gratifying to our sense of justice than the reflection that at last the epoch-making labors of Robert Koch, in demonstrating the pathology of tuberculosis and in providing a remedy against it, seem to be about to receive their due mead of appreciation. His gigantic intellect unraveled the fundamental problems concerning this disease which had baffled countless investigators since the beginning of history. The treatment that he devised to overcome it is, we believe, the most efficient yet brought forward, and will presumably never be superseded by anything more efficacious. it can be modified with advantage, as many tuberculin therapeutists have shown, but if the true nature of the disease is now known and the action of tuberculin upon it is rightly explained, it does not seem probable that Koch's ideas will ever be entirely superseded. Practically all writers now agree with him that the crux of the successful treatment of tuberculosis lies in its timeliness, and that the only logical method of handling this great problem is the nearest possible approach to the preventive method. If, by any possibility, we can prevent the spread of the contagion, our efforts, hitherto so inadequate, to banish the great white plague from the earth, may at last be crowned with success. Can any words demonstrate more clearly the great mental grasp of Professor Koch than the following with which he closes his exhortation to treat tuberculosis in its earliest recognizable stage, "only then will the new method have become a genuine blessing for suffering mankind, when it will have come to pass that all cases of tuberculosis are taken early under treatment and the occurrence prevented of advanced, neglected cases which, up to the present, have formed the inexhaustible source of ever-recurring infection."

If then, the greatest intellect which has up to this time turned its best efforts toward the conquest of tuberculosis, understood so well a generation ago the pathology and therapeutics of this disease, why is it that today so much uncertainty and doubt is felt throughout the medical profession regarding Koch's method of treatment? The strange, almost romantic history of tuberculin therapeusis is known of all; yet the rationale of the subject and the technique of the treatment are still almost unknown to the profession at large. For this unfortunate state of affairs there would seem to be several reasons. First and foremost, the great body of medical opinion has not rebounded from the almost unspeakable disgust and disappointment which followed the universal outburst of enthusiasm caused by the announcement that Koch had prepared a certain remedy for tuberculosis. Almost in an instant the whole world, lay and professional, gentle and simple, learned and ignorant, had jumped to the joyful conclusion that the "great white plague" had been conquered at last, and that a disease hitherto considered hereditary and incurable was to be banished from the earth forever. The older members of the profession well remember the disappointment, deep, bitter and lasting, which followed the announcement that the new agent had failed and that no permanent good, but rather evil, had resulted from

its use. The reason underlying this untoward result was simply that neither Koch himself nor his associates really understood the extreme potency of the remedy which he had advocated. He had let the genie out of the bottle and was unable to harness him. Nor could anyone explain then exactly how this new agent was to accomplish its purpose, nor how much harm might be done by improper dosage.

Although Koch recommended what were then esteemed small doses to be given by hypodermic injection, the doses were in reality too large and the intervals between them were too short. He used 1 mgm. of the dried tuberculin in solution as the first injection, followed in a day or two by an injection of 5 mgm., and this was followed in two days more by 10 mgm. The dose seems then to have been raised to 12.5 nigm. and so continued until the patient felt much better or worse. It is easy to understand with our present knowledge why this course of treatment disappointed its advocates; but unless we give due weight to the intensity of the "tuberculin delirium," it is hard to realize the extent of the reaction in the minds of the profession against this form of treatment. No doubt two or three centuries earlier the use of tuberculin would have been forbidden by law. Yet such a prohibition would have been practically superfluous, for only a few of Koch's devoted followers retained their faith in tuberculin. Götsch, Spengler, and probably a few others, who had been associated with Koch, continued to use it, while the body of the profession almost unanimously followed the great Virchow in utterly condemning it. Virchow frightened the medical men of that day by asserting that tuberculin "mobilized" the more or less quiescent bacilli in the system of a consumptive and drove them to the uttermost parts of the body to carry on their work of destruction.

The advanced lesions found in the cadavers of those dead of tuberculosis were said to have been increased if not caused by tuberculin, in much the same way as two hundred or more years before, the lesions of chronic malaria were asserted to have been caused by the use of quinine. Nor in all the succeeding years have certain members of every community ceased to malign the salts of the cinchona bark; so it is not likely that with an apparently good case made out against tuberculin by Virchow and other *savants* we shall cease to be told of its dangers by the prejudiced and the ignorant for many years to come. One medical friend of the writer's, who claims to have been using tuberculin for twelve years, and another who has used it more or less for eight years, are dissatisfied with it, and unite in asserting that they have little or no confidence in the Bonime method of treatment, although neither of them appears to have used it properly. These men remind one of the gentlemen cited by Pottenger, who deprecated the administration of tuberculin, one or more of whom had not taken the temperature of their patients either before or after the injections of tuberculin, and at least one other who never examined the chests of his patients, and did not seem to know whether they had tuberculosis or not. It goes without saying that whatever the merits of any plan of treatment may be, only those who have mastered its technique are entitled to pass judgment upon it, and it is naturally a great drawback to the successful administration of tuberculin at the present time that so few men are competent to handle so powerful and so insidious a remedy. Probably no one who has not enjoyed at least six months thorough clinical and didactic teaching on the subject, and who is not in addition a practised and reliable physical diagnostician, should attempt to use tuberculin by the Bonime or any other method.

However, to return to the history of the present revival of Professor Koch's treatment, we observe that it was finally pointed out that the lesions found in the bodies of those dead of tuberculosis were much the same whether tuberculin had been administered as a remedy or not. And as time went on it was ascertained that of all the patients treated with tuberculin in Koch's clinic, quite a fair proportion had recovered their health, so that the disease in their cases at least had been arrested and the fearsome remedy had done them no permanent harm. Some of these patients are living to-day. As intimated before, Spengler, Götsch and other *savants* who had worked with Koch, never lost their faith in tuberculin. After using graduated doses for ten years, Götsch, at Koch's suggestion, published his results which showed that his cases had done better than could have been expected without the use of tuberculin. Some of the best minds in the profession then began to realize that the remedy had been condemned too hastily. In America Dr. Trudeau is said never to have lost his faith in the ultimate triumph of this form of medication. Gradually step by step the value of a judicious use of tuberculin has been wringing a more or less reluctant assent from the profession, and the end is not yet.

Neither so far does there seem to be any revival of the "tuberculin delirium" of Koch's time, and this is as it should be, for, as Dr. Baas delights to remind us in his History of Medicine, nothing in medical progress that meets with instant and uproarious approbation turns out to be of permanent value. And while human nature remains as it is, and always has been, it is far better that there should be sufficient opposition to the introduction of such a remedy as tuberculin to force its advocates to be very sure of their ground. If each step of the advance be stubbornly contested false, extravagant and misleading claims will be checked in their incipiency and the true status of the new agent will be the sooner and the more firmly established.

Just now tuberculin is not one of the medical fashions in America, and for reasons to be given later we hope that it never will be so fashionable that any one except a real expert will ever consent to use it. Its injudicious use, even in Koch's hands, was unavoidable thirty years ago when it was so little understood. Now, however, its onward march is steady and its advocates are ready to give reasons for their faith and to show their cases.

In America Pottenger has worked with tuberculin twenty-five years. He says that between two of his comparatively recent visits to Germany, a period of three or four years I believe, he observed that the percentum of the tuberculosis sanatoria using tuberculin treatment had risen from twenty-five to about seventy-five. Ritter was converted from an opponent to a strong advocate of this treatment by his experience in his own institution, where he began (probably in desperation) to treat the most unpromising cases such as had been excluded from the public (insurance) sanatorium or had already undergone an unsuccessful course of non-tuberculin treatment.

Dr. Bennett says (in *The Practitioner* for Jan., 1913) that when he began treating tuberculosis with

tuberculin he could not banish from his mind the fear of the injury which the remedy might do the patients, and continues, "The first few weeks did nothing to remove this feeling, but as soon as I abandoned all attempt to hurry matters and was content to make the treatment reactionless, the feeling of opposition died away and I now feel quite convinced that tuberculin is of the very highest value in the treatment of the disease." This able practitioner had used tuberculin in fear and trembling for some years until the light broke upon him that he should no longer try to abort or drive out a constitutional disease in a few days. In other words that he should not try to force nature's hand, but should humbly study and carefully follow her methods and she would do her part by gradually but surely healing the sufferer from a disease which had been generally regarded as hopeless. The *Journal of Vaccine Therapy* for September, 1913, after summarizing a series of cases, says editorially: "No ill effects were traceable to the tuberculin. The chief danger in the administration is, we think, an impatience on the part of the immunisator," who has ever to contend with the obsession, so common in the lay and often in the professional mind, that the larger the dose the greater the benefit. Our editor goes on to remark that one would not endeavor to raise a patient's toleration to strychnine to a thousand times the initial dose, and yet tuberculin is to a non-immunized tuberculous patient a more powerful drug than strychnine.

Tuberculin, while it is innocuous to a non-tuberculous person, will, by dissolving the capsules of the tubercle bacilli, already present in the body of a tuberculous subject, set free certain toxins. These must be neutralized by the appropriate antibodies or they will do serious harm. These antibodies are secreted by the body cells under the stimulus of the toxic action of the bacilli. However, only a limited number of antibodies can be produced at once, and if the dose of tuberculin is too large, even very slightly so, too much toxin is liberated and harm is done. As Professor Park puts it, "we have the paradoxical condition that the (bodily) mechanism associated with protection is also the mechanism of intoxication when over-developed or over-active," or, as other writers (*e.g.* Riviere, Morland, Rosenau and others) put it, the hypersusceptibility is necessary for the production of immunity, and these two opposing states are interactive and mutually dependent.

Hence, our guiding principle in tuberculosis therapy is to stimulate sufficiently, if possible, but never to overstimulate the hypersensitive body-cells. If our stimulus is insufficient, we shall produce a state of allergy without accomplishing our object. This we may also do by too soon intermitting the treatment. We are treading on dangerous ground and must always be guided by the motto that haste makes waste. The action of tuberculin injected into the tuberculous body may illustrate the whole process of the disease. The consumptive patient is constantly producing antituberculin to combat his autoinoculation, as has been shown by the complement deviation test by Bordet and Gengou. So long as his body cells can keep up this supply of defensive agents the disease does not gain appreciably. Sometimes the bacilli are entirely routed and the patient regains his health. Often, however, these invading bacilli are driven into retirement and may not reappear for years. In childhood glandular and joint lesions are frequently arrested, and in adults pulmonary lesions are also frequently, but not generally, recovered from. This shows how long and how hard nature fights to subdue and expel the invader, and how beneficial a little help at the right moment may be. The sooner we can give the help the more chance there is that nature, properly reinforced, will conquer. Babies having practically no antibodies are extremely susceptible to the deadly action of the bacilli. If, however, we can even partly tuberculize them before they succumb to the invasion it seems probable that they will produce sufficient antibodies to free their system from tuberculosis for the rest of their lives. An intercurrent infection, like measles, seems to completely banish hyper-susceptibility just as an overwhelming auto-intoxication may do, so in a way that we do not comprehend our principal line of defense may be completely thrown down and acute general miliary tuberculosis may supervene. These conditions, so crudely sketched, seem to me to indicate, not alone the necessity, but the eminent advantage of using tuberculin in a proper manner. Just so long as the body cells are able to react to tuberculin, just so long more antibodies will be thrown out and the patient's general condition will be improved and some advanced cases will be cured. In like manner we see an occasional recovery in a patient who has been treated by the ordinary methods, apparently without avail, and who has been sent home to die, when far advanced in the third stage of consumption. In this patient the bodily forces have finally overcome the invader by the production of a state of complete immunity. So with tuberculin we may, and frequently do, in apparently hopeless cases, produce at last a state of complete immunity to the poison of the bacillus. It would, however, be unreasonable to expect to produce such a state in a majority of third stage cases.

Now, how shall we administer this remedy? Without taking the time to discuss the various tuberlins and their method of administration, let us take up the consideration of what promises to be a feasible and efficient method in all cases. I refer to a method devised by Dr. Ellis Bonime of the Polyclinic Medical School and Hospital, and practised by him for a number of years. In cases that show unmistakable symptoms of any form of tuberculosis and in some doubtful cases no diagnostic doses of tuberculin are necessary. But in many cases a diagnosis must be made and is impossible without the subcutaneous use of tuberculin. The von Pirquet test, which is so easy to apply, is not of much value after the first year of life. Although if it be negative when properly applied and repeated once, there is a strong probability that the patient is not tuberculous.

The only positive test is the subcutaneous injection of the proper dilution of O. T. Starting in cases of suspected pulmonary tuberculosis with .10 cc. of No. iv dilution, and taking the temperature every two hours in the twelve hours succeeding the injection, if there be no reaction in 48 hours .50 c.c. of No. iv is given; if no reaction follows this, give .10 c.c. No. iij; if this has no reaction .50 c.c. of No. iij. Then .10 c.c. No. ii; then .50 c.c. No. ii, and finally .10 c.c. of No. i. If, after these five injections, given every 48 hours, no reaction occurs, the patient is non-tuberculous. In giving the injections a sharp, perfectly clean needle should be used. The needle should be passed in parallel to the skin into a spot on the outer aspect of the upper arm that has been previously painted with iodine.

No covering of any sort is needed over the site of the injection, although some practitioners prefer to paint the spot with collodion. The so-called "Record" syringe, imported from Germany, is the proper one to use, although there are fairly good syringes of American manufacture.

The determination after dosage is the next step in the procedure. Dr. Bonime has not used logarithms or involved mathematical formulæ to regulate his doses. He leaves nothing to chance. He declines to treat a case where he cannot have reliable temperature records. The increase of his dosage is in arithmetical progression, not in geometrical progression, which was formerly largely used and was unquestionably very harmful. He repeats each increase once. He dilutes the tuberculin with ½ of 1 per cent. phenol in sterile normal salt solution. He uses preferably Koch's old tuberculin made into six or more dilutions, each one a decimal of its predecessor. This formula has been recommended by Park and Williams and others, and is not new. The selection of the appropriate dilution to each case calls for the best judgment and clinical experience. Dr. Bonime protests vigorously against routine and rule of thumb methods. Only an experienced clinician and tuberculin therapist is competent to select the appropriate dilutions for each case, as it comes along. A mistake here may vitiate and render abortive the entire course of treatment. In a general way experience has demonstrated that closed glandular tuberculosis should be started on No. iii (dilution 1-1,000), but open or postoperative cases should be started on No. iv (dilution 1-10,000) because of their increased susceptibility. Closed pulmonary cases should be started on No. iv, whereas open pulmonary cases should begin on No. v (1-100,000) or No. vi (1-1,000,000). But there will prove to be many exceptions. Each case must be individualized and its needs and limitations carefully determined, as *e.g.* colored people and Italians are more susceptible than others and should be started on the dilution next higher than that used for most Caucasians. We should never forget that we are instituting a course of treatment of a hydra-headed and treacherous disease which may pervert every one of the bodily functions and attack every one of the bodily organs.

As explained above, our main hope, in fact, in tuberculin treatment, our only hope of success, is so to marshall and direct the forces of the patient's own body that they will repel the invader and shake off the insidious and slowly developing infection, which may have maintained itself alive, albeit inactive, in the tissues for months and years, stealthily awaiting the time when the bodily defenses shall be relaxed so that the invading forces may begin their ruthless march of destruction.

Having begun the administration of the selected dilution of O. T., Dr. Bonime increases his initial dose with the utmost caution, using at first .10 c.c.of the selected dilution. He increases this by .02 c.c. after a three or four-day interval. The next hypodermic injection will be another increase of .02 c.c., making .14 c.c. The next increase will be by .04 c.c., which will be repeated once. Then .06 c.c. also to be repeated once. The injections are made twice a week in the late afternoon or evening, and the increased dose should precede the four-day interval, as the larger interval lessens the probability of a reaction.

Reactions must be avoided at any cost, and the immunizator should never forget that he may undo weeks of good work by a little carelessness. Thus he should be especially particular about the needles and syringes used, and in the observation of strict antisepsis in making the injections.

The general scheme of treatment is as follows, beginning, let us say, on Monday at 8 P. M. Suppose the case to be one of "closed" pulmonary tuberculosis.

We give on

Mon.....	.10 c.c.	No. iv	Increase .02 c.c.
Thurs.....	.12 c.c	No. iv	
Mon.....	.14 c.c.	No. iv	Increase .04 c.c.
Thurs.....	.18 c.c.	No. iv	
Mon.....	.22 c.c.	No. iv	Increase .06 c.c.
Thurs.....	.28 c.c.	No. iv	
Mon.....	.34 c.c.	No. iv	Increase .08 c.c.
Thurs.....	.42 c.c.	No. iv	
Mon.....	.50 c.c.	No. iv	Increase .10 c.c.
Thurs.....	.60 c.c.	No. iv	
Mon.....	.70 c.c.	No. iv	Increase .12 c.c.
Thurs.....	.82 c.c.	No. iv	
Mon.....	.94 c.c.	No. iv	
Thurs.....	.10 c.c.	No. iij	

Etc., etc.

A reaction is indicated by a rise of temperature of one or more degrees Fahrenheit (occurring during the second twelve hours, after the injection), above the usual temperature of the patient as shown by the recorded temperatures for that hour of the day. It has been found, so seriously in earnest are all consumptive patients to get the upper hand of their disease, that they or their friends can be relied upon to take and record their temperatures as often as may be required. Naturally, rectal temperatures are to be insisted upon. Even school children can be excused to go to the toilet every two hours to take their temperatures.

Most of the cases in Dr. Bonime's clinic are ambulatory and home talent must be depended upon to keep the temperature records. It is rather surprising to note how well most of these patients learn to do this. Sutherland says in the *British Medical Journal* for Sept. 16, 1911, that "it has been demonstrated that eighty percentum of the early cases of tuberculosis can be treated at their own homes without interference with their occupation." We have no space to discuss here the economic advantage of this proposition. Generally speaking of course, the help of competent nurses or young physicians for follow-up work would be very great.

Dr. Bonime requires four hour temperatures daily while his patients are undergoing his treatment; and on the days succeeding the injections of tuberculin he has the temperature taken every two hours. This is done for the purpose of detecting a reaction. Should one occur, the treatment must be suspended for a week and not resumed until after every symptom of constitutional reaction has subsided. Then the injection of tuberculin should be that of the third previous dose. To illustrate; if on a Tuesday a reaction shall follow the injection of the preceding Monday which was, we will say, .50 c.c of No. iv dilution, no injection is given until the Monday following the dose that caused the reaction, then the dose would be .34 c.c. No. iv solution. No reaction will probably follow. Then the gradual cautious approach to a saturating dose will be resumed and the increase of .02 c.c. of the solution will be adopted (each increase to be repeated once) so that on the next Thursday .36 c.c. not .42 (as in the original schedule) will be given. Then on Monday following .36 c.c., etc., so that it will be

three and one-half weeks before a dose as large as the dose that caused the reaction will be again reached. Fortunately the reactions that do occur in this method of treatment are so small, the high temperature sometimes lasting only a half hour, that they do little harm and are frequently, if not generally, unaccompanied by any perceptible symptoms except the temperature increase. Hence the necessity for the two-hour thermometric observations during the second twelve hours after the tuberculin injections.

When the patient has been safely conducted through the various dilutions and has reached that stage of immunization that he will not react to 0.1 c.c. pure O. T. This is to be followed in a week by .20 c.c. pure O. T. then if there be no reaction Dr. Bonime switches him onto bacillary emulsion (B. E.). This he considers imperative in joint cases and highly desirable in all cases of tubercular infection. Because the B. E. will immunize the patient against certain products of the infection which are more or less refractory to the action of O. T. The same decimal dilutions are made of B. E. but for the patients having passed safely through the injections of O. T. only dilution No. i, of B. E. is used. When using B. E. the intervals should be doubled, since it takes longer for the neutralization of the larger percentum of toxin contained in the B. E. than in the O. T. Beginning with dilution No. i of B. E. it is customary to increase by tenths of a c.c. given weekly through this dilution. When 0.1 c.c. pure B. E. has been reached without reaction, the intervals are extended to three months. If the patient can take, without reaction 0.1 c.c. pure O. T. four times in a year, he is presumably immune from infection with the T. B. although under certain circumstances as *e.g.* an attack of measles, this immunity may be broken down and the state of hypersusceptibility may recur and another course of tuberculin treatment may be necessary to restore the patient's immunity. Beginning, usually with No. i O. T. and continuing as before.

A course of Dr. Bonime's treatment may last from four to eighteen months, but the average duration of a sanatorium course of treatment leading to a complete arrest of a tuberculous process is two and one-half years, and of these arrested cases, at least 30 per cent. relapse and die of tuberculosis.* Whereas, it is agreed by practically all of the authorities of the present time that all cases having had a thorough course of tuberculin are more resistant to tuberculous infection than those who have not been so treated. I am not aware of the existence of any statistics covering the above mentioned point, although it is to be hoped that some will soon be available.

It is hardly necessary to observe that ambulatory patients who have been able to maintain themselves and their families and have kept away from the enervating influences of a sanatorium are in a far better fix to maintain their improved condition and their place in the world than if they should return from sanatorium conditions and again try their luck in the unfavorable surroundings where they developed their original tuberculosis.

This paper is already too long and no space is left to speak of joint and grandular tuberculosis, and the treatment of mixed infections. For the minutiæ of the therapeusis of these phases of tuberculosis the reader is referred to Dr. Bonime's forthcoming book and to a paper by Dr. Sidney Twinch of Newark, read in the orthopedic section of the recent Congress of American Physicians and Surgeons, giving a series of forty-five or fifty joint cases, some of whom had resisted the routine treatment for years and all of whom have been cured or greatly benefited by the Bonime treatment.

If Dr. Pottenger can report an improvement in his results of from 20 to 25 per cent. more cures of tuberculosis under tuberculin treatment than where the dietetic-hygienic treatment alone was employed, and if certain tuberculin clinics in England and Germany can report 100 per cent. of cures in the early stages of tuberculosis by the judicious use of tuberculin, we believe that we shall see still better results in all cases of tuberculosis by the simpler, safer and more exact method of treatment taught us by Dr. Bonime.

As Dr. E. Mariette (*Brit. Med. Journal*, Sept. 16, 1911) strongly puts it "The results claimed by German writers, which are confirmed and endorsed by those who have used their methods in this country, ought to be sufficient to convince every practitioner in charge of an uncomplicated case of phthisis, that if he withholds from his patient the benefits of a thorough course of tuberculin he is almost as guilty of culpable negligence as he would be in performing an operation without due antiseptic precautions."

42 Church Street.

*The annual report for 1915 of the Rhode Island State Sanatorium for Tuberculosis gives the death rate of their discharged cases for the past ten years at 57 per cent. of 2142 patients. This is the entire number which it has been possible to trace.

THE RELATION OF TUBERCULOSIS OF THE BRONCHIAL GLANDS TO THE DIAGNOSIS OF TUBERCULOSIS OF THE LUNGS.*

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Tuberculosis of the bronchial glands may cause tuberculosis of the lungs in three ways: by representing the primary focus of infection whence supplies of tubercle bacilli may be transported to the lungs at any time; by direct extensions of tuberculous processes from the glands surrounding the root of the lung; by pressure upon the trachea and bronchi which induces such secondary pathological changes in the lungs as to favor the development of tuberculous processes.

From this point of view, the diagnosis of tuberculosis of the lungs may begin with that of the bronchial glands and we should never say that there is no danger from tuberculosis until we have proven that there are no tuberculous processes in the bronchial glands. After we are confident that there are no physical signs in the lungs suggesting tuberculosis we must remember that it is equally important to determine whether there are any tuberculous processes in the bronchial glands or not and if there are, then the problem is how to estimate their effect upon the lungs when we have no physical signs to guide us.

There are two reasons for not finding tuberculosis of the lungs when it already exists: there are no physical signs or we find pathological conditions which are common to non-tuberculous diseases of the lungs, and because these conditions are of such long duration we take it for granted that they cannot be tuberculous.

*Read at the meeting of the National Society for the Study and Prevention of Tuberculosis, Washington, May 12, 1916.

When tuberculous processes extend from the hilum into the lung, it may not be possible to detect them by a physical examination and there is no analogy between the diagnosis of the apex or the pleura or other peripheral parts of the lungs and these creeping, thread-like peribronchial infiltrations which give no sign of their presence. It is possible to say with more or less accuracy that the upper part of the lung is involved to such or such an extent by depending upon physical signs, but this is not true of the infiltrations extending from the hilum into the lung because the tissues are not impacted, there is not the infiltration en bloc, the physiological function of the larger bronchi is not altered, there is the same content of air, the intima is not roughened, the breath sounds are not changed and there is no dullness, so that we have nothing to inform us of the first act of the tragedy being played in the lungs. A theoretical consideration of the pathology of these peribronchial extensions shows us when to expect their revelation by physical signs and when not.

Enlarged tuberculous glands surrounding the root of the lung threaten its integrity in two ways: first by pressure upon and interference with the return circulation of blood and lymph from the lungs; second, by direct extensions by contiguity because these glands lie so close to the lung that as Osler has said it is sometimes very difficult to say where the lung tissues end and the glands begin. Kraemer has compared the effects of the pressure exerted by these enlarged glands upon the return circulation from the lungs with those caused by enlarged cervical and inguinal glands and suggests that just as they cause edema and dilatation of the veins of the face, neck, external genitalia, and lower extremities, so the enlarged glands at the hilum cause stasis and edema of the drainage territories adjacent to them.

Remembering that the network of vessels surrounding the alveoli would cover 150 square meters of surface if spread out on the floor, and that all their immense content must be returned through the relatively narrow portals of the hilum, it is quite possible that a slight amount of pressure at the hilum might produce a disproportionate amount of obstruction which would congest the nearest areas of drainage which in the right lung would be the upper part of the lower lobe, the middle lobe, and the lower part of the upper. This edematous condition might easily cause effusions into the interlobar fissures with subsequent plastic absorption and scar formations. Edematous infiltrations of the tissues surrounding the hilum would be more apt to cause dullness and altered breath sounds if there were not such an excess of large air passages over smaller that the air content was preserved over that lost. The exaggeration of the breath sounds into something like bronchophony may be caused by the pressure imparting a better carrying quality to the walls of the bronchi and this and d'Espine's sign of increased transmission of the whispered voice are often the only and most reliable physical signs obtained from tuberculous processes in the bronchial glands. The pressure upon the bronchial circulation, the tendency to suffusion, to slowing of the currents, to subsidence of their contents, and to a backward wash out of the bronchial glands favor the gradual extension of tuberculous processes through the sheaths of the larger bronchi and on point by point to the smaller ones. Leaving the regions surrounding the hilum and tracing these peribronchial infiltrations on their way through the lung, we find that there are no physical manifestations of their presence until they reach air passages which are not sufficiently rigid to resist their pressure; up to this point they have not affected the interior of the bronchi, but have remained purely interstitial and inert; there is no attack and no defense; like foreign bodies they are fibrosed as fast as deposited and no harm is done because there is no toxemia, no absorption, and no liberation of toxins. These fibrosed processes are more like lichens stretching along the limbs of trees than disease producers. Coming to the smaller and softer air-passages with no cartilages to keep them open, they collapse, the air cannot enter so freely, the breath sounds are weakened, and the lobules are not filled sufficiently to expand them promptly anad vigorously; insufficient breath sounds and insufficient expansion of the alveoli are the characteristic consequences of pressure upon the smaller air-passages. There is no reason for altered breath sounds, for harsh or granular breathing or for any of the signs of disintegration; nor is there any dullness, for the air content of the larger bronchi is preserved. It may even be that instead of dullness there is an increase of resonance suggesting emphysema. Even in the long, thin, flat chest with little or no motion in the intercostal spaces; even when the lung is so tied down that the chest rises and falls as a whole *en cuirasse*, we may find to our surprise that not only is there no dullness but actual hyperresonance in some regions. Resonance characteristic of an excess of air, of emphysematous conditions. It is possible that the walls of the larger bronchi are rigid with their infiltrations and so do not expel their air as they should and that the retained air more than compensates for the loss in the terminal lobules. It is possible that we have a bronchitic emphysema which is comparable to the alveolar form and produces the same lack of collapse and expansion with the same insufficient exchange of air and suppressed breath sounds. As one by one the terminal areas are choked off, the leaves or the breathing spaces of the bronchial tree are obliterated, they collapse, form atelectatic areas, and the lung is tied down. Thus one lobule after another disappears until finally the branches chiefly remain and the breath cannot get much beyond the bronchi. This is fibroid phthisis *par excellence* without breaking down, without disintegration, without absorption of toxins. As the rigidity of the bronchial walls increases they cannot stretch and follow the expanding chest wall so that the thorax is drawn in eventually and there is dimpling over the hilum and in the second and third intercostal spaces near the sternum. But all these evident manifestations come too late; what we need is detection as these infiltrations begin to creep from the hilum along the main bronchi through the paravertebral region on up to the apex, or through the subpleural spaces out to the axilla, or downwards towards the base. When the lobules in the apex collapse we can discover it; when half an inch or more of normal lung substance in the cortex covers up the deeper extensions, how can we detect them by physical signs? The pathology of these peribronchial extensions teaches us not to depend upon physical signs because we cannot obtain them; not to expect the signs of pneumonic infiltrations because the tissues are not infiltrated compactly; not to look for disintegration because there is no break-

ing down; not to rely upon harsh or granular breathing or rales of any kind, but rather to seek for indications of gradual obliteration of the breathing spaces in the terminal lobules. Applying the ear directly to the skin we notice that, as we feel the chest wall pulled out against it, we cannot hear the accustomed response of the entering air; instead of the rush of the air through the air-passages and the prompt and uniform unfolding of the alveoli, we hear little or nothing; it is rather as if some stupor robbed us of our keenness of perception; as if our senses were dulled; as if a veil were drawn across between us and the lung; all is dulled, blurred, obscured, suppressed, just as the nature of the pathological processes would lead us to expect.

The pressure from enlarged tuberculous glands surrounding the trachea and bronchi produces different effects upon the lungs from those caused by the glands at the hilum. When these glands enlarge and press upon the walls of the trachea and bronchi, circular constriction does not so much follow as a flattening or lateral thrusting in which narrows the lumen aand causes tracheobronchial stenosis. In the beginning this stenosis does not obstruct the entrance of air because inspiration distends the air passages as the chest wall is pulled out and the stenosis is relieved; the entrance of air is also furthered by the weight of the atmosphere pressing down upon the column of air reaching from the upper air passages to the alveoli and forcing it down upon the retreating alveolar walls. As the chest wall falls back the lumen of the air passages is compressed, the stenosis returns, and now the column of air driven upward by the collapse of the lung meets the stenosis and the weight of the atmosphere is against its escape. Delayed and difficult expiration results with retention of air distal to the stenosis; as the bronchial glands enlarge and the pressure increases, the difficulty of getting rid of the accumulated air becomes greater until finally expiratory dyspnea results; gradually the intra bronchial and intra-alveolar pressure from the retained air increases and the essential features of asthma appear with more air entering the lung during inspiration than can be easily expelled by expiration, and attacks of expiratory, asthmatic dyspnea develop; with increasing accumulation of air and rise of intra-alveolar pressure, emphysema follows; if the backward thrust of the air against the stenosis is sufficiently great to force the wall of the bronchus out, there is bronchiectasis and expectoration of profuse, purulent sputum which as a rule does not contain tubercle bacilli; if the entering force of the column of air is not sufficient to distend the smaller air passages, they collapse and form areas of atelectasis; these atelectatic areas are especially apt to form in the lobules and to constitute the acinous-lobular type of infiltration. Irritation at the point of pressure and interference with the bronchial circulation cause hyperemia, inflammation of the mucosa, exudations, and chronic bronchitis which may persist for years. The congestion of the vessels in the bronchial walls may cause rupture with hemoptysis and hemorrhages occurring at intervals and persisting for years. The irritation of the bronchi establishes a tendency to catching colds and repeated attacks of bronchitis. A cough may persist for years annoying and paroxysmal or so insignificant as to escape notice; dry and hard when due to pressure on the vagus, wet and easy when due to catarrhal conditions. As a consequence of tracheo-bronchial stenosis there are secondarily induced in the lungs diseased conditions similar to those of bilateral, chronic, diffuse bronchitis, asthma, emphysema, bronchiectasis, and atelectasis, together with hemoptysis and hemorrhages. In these cases of tuberculosis of the lungs secondary to tuberculosis processes in the bronchial glands, we cannot depend upon physical examinations of the lungs for sufficiently reliable information to positively exclude the presence of danger. Before we can conscientiously give the verdict, no tuberculosis of the lungs because there are no physical signs, we may be forced to seek the aid of tuberculin and the Roentgen ray.

The tuberculosis of bronchial glands is closely associated with the diagnosis of those cases of incipient tuberculosis which cannot be revealed by physical signs.

The child has a cough, or does not gain in weight, or is not strong. The adult is not quite up to par—does not feel just right; has an innate conviction that something is wrong; cannot say just what it is—but he is worried and anxious about himself: There is not enough vigor, or he does not sleep well or is very nervous. How many of these cases are dismissed with the comforting assurance that nothing is wrong? That the child is all right and the man tired or neurasthenic? Take a little vacation or go out in the country for a few days and you will be all right. There is absolutely nothing to worry about—there is nothing in the lungs.

In these cases with clinical suggestions of tuberculosis which cannot be confirmed by physical findings in the lungs, before assuring the parent or patient that there can be no tuberculosis because nothing can be found in the lungs, we should remember that it is very possible that we are dealing with tuberculosis of the bronchial glands which may some day cause tuberculosis of the lungs and that to discover pulmonary tuberculosis effectually in its very incipiency we may have to begin with that in the bronchial glands.

A NEW METHOD OF EXTIRPATION OF THE LACRYMAL SAC WITHOUT RESULTANT SCAR.

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No visible facial scar may be assured the patient who submits to the operation for the removal of the lacrymal sac by way of the slit canaliculi.

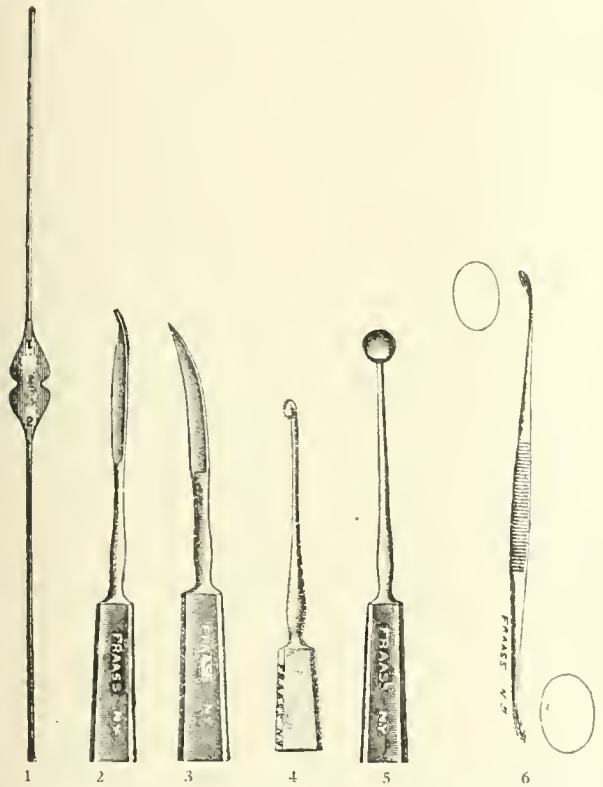
Most ophthalmic operators have experienced great difficulty in obtaining the patient's consent when a suggestion to remove the sac through a facial incision with a certain scar remaining of uncertain dimensions, but little or no resistance is offered by them to the operation promising as good result without a scar. Especially is this the case with women. Where there has existed for a time an annoying chronic dacryocystitis of either the catarrhal type, with regurgitation of mucoid secretion into the conjunctival cul-de-sac, or the recurrent phlegmonous type, the extirpation of the lacrymal sac becomes imperative, and the patient is confronted with the choice of operation.

It is possible to do this operation with a local anesthetic injected into the skin about the sac, but

it is much more satisfactory to administer complete anethesia, preferably ether.

The conjunctival cul-le-sac is flushed with a saturated boric acid solution after the contents of the lacrymal sac are milked into it. Bowman's Number 1 probe is passed through each canaliculus as far as the bony wall; this dilatation allows the engagement of the tip of a Weber's knife, which is passed down the upper canaliculus, making the usual Bowman slit, then down the lower one in the same way. There usually remains a bridge of tissue between the distal ends of the incisions. This is severed with a curved bistoury. The anterior lacrymal crest is then located and the internal canthal ligament is divided at its insertion here.

The diseased sac and the surrounding granulomatous tissue and the bone beneath, when found carious, are then broken up by the appropriate curettes and scraped out through the original incision. The walls of the canaliculi are scraped also. The



1 2 3 4 5 6

Instruments used: 1, Bowman's No. 1 probe; 2, Webber's canaliculus knife; 3, curved bistoury; 4, 5, 6, special sac curettes.

cavity is then cleansed with a swab saturated in bichloride of mercury solution (1 to 500). A thick pad of cotton wrung out of saturated boric acid solution is placed over the operated area and a head bandage is applied firmly over it so as to produce pressure sufficient to keep the walls opposed and prevent swelling.

The after-treatment consists of cleansing of the conjunctival cul-de-sac and the renewal of the bandage daily for three or four days.

The advantages of this operation are: (1) There is no scar remaining on the face; (2) there is less difficulty in obtaining consent to operate when no facial scar is assured; (3) there is much less hemorrhage during the operation; (4) there is no possible return of the condition, because the mucous lining is ablated from the puncta to the upper portion of the nasal duct.

Conclusions as to results: (1) Cessation of all sac secretion immediately after operation; (2) epiphora diminishes gradually and finally ceases.

Case I.—A. C., an Italian boy aged nine years complaining of severe pain over the lacrymal sac area on the right side. Eye was closed, the tissues in this region were deep red and swollen to the size of a small walnut. There was no sign of pointing; epiphora was only slight. August 20, 1913 ether was administered. Dr. W. H. Long of Philadelphia, assisted. Bandage applied for four successive days. There was a gradual reduction of the redness and swelling. At the end of three weeks there was no discoloration of skin or epiphora.

Case II.—A brother of Case No. 1, aged eleven years, suffering pain over the right lacrymal sac; this region was red, slightly swollen, and a fistulous opening existed in its lower portion. Epiphora not annoying. There was a history of a few previous attacks. August 20, 1913, ether was given. Dr. W. H. Long assisted. Bone was found carious. Fistulous opening was scraped and bandage applied. At the end of four weeks there was no redness and with difficulty the previous site of the fistula could be found. There was no epiphora.

Case III.—J. McD., aged ten, a son of Irish parents, complaining of tears overflowing and at times a thick secretion filling the left eye. The skin was elevated over the lacrymal sac area (mucocele) and pressure here expressed a mucoid secretion through the puncta filling the conjunctival cul-de-sac. August 29, 1913 ether was given. Dr. W. H. Long assisted. Bone was found carious; bandage applied for four successive days. There was no reaction observable at any time after the operation. At the end of four weeks the epiphora was lessened considerably. At the end of eight weeks the epiphora was only slight occasionally outdoors and none at all indoors.

Case IV.—T. G., a son of Irish parents, aged ten, complaining of pain over the lacrymal sac area of the right eye. A recurrent phlegmonous attack of dacryocystitis. No complaint of epiphora. August 7, 1913 ether was given. Dr. W. H. Long assisted. The bone was found carious. Bandage kept on for five days. At the end of five weeks there was no epiphora, no pain, and no discoloration of skin.

Case V.—Mrs. A. L., an Italian woman, aged thirty-two, consulted me because the tears overflowed and the conjunctival cul-de-sac of the left eye filled occasionally with a thick viscid secretion. There was no mucocele, but pressure over the sac area caused a mucoid secretion to fill the cul-de-sac. She gave a history of probing and treatments for the past three years. May 14, 1914, ether was given. Dr. B. L. Gordon of Philadelphia, assisted. Bone was found carious. Bandage applied and renewed daily for five days. One month after the operation, no secretion and epiphora lessened. At the end of four months there was no epiphora indoors and only occasionally outdoors.

Case VI.—Miss L. R., a Jewish woman aged thirty, consulted me because of a thick secretion filling the left cul-de-sac and epiphora. The secretion blurred her vision occasionally and she begged for relief. She gave a history of this condition lasting about five years, during which time the lacrymal passages were probed and medicated. June 16, 1914, ether was given. Dr. B. L. Gordon assisted. Bone was found carious and bandage applied. There was no reaction observable after the operation at any time. At the end of eight weeks there was no secretion and no epiphora.

Case VII.—Miss A. B., aged twenty-five, a daughter of Irish parents, complaining of a thick secretion in her right eye and overflowing of tears so annoying that it interfered with her work. Skin was distended over the sac (mucocele) and when pressed the glairy fluid filled the cul-de-sac. August 16, 1914, ether was given. Dr. Austin O'Malley of Philadelphia, assisted. No carious bone found. Bandage applied. Next day there was no reaction. Bandage removed in three days. Eye looked well. Went back to work the fourth day after the operation. The epiphora lessened a great deal at the end of the first week. At the end of three months the tears did not seem to bother her much indoors and only slightly outdoors. At the end of six months there was no epiphora at any time.

Case VIII.—Mrs. B. B., aged thirty-five, a Jewish woman, suffering from a recurrent attack of plegmonous dacryocystitis on the right side. Had had three or four previous attacks and wanted relief. Ether given September 18, 1914. Dr. B. L. Gordon assisted. Carious bone found. Bandage applied. Redness and

swelling gradually disappeared. She had no annoying epiphora at any time. One month after the operation she was entirely well.

Case IX.—An Italian woman presented herself for treatment in my service in the eye dispensary in the Polyclinic Hospital, New York, with the tissues red and swollen over the right sac area, complaining of great pain. There was some epiphora. She gave a previous history of thick secretion in her eye and probings and treatments of the lacrymal sac. August 26, 1915, cocaine injected into the skin surrounding the sac. Dr. T. A. Northcott assisted. Bone found carious. Bandage applied. Case observed every other day. The discoloration disappeared at the end of one month. The tears were still annoying. At the end of four months there was no epiphora.

Case X.—A German woman, aged forty-five, applied for treatment, in the eye dispensary of the Polyclinic Hospital, New York, in my service, with an annoying glairy secretion in the left cul-de-sac and epiphora also. She had been probed and medicated for five or six years previous without results. September 25, 1915, cocaine injected into the skin about the sac. Dr. P. A. Cavanaugh assisted. Bone found to be carious. Bandage applied. The bandage loosened during the night. The next day over the field of operation the tissues were swollen and the wound gaped. Bandage reapplied. Swelling disappeared slowly. The healing took place from the bottom of the wound. Opening cleansed daily and at the end of two months the walls of the wound were adhered. Bandage applied daily during this time. At the end of three months there was no sac secretion and the epiphora lessened a great deal. At the end of four months the epiphora was present only in the wind.

Case XI.—An Italian woman, aged forty-five years, applied for treatment in my service at the eye dispensary in the Polyclinic Hospital, New York, complaining of epiphora and occasionally a filling of the right conjunctival cul-de-sac with the regurgitated viscid secretion of a chronic catarrhal sac. No mucocele or active inflammatory process. The lacrymal passages had been probed and medicated for the past five or six years with no results. October 20, 1915, cocaine injected in the skin around the sac. Dr. J. E. Burns assisted. Bone found carious. Bandage applied. After three months there was no secretion or epiphora.

Case XII.—An Englishwoman, aged thirty-six, who complained of pain over the left sac area with epiphora and secretion applied for treatment in my service at the eye dispensary in the Polyclinic Hospital, New York. Her eye was closed from the swelling in this region. Skin tense. She had been treated for attacks of this character for the past six or seven years with probes and medication. December 15, 1915, ether given. Dr. L. B. Nicholson assisted. The sac was a mass of frog spawn-like granulation tissue. Bone carious. Bandage applied. The area appeared normal in one week. The end of a month epiphora less than originally. After three months there was no epiphora.

Case XIII.—Englishwoman, employed in the laundry of the Polyclinic Hospital, had been probed and medicated for the past two or three years. She had an attack of a recurring phlegmonous kind. Skin swollen, red and tense over the right sac extending to lid and closing the eye. She applied for treatment in my service at the eye dispensary in the Polyclinic Hospital. December 17, 1915, cocaine injected into the skin. Dr. W. A. Ryan assisted. The corium above the sac was greatly thickened and contained a few pus cavities that were broken down and curetted from within. A great deal of roe-like granulation tissue was scraped away. The bone was carious. Bandage applied. No redness of skin at the end of one month. At the end of three months tissues quiet and some epiphora, but much less than originally. After four months epiphora not annoying indoors and only slightly in the wind.

Case XIV.—B. R., an American boy, aged eleven years. An attempt at removal of the right lacrymal sac through an incision in the skin was made about one year before by another surgeon. There was a broad scar remaining and the mucoid secretion regurgitated into the conjunctival cul-de-sac at intervals. On pressure over the sac area a great deal of thick viscid secretion filled the conjunctival cul-de-sac. He applied for treatment in my service at the eye dispensary in the Polyclinic Hospital, New York. March 22, 1916, ether was given. Dr. A. L. Bass assisted. Bone found carious. Bandage applied. At the end of four weeks there was no epiphora and the boy was well.

17 East Thirty-eighth Street

THE CONTROL OF THE NEXT EPIDEMIC OF INFANTILE PARALYSIS.

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Since the first extensive epidemic of infantile paralysis in the United States (132 cases, Vermont) in 1894, and especially since the severe New York City epidemic of 1907, with approximately 2,500 cases, the control of this disease has become an urgent municipal problem. Nearly 9,000 cases were registered in the United States in 1910. The total figure for the current New York epidemic to date (August 15, 1916) exceeds 6,000 cases.

The great lesson taught by the last epidemic is the interpretation of anterior poliomyelitis as a contagious disease which spreads from one human being to another. Prophylaxis accordingly assumes greater importance in the control of future epidemics than ever before, and preparedness is now in order against the next invasion of the ultramicroscopic pathogenic agent. While the significance of the passive human carrier is beginning to be appreciated, the defensive measures in use fail to do justice to this source of contamination. As in practically all epidemic diseases, the actual original focus of infection and the starting point for all later cases of the disease must be sought in an infected human being. Patients in future will be strictly isolated and a better knowledge of the biological properties of the pathogenic agent will furnish a more reliable basis for the hygienic measures to be adopted in the community. The spread of poliomyelitis, in future epidemics, will be checked in a similar way as is now in use for infectious diseases, such as scarlet fever and diphtheria. Measures will be instituted for the removal and disinfection of the patient's secretions (from the respiratory no less than from the digestive tract), and for the purification of the sick room after his recovery. Healthy children in a stricken family will be regarded as potential germ carriers, and excluded not only from schools, libraries, and places of amusement, but also from street cars and other public conveyances. Visitors, children or adults will not be allowed in the homes of patients having the disease. The greatest difficulty will be encountered in restricting the social relations of adult members of infected families who, like children, may be passive germ carriers, although this fact is often disputed for commercial reasons. In this connection it will be found that the poliomyelitis germ is not ubiquitous, that is to say, it does not occur irregularly, in healthy individuals, but the bacilli carriers always come from infected surroundings.

The infection is now generally conceded to take place essentially through the invasion of the nasopharynx in which the virus of the disease has been known to persist for years. By means of experimental inoculation of nasal mucus into monkeys, it has been conclusively established that the infectious virus remains viable in the nasal passages for at least six months, in patients who have recovered from the disease, or in healthy persons from their surroundings. Typical poliomyelitis was transferred to healthy monkeys, by Osgood and Lucas, through the filtrate of the nasopharyngeal mucosa of two monkeys which had died, in the absence of any other demonstrable

infection, six weeks and five and a half months respectively, after the acute stage of poliomyelitis. Such observations illustrate the persistence of viable infectious poliomyelitis virus in the monkey's nasopharyngeal mucosa for weeks and months after the end of the acute paralytic stage and for a much longer time than its survival in the central nervous system. The fact cannot be overemphasized that the virus of this disease may exist for a very long time in an efficient condition, in the mucosa of the nasopharynx. On the basis of this assumption each cured case represents for a long time a serious source of danger to the community.

When the same conclusions are reached by a process of reasoning from different premises, the chances of the accuracy of these deductions are greatly augmented. With special reference to the poliomyelitis problem the importance of the nasopharynx as the entrance avenue of this infection and the urgent necessity of prophylaxis by nasopharyngeal hygiene have been pointed out for years by representative otorhinologists and public health experts in the persons of Dr. William Sohier Bryant and Dr. Charles E. North, whose teachings and recommendations, had they been generally understood and heeded, would in all human probability have checked the spread of the current epidemic, as they will presumably serve for the control of the next. The bacteriological laboratory can only provide the key and fit it into the recalcitrant lock of disease; the key must be turned, the door thrown open, and the light let in by the experienced clinician, the learned specialist, and the rare expert in preventive medicine.

The localization of the infectious virus in the nasopharynx fortunately renders it accessible to judicious intervention. No purposeful efforts have been made so far to control the infection which emanates from the nasal secretion, and it is perhaps too early in the century to anticipate the banishment of the pocket handkerchief at the appearance of the disease. The day will come when the customary cotton rag is replaced by the cheap and clean Japanese paper napkin, which is burned after it has been used. People will realize that for a long time after the patient's recovery his pocket handkerchief continues to represent a possible source of infection. Infants and children are helpless against the rubbing of strange handkerchiefs over their perspiring or grimy faces. The public roller towel of the past was innocuous as compared to the family pocket handkerchief. Bitter experience will drive home the lesson that neglected noses, mouths, and throats, are largely if not exclusively responsible for the ultimate crippling of the unfortunate victims of disease and ignorance.

The possible involvement of the hypophysis or pituitary body, by way of nasopharyngeal infection, in infantile paralysis (W. S. Bryant) opens up an entirely new vista and the existence of a pharyngeal hypophysis, an outpost of the cerebral hypophysis, adds to the force of the argument. Not only has the hypophysis been credited with a protective influence, in the sense of regulating the resistance of the body against disease, but the functional activity of all organs is influenced by the posterior portion of the cerebral hypophysis through the intermediary of the subsidiary centers located in the bulb and spinal cord. The posterior pituitary body is the chief center of the spinal system (Sajous). Before the outbreak of the next epidemic of anterior poliomyelitis, pathologists will have examined under the microscope the changes of the cerebral hypophysis of children who have succumbed to the disease. Reports will be available showing if the pharyngeal hypophysis, which is usually present, has undergone the compensatory hypertrophy sometimes noted in cases of organic pituitary disease, or if it presents inflammatory changes indicative of a local infection. The existence of close physiological and pathological relations between the nasopharynx and the hypophysis was pointed out by Citelli in 1912. Stimulation of the accessible pharyngeal hypophysis, with the object of furthering the function of the cerebral hypophysis through local application of radium, would seem to be at least worthy of a trial.

In diphtheria, a disease likewise contracted by nasopharyngeal infection, the changes of the cerebral hypophysis have been investigated and the cellular exhaustion which exists in these cases has been referred to the augmented compensatory activity of the hypophysis, as the result of the missing function of the medullary substance of the suprarenals (Abramow). The hypotonia of the vascular system in diphtheria is explained by Creutzfeldt and Koch as the result of degenerative changes of the intermediate lobe of the hypophysis, the part which secretes the blood-pressure raising substances. The clinical administration of pituitrin in diphtheria is followed by a distinct rise in blood pressure and combined pituitrin adrenalin treatment was recommended by Creutzfeldt and Koch as the most rational method of correcting the circulatory disturbance in diphtheria. The beneficial effects of adrenalin have been known for years, but although the interrelation of the endocrinic system is a part of contemporaneous knowledge, a more liberal application of the endocrinic principle is left to coming clinicians. The phenomena following upon the administration of pituitary substance are known to resemble those elicited by adrenal preparations. Unfortunately, no observations are available concerning the effect of hypophysis extract in cases of infantile paralysis, although many are claimed to have been benefited by adrenalin, and although it has been shown that the points of attack of adrenalin are sensitized by the simultaneous action of doses of hypophysis extract almost inert in themselves. The cooperation of these two substances causes a disproportionately stronger vascular contraction and the blood-pressure raising effect of adrenalin is also remarkably increased by the addition of small amounts of hypophysis extract. The rise of blood pressure is sustained much longer by pituitary substance than by adrenalin, and according to Sajous the temperature and the muscular tone are also apparently sustained for a longer time by the active principle of the hypophysis. A great practical advantage, as compared to adrenalin, especially in children having anterior poliomyelitis, consists in its simple administration by the mouth, without loss or impairment of therapeutic efficiency.

Serotherapy of anterior poliomyelitis has been recommended by Netter, in France, since 1910, on the basis of favorable clinical experience with the application to this disease of an efficient medication in cerebrospinal meningitis. The intraspinal injection of blood serum derived from patients

who have had infantile paralysis aims at bringing the virulent invaders of the nervous centers in contact with a fluid containing antibodies capable of neutralizing their pathogenic effects. It is not surprising that on etiological and other grounds the treatment of poliomyelitis with intraspinal injections of blood serum from convalescents has given rise to much controversy and adverse criticism. The method is now being tried in some hospitals in a limited number of cases, but it is too early to foretell the results of this tentative therapy.

In view of the appalling cost of a poliomyelitis epidemic—aside from the municipal expenses directly incidental to its prevalence, it is also necessary to count the financial encumberment of individuals, families, and ultimately the State itself, by the more or less crippled survivors—the question arises if the future will not see the wisdom of entrusting the welfare of the community to a competent guardian of the public health, who in his person unites the variegated but inert knowledge of bacteriologists, neurologists, practitioners, commissioners, etc., and whose competence in dealing with an incipient local epidemic is based on a thorough knowledge of the laws of universal epidemiology.

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41 WEST FORTY-FIFTH STREET.

EPIDEMIC POLIOMYELITIS.

PRELIMINARY REPORT ON 33 CASES.

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ALL but one of the cases were observed by me through the kindness of colleagues in the boroughs of Kings, Richmond, Queens, Manhattan, and the Bronx, and in Perth Amboy, N. J. Three of the patients were from 1 to 2 years old; fifteen from 2 to 3 years; nine from 5 to 6 years, and six from 8 to 10 years old. Twenty-two were boys and eleven girls. All of them were apparently in good health previous to the attack and well developed mentally as well as physically. The onset was very sudden in twenty-nine of the cases, while four of them showed signs of general malaise for from five to ten days. The history of infection could not be traced with any degree of certainty. In all but four of the cases poliomyelitis prevailed in the immediate neighborhood. In one case, a physician's child, there was a history of the father having taken his child in his automobile while attending to two cases of infantile paralysis. The presumption is also that while leaving his child in the car in front of the patient's house, it must have come in contact with some infected children of the neighborhood. In the cases of two children of Manhattan there was the presumption that the father in one case, an uncle in the other, both insurance collectors in the infected districts of Brooklyn, have conveyed the disease to the victims. One patient of Long Island had not come in contact with any child for six weeks previous to being stricken with the disease. Here also it was assumed that an adult carried the infection.

In nine cases one or more extremities were involved; in twelve cases the disease was limited to the muscles of the neck, throat, and palate, and in the remaining twelve the muscles of the chest, spine (patients were unable to turn around), and abdomen were affected. Nine children died, six of them within from 24 to 48 hours after the onset. The other children have greatly improved, whether fully or not it is too early to tell. The majority of cases began with headache and sore throat, the tonsils presenting either simple congestion or also small grayish white deposits. It was often associated with difficult, though not painful, deglutition. In the twelve cases in which the throat muscles were involved there was distinct hoarseness, the voice in speaking often resembling that observed after intubation. Associated with these symptoms was usually also regurgitation of fluids through the nose in drinking, so that the entire clinical picture fully agreed with that of postdiphtheritic paralysis; indeed, so much so that on five occasions the family physicians deemed it imperative to administer diphtheria antitoxin, in one instance as much as 18,000 units. In practically all the cases there was distinct drowsiness. The children, however, when aroused were perfectly conscious and able to respond to questions intelligently. Twitching of the muscles was very common even in the absence of high fever. In three cases convulsions of short duration occurred during the onset. The temperatures ranged between 100° and 104° F., most commonly about 102° F., while the pulse rate was invariably high, between 120 and 180 per minute, even in the absence of fever. Careful testing of the reflexes showed exaggeration in twelve cases, diminution in fourteen, and abolition in seven, the last being in the cases in which paralysis of the extremities predominated. In three children there was partial implication of the sphincters, in one of the anus, and two of the bladder, herein not being included the several cases of anuria of from twelve to thirty-six hours' duration. Muscular pain was pronounced some time during the course of the disease, most commonly at the onset, and I believe it was the pain which was responsible for the apparent presence of the Brudzinski and Kernig signs. Although the child was able to hold the head erect and to bend it backward, there was considerable difficulty or even inability to bring the chin down upon the sternum. The gastrointestinal tract was but little affected, about half of the cases gave a history of occasional vomiting, and the great majority of the children refused to eat on account of the difficulty in swallowing. On the other hand, some children maintained a very healthy appetite

for food, in fact, better than during good health, so much so that their parents cast some doubt upon the correctness of our diagnosis. In three cases slight facial paralysis was manifested and persisted after partial disappearance of the other symptoms.

Evidently the symptomatology of the disease during the present epidemic does not materially differ from that observed on previous occasions. In all epidemics certain groups of symptoms, depending upon the seat of the lesion, seem to predominate, and in the beginning tend to obscure somewhat the diagnosis; but with an epidemic prevailing, there should be no difficulty in arriving at correct conclusions. In this epidemic, as in previous ones,* we occasionally meet with atypical cases, as, for example, facial paralysis with crossed paralysis of the extremities, but these cases can readily be differentiated from encephalitis by the absence of spasticity and athetosis in the former and the fact that in poliomyelitis the spinal fluid shows an increase in albumin and globulin, a fair reduction of Fehling's, and a cellular increase, usually of mononuclears. This test, by the way, is of inestimable importance in all doubtful cases, when the question arises between poliomyelitis, rheumatic affection, acute scurvy, hip-joint disease, or injuries, and the like. Diphtheria can readily be distinguished from poliomyelitis involving the throat by the presence of Klebs-Loeffler bacilli in the former, and by the other clinical symptoms associated with diphtheria.

Exempting the six cases that succumbed to the attacks before any therapeutic measures had been employed (indeed two of them died during my consultation with the family physicians), I believe the results of the treatment presently to be outlined compare favorably with those of all other methods of treatment in vogue, including the injection of serum and adrenalin.

The treatment consists of cupping (six to ten cups on each side of the spinal column); hot (101° to 105° F.) mustard baths every four to six hours; sodium or ammonium salicylate (one or two grains for every year of the child's age, every two to six hours), and strychnine (small doses) internally; occasionally lumbar puncture, especially where twitching or rigidity is pronounced, and camphorated oil hypodermically, whenever respiratory difficulty presents itself. Immobilization of the paralyzed limbs, and light massage and passive motion are resorted to immediately, irrespective of acuteness of symptoms.

127 West Eighty-seventh Street.

THE RICE DIET:

HOW TO PREPARE AND EAT IT.

By H. S. BARTHOLOMEW, M.D.,
NEW YORK.
PHYSICIAN TO THE CLINIC AT ROOSEVELT HOSPITAL FOR DISEASES OF THE STOMACH AND INTESTINES.

It is not the intent of the writer of this brief article to enter into the subject of diet or to extol the merits and uses of the so-called "rice diet," but to emphasize the importance of impressing upon the patient strict observance of details in the preparation and consumption of the rice if good results are to be obtained from the same. To tell the patient he must go on a rice diet for a stated length of time will not suffice; he must be impressed with the importance of the details laid down regarding it, otherwise it will fail of its purpose.

The so-called rice diet consists of *rice*, *butter*, *bread*, *water* and *salt*. Absolutely nothing else is allowed in the way of food or drink. This is to be eaten three times a day at the regular meal time—enough may be taken to satisfy the hunger. It must be eaten very slowly, thoroughly masticated, and at least one half-hour should be consumed at each meal.

The rice is to be freshly prepared each time and eaten while hot, not allowed to stand and become cold and soggy. It must be eaten with a fork—not a spoon. Butter is the only other article of food to be eaten upon the rice and bread—no cream, milk, or sugar is allowed. Salt may be used to season to taste.

Ordinary white wheat bread, at least one day old, freely spread with butter is the only other food to be eaten with the rice. One or two ordinary slices may be taken at each meal.

Water not too cold may be taken with the meals in moderation—nothing else in the way of drink. The water *must not* be drunk or taken into the mouth during mastication, as it will interfere with the action of the saliva upon the rice and bread. It must be drunk while the mouth is empty. Between meals water should be drunk very freely; the mineral and spring waters may be taken.

Butter must be used rather freely both upon the rice and bread, at least one-fourth of a pound being taken daily.

Preparation: Place two quarts of water in a kettle or pot of twice or three times this capacity to avoid boiling over, add one-fourth teaspoonful of salt and allow to boil vigorously, sprinkle in slowly five tablespoonfuls of white rice* previously rinsed in cold water, this being the average amount for one person—more or less may be used. Allow to boil vigorously without stirring or covering the pot for thirty minutes (by the clock), drain in a cullender and set on the back of a hot stove for a few minutes to dry—not too long as it will become hard and tough. Serve on a hot plate, add a piece of butter the size of a small hen's egg and mix with two forks, lifting the rice from the bottom of the plate each time until the butter is all melted, coating each grain of rice. Salt to taste and eat at once with a fork.

Patients taking the rice diet who are inclined to constipation must see that daily evacuations of the bowels are obtained. Morning aperients taken on rising give the best results. Carlsbad salts (the artificial being equally as good as the imported), one to two teaspoonfuls dissolved in a glass full of hot water and drunk the first thing on rising in the morning are excellent, especially in the robust and fleshy. To vaoid the unpleasant effects experienced by some, such as nausea, a good plan is to rise on awaking in the morning, take the aperient and return to bed for a short time.

By adhering strictly to the above details in the preparation and consumption, the rice diet patients will be impressed with its importance; they will not tire of it; proper digestion is insured and results will be most gratifying to both physician and patient.

207 West Fifty-sixth Street.

*Atypical Poliomyelitis, Medical Record, March 23, 1912.

*Of late the brown or natural whole rice is being advocated by many physicians owing to the fact that the vitamine is found in its outer covering or husk. It may be used in the rice diet.

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THE STANDARDIZATION OF CLINICAL METHODS.

IT has long been the dream of all workers in clinical pathology that some day there will exist a standardization in the methods used in the clinical laboratories so that reports, often couched in identical phraseology, might mean the same thing. Many workers, especially those in charge of the clinical laboratories of large hospitals, have expressed themselves vigorously toward the same end. The subject is brought again to mind by the almost simultaneous appearance of two small manuals of laboratory methods.[1] Both are good, but an examination of their contents will show certain differences that are far from being merely academic. They are naturally restricted to the presentation of the single method which has seemed best or most convenient to the author and for the most part are free of discussion of the significance of findings. The differences in the methods offered are often trivial but sometimes vital, so that an adherent of one book could hardly duplicate the results of an adherent of the other unless the different substances examined for were present in unmistakable quantities.

McJunkin, for instance, recommends the addition of kieselguhr to the urine in order to clear it before testing for albumin, ignoring the fact that this will absorb a certain amount of the albumin present. He is also an enthusiastic user of the McJunkin polychrome stain, which is quite natural. Hill advises that the blood-acid mixture in the use of the Sahli hemoglobinometer be allowed to stand one minute before diluting, while McJunkin does not mention time at all, and both fail to speak of the importance of the direction of the source of light in the use of the Tallqvist scale. So it would be possible to point out several places where the two authors differ in quite essential details as to method. If one were to go further and include in such a comparative study others of the numerous manuals on the market the result would be exceedingly confusing to any except a trained clinical pathologist.

So much for the state of things as it exists at the present time. The advantages of a manual of standard methods would be many and, for the most part, obvious. Much of the laboratory work that is reported from hospital wards is done by the interne staff, which is composed of men who have had but little training and who apply various methods in what is only too often a casual fashion. A standardization of methods would at least introduce a uniformity of technique and reporting vocabulary and would help tremendously in enabling one to compare the reports from different institutions. If the reader is not convinced of the necessity of such a manual let him offer a specimen of sediment from a urine containing an increased number of leucocytes to a number of internes and ask them whether there is pus present. His conviction will be assured if he asks them to examine it daily for several days. The replies will vary to such an extent that it will be difficult to believe that all the men were examining the same specimen. Such a manual would have, of course, no place in the teaching at the medical school except that such and such a method would be noted as "the standard method" and the reasons given therefore. Each professor would teach as he saw fit and, in the hospitals also, special methods would be introduced as necessary or desirable.

No single man is capable of devising such a manual. It should be taken up by some national society or by a congress of the hospital clinical pathologists. It should include but one method for each test and should describe the technique in minute detail so that there could be no possibility of misunderstanding it. It should also prescribe the terms in which reports are to be worded. It should be as extensive or as limited in its scope as the circumstances at the time seemed to warrant, and above all it should be subject to fairly frequent revision so as to include improvements and changes as they might occur. The resulting manual would in many ways compare to the Pharmacopeia as an accepted standard, and the delegates should pledge themselves to the observance of its directions, each in his own institution. It would be a large job—there is no doubt about that—and the first edition would be long in preparing. Revisions would not demand so much time and the work would be distinctly worth while. That the accomplishment of this work would demand a considerable self-sacrifice on the part of the delegates as to both time and beliefs in favorite methods should only stimulate them to increased efforts to produce a creditable result. The MEDICAL RECORD hopes that the matter will be considered in the near future by some influential society and thereafter pushed through to a successful conclusion.

CONTRIBUTIONS TO NEGRO PSYCHOLOGY.

WE in America have here a psychological problem peculiarly our own. It is a matter of grave responsibility in whatever aspect it is presented to consideration. The psychopathologist is awaking to the importance of our negro population in his field of interest whether in practice or in scientific investigation.

Psychopathology is only one side of psychology,

[1] "A Manual of Practical Laboratory Diagnosis." By Lewis Webb Hill, M.D., Graduate Assistant, Children's Hospital, Boston. W. M. Leonard, Boston. 1916.
"Hospital Laboratory Methods," for Students, Technicians and Clinicians. By Frank A. McJunkin, A.M., M.D., Professor of Pathology, Marquette University School of Medicine, Milwaukee, Wis. Price $1.25 net. Philadelphia. P. Blakiston's Son & Co. 1916.

one mode of its application, and both stand in the service of society. Therefore Ferguson's* recently published report of his experimental study of the negro must arouse a practical medical and sociological interest because of the close relation and interdependence between mental capacity and social and individual health and efficiency. Ferguson summarizes the conclusions that have been drawn in the past concerning the mental and cerebral conditions of the American negro, some based on experimental studies, others not. There is wide difference of opinion in regard to the mental capacity of the negro as compared with that of the white, taking into account variously the size of the head, its contour, and the extent of convolution in the brain. Earlier studies were not very accurate, and the conclusions were untrustworthy. Later more accurate mental tests were made. Experiments of this sort, the Ebbinghaus completion test, the Columbia maze test, and others, were utilized by Ferguson to determine if possible the mental difference between the negro and the white, as well as between the pure negro and the mulatto.

The general results arrived at through experiments carefully made seem to prove a somewhat greater mental capacity in the white race and also in the mixed race compared with the pure negro. Valuable, however, as this study is, and the author does not claim for it more than a beginning of investigation into this difficult subject, psychopathology seeks a great deal more. The author of the monograph touches upon the further psychic factors, and without a due consideration of them there is the danger that always attaches to these static psychological tests, that of forgetting the broader psychic setting which keeps before us the intensively and extensively human character of the problem.

Some studies sent out from the Government Hospital for the Insane in Washington present the same racial differences from another point of view, and suggest, besides the social value in understanding the situation, the equally valuable contribution of negro psychology to the understanding and control of mental symptoms. This, of course, lays stress upon the genetic attitude toward the question, and that informs this valuable scientific study of Ferguson with fresh vitality. A genetic approach is essentially an interpretative one. It throws an illumination upon the differences which must exist in the physical cerebral capacity as well as the differences in psychical development, the over-emphasis in the American negro upon certain levels which we have come to know as infantile, either racial or individual. Moreover, interpreting them, it offers the broader basis for educational adjustment which Ferguson suggests. It makes us also more patient with this alien race. Dr. Evarts (*Psychoanalytic Review*, Vol. I, pp. 389-394) reminds us not only of their recent savage origin but of the unexampled position into which they were thrust, suddenly dropped into a civilization ages beyond them, to which, however, they were compelled to adapt themselves, with even the support of servile dependence early removed from them. Their adjustments have not come about by natural evolution. No wonder, then, that certain psychological reactions seem unaccountably in advance of cerebral development and that also an infantile or primitive psychical nature is uppermost. They have of necessity and with commendable success adopted much from their environment. Genetically, however, their development has not kept pace. Then comes also the admixture of white blood and, as Ferguson reports, the superiority of the partially white to the pure negro, which testifies to the hereditary development of brain capacity.

These two sides of the study, on the conscious and on the unconscious level, we might say, manifest in different ways the same attempt and partial success toward the adaptation required of this race placed in this anomalous situation. The latter study is essentially pathological, but as such is no less valuable in its contribution to an appreciation of the situation and most effective means in the accomplishment of this peculiar problem of adjustment. These psychoanalytic studies reveal the failure in adjustments and the compensations adopted, but as such they throw much light upon the fundamental elements of just such failure and mode of compensation in the psychoses and psychoneuroses of white patients of a higher grade of culture, but who, we must remember, are products of the same origins and whose unconscious inheritance therefore differs only in its greater accumulation and in the greater remoteness of the primitive elements.

*"The Psychology of the Negro," by George Oscar Ferguson, Jr., *Archives of Philosophy*, No. 36, April, 1916.

THE APERIOSTEAL STUMP AND ITS CARE.

UNDER this title H. H. M. Lyle (*Annals of Surgery*, June, 1916) makes some very interesting and practical suggestions. To obtain a useful stump three cardinal points must be observed: (1) Correct treatment of the bone; (2) correct treatment of the soft parts; and (3) prevention of stump atrophy. All amputations of the lower extremity should yield stumps capable of directly supporting the whole weight of the body. There are four methods of treating the bone: the osteoplastic, tendinoplastic, periosteal, and aperiosteal. Lyle says that the osteoplastic is the ideal method but requires ideal conditions; the tendinoplastic is of limited usefulness; the periosteal, although employed by the majority of surgeons in this country, is inferior to the other methods and should be abandoned; while the aperiosteal, in the advent of complications in healing, is the only one likely to furnish a useful end-bearing stump. He considers it the simplest, most universally applicable, and most practical.

After directing attention to the fact that when one examines standard artificial limbs for thigh amputations one will see that the stump socket is designed to avoid direct pressure on the end of the stump and to transfer as much weight as possible to the pelvic girdle, Lyle refers to a paper read at the meeting of the American Medical Association two years ago in which he called attention to the notoriously bad results obtained in amputation through the shaft of the femur and strongly advocated the employment of the aperiosteal method

where the osteoplastic could not be used. In a series of 47 femur cases from all parts of the country which he had occasion to examine he found but two true end-bearing stumps. In the majority of these cases he felt that the fault did not lie with the technique of the operator, but with the method of bone treatment and the after-care of the stump. The aperiosteal method aims to produce a painless supporting stump capable of early functional use. The technique of the bone section is as follows: Bone and periosteum are divided together, then a small cuff of periosteum 0.5 cm. in depth is removed and the marrow cavity is spooned out for a like distance. The cuff should not be dissected up as a preliminary step to bone section. In the removal of the cuff of periosteum no periosteal shreds should be allowed to remain; for such shreds, retaining their primitive osteogenetic function, are capable of producing painful bony spicules which would interfere with the early functional use of the stump. More than 1 cm. of periosteum and marrow should never be removed because of the possibility of resulting bone necrosis.

In spite of correct technique in the amputation itself the stump may become atrophied and useless if not quickly used as a real support. Lyle specifically states that this is the special feature of the aperiosteal method that he wishes to emphasize. His plan of after-treatment is as follows: "The patient is put to bed with the leg elevated. As soon as the wound is healed begin Hirsch's medico-mechanical treatment. Massage the stump twice daily, and after each treatment rub in a 2 per cent. solution of salicylic acid in olive oil. At night bathe in a warm sodium carbonate solution. Protect the stump with lamb's wool. Place a box at the foot of the bed and have the patient press the stump against it for from five to ten minutes three times a day, then four times a day, and finally every hour.

After each treatment energetically flex and extend the hip and knee. Now begin standing exercises. Rest the stump on a bran-bag or a cane-seated chair, at first placing the weight evenly on both legs; later place all the weight on the stump. At the end of two weeks the patient should be able to wear a peg-leg, later a permanent prosthetic appliance which directly receives the weight through the end of the stump."

Lyle believes that no surgeon should undertake an amputation by the aperiosteal or any other method unless he is willing to carry out the after-treatment which aims to provide a painless end-bearing stump. He also believes that an early functional use of the stump is the best method of preventing atrophy, although this is in direct opposition to the usually accepted teachings.

If Lyle's conclusions are generally approved by those who have had a similar opportunity to study conditions here and at the base hospitals abroad, it will mean a revolution in the technique of amputations of the lower extremity and in the manufacture of prosthetic apparatus designed to receive stumps formed in accordance with the principles which he has laid down.

RADIUM IN THE TREATMENT OF EXOPHTHALMIC GOITER.

Among the ever increasing number of morbid states in which radium is used externally or internally with more or less success, exophthalmic goiter deserves mention. Dr. W. B. Aikins of Toronto chose this as the subject of his presidential address at the meeting of the Ontario Medical Association, June 2, 1916, in which he pointed out that clinical experience showed that many cases did not respond satisfactorily to other methods of treatment, and that in many of these refractory cases he had found the employment of radium to be of decided benefit.

Abbe of New York was the first to use radium successfully in the treatment of exophthalmic goiter, and his favorable experience with this remedy had been repeatedly confirmed by other writers. The experiments of Victor Horsley and Finzi showed that the most constant changes after the application of radium affected the blood and lymph vessels. Aikins' own clinical experience showed that when applied over the thyroid the more penetrating radium rays diminished the vascularity and reduced the secretion of the gland.

Dawson Turner, who has had very favorable results, thinks that radium has two definite advantages as compared with the *x*-rays, namely, (1) The possibility of giving definite doses; (2) The fact that it can be applied without noise or excitement while the patient remains quietly in bed. Aikins reports at some length a number of cases of exophthalmic goiter in the treatment of which he had employed radium with excellent results.

The concluding portion of Aikins' presidential address is devoted to a brief consideration of the psychological aspect of the condition, and its significance in relation to treatment. But while he allows that in relief of those nervous symptoms, which form a prominent feature of exophthalmic goiter, psychotherapy plays an important rôle, he is of the opinion that physicians who have not had much experience of neurotic and neurasthenic people, and consequently do not understand them and have no sympathy with them, should refrain from undertaking medical treatment of this kind in which the psychic element is such an important feature.

ALCOHOLISM IN SWITZERLAND.

Switzerland, so far as we know, has never acquired the reputation of an alcohol-ridden land. We do not hear much about Swiss pauperism, crime, and insanity, nor of Swiss plans for fighting the drink evil. Nevertheless, at a meeting of the Zurich Medical Society last spring (*Correspondenz-Blatt für Schweizer Aerzte*, June 24) Dr. Meyer frankly asserted that Switzerland does not really deserve its good reputation as a moderation country. There is at present an alcohol monopoly in Switzerland which it is proposed to extend to the activities of household stills which have hitherto been exempt. A beer tax is also regarded as a future certainty, so that the consumption of spirits is not only bound to increase, but the government will evidently profit

in a twofold manner by such increase. Meyer does not state how the domestic output is to be incorporated into the State monopoly.

In this connection certain facts are of interest. In all the Swiss towns there are numerous little "joints" which depend entirely for their existence on the amount of spirits which they can sell before the men go to work in the morning. These places open at an early hour, and the quantity of spirits sold during this period is said to be immense. In rural districts brandy is served at table and is drunk not only by the women, but, so the author states, by the children as well. The peasant sells some of his home-made brandy, but reserves much for home consumption. The amount of alcohol sold by the State represents an expenditure per capita per annum of six francs, or about twenty-four francs per adult man. It is estimated that, if the home-made brandy consumption is included, this rate will be about doubled, or nearly fifty francs worth of alcohol for each grown man. The physician often sees cases of alcohol abuse and the best way of reaching the evil seems to be to restrict the home production in the interest of public health. It is certainly significant that while the great fighting countries are striving to cut down the manufacture and consumption of alcoholics, an isolated neutral country shows no disposition to follow this lead and even leans in the opposite direction.

Antityphus Sanitation in Mexico.

For those who know the condition of anarchy that prevails in many parts of Mexico, though naturally much less in evidence in the capital city, it will come as a mild surprise to learn of the systematic and scientific efforts being made for the control of the form of typhus which prevails in that country. From the *Boletin del Consejo Superior de Salubridad* for March we learn that there is a special service for combating typhus in Mexico City and outside municipalities in which the disease occurs in endemic form. The medical inspectors pay visits to all public places in the municipalities—prisons, churches, shops, theaters, etc.—in addition to domiciliary visits undertaken principally to pronounce upon their sanitary condition. Typhus victims are interned and their premises fumigated. When the infection shows no falling off, as in certain quarters inhabited by the very poor, a second visitation is made. During the month many objects, chiefly pieces of bedding, were destroyed by fire—in the words of the report there was a total of 3,547 incinerations. Special efforts were directed to make the street cars safe for travelers, over 15,000 notably dirty people being turned back from the cars during the month. The number of theaters visited was forty-six, of which all but six were pronounced clean. Of the whole number thirty-eight had been disinfected. The number of dirty patrons turned back was 4,111. Overcrowding was prevented by discontinuing the sale of tickets. The number of churches visited was eighty-two, and it was necessary to turn back 773 filthy subjects, 1,022 who had brought food with them, 141 sick people, and 154 beggars. Barbers apply parasiticides after hair cuts and shaves. Over 800 subjects were freed from lice. Despite the vigor of the campaign nearly 2,000 new cases of typhus appeared during the statistical month.

A Murphy Button in a Strange Situation.

At a meeting of the Société des Chirurgiens de Paris, Le Bec (*Revue de Chirurgie*, February, 1916) showed a soldier who had a scrotal tumor with fistula. This tumor proved to be a Murphy button. The patient had no hernia and the inguinal rings were normal. Le Bec's explanation of the matter is that some surgeon had done a castration and for cosmetic reasons had wished to put something in the scrotum to take the place of the ablated testicle; and that he had taken for this purpose the first thing that came to hand. However, the button, often invaluable in its proper field, was intended by its originator to cut its way out and it had begun to run true to form in this instance.

News of the Week.

Poliomyelitis Epidemic Continues.—The total number of poliomyelitis cases in this city to August 17 was 6,658 and the total number of deaths 1,497. In the remainder of the State, up to the same date, 957 cases had occurred. The prevalence of the disease in the city as compared to other years is shown by the following figures prepared by the Health Department: In 1913, 310 cases; in 1914, 129 cases; in 1915, 92 cases; in 1916, up to August 5, 4,856 cases, and to August 12, 6,140 cases. In New Jersey also the disease continued to spread during the week, the total number of cases reported to August 12 being 1,461. In Pennsylvania 296 cases had been reported to the same date, 161 of them in Phialdelphia. The question of opening the New York City public schools on September 11 was discussed at a conference with the Health Commissioner recently, and as a result the Board of Education passed a resolution authorizing the president of the board to act upon any recommendation made by the Health Department. President Wilson recently signed an act appropriating $85,000 for use of the Public Health Service in preventing the spread of this disease, and $50,000 in addition to provide for the appointment of more assistant surgeons.

Clinics for Poliomyelitis.—Because of the success of the special poliomyelitis lecture clinics conducted recently under the auspices of the Department of Health and in response to numerous requests that they be repeated, a new course of clinics has been arranged through the cooperation of the attending physicians at the various hospitals where these cases are treated. Attendance at the clinics will be strictly limited, and physicians desiring to attend should apply in advance to the respective hospitals for cards of admission. Groups will be formed in the order of application. When the group is complete the applicant will be referred to the clinic held in the following week. Clinics will be held at Bellevue Hospital, Pavilion 32, every Monday at 4 P. M.; at Lebanon Hospital, every Tuesday at three thirty; at Willard Parker Hospital every Wednesday at four; at the Babies' Hospital every Thursday at four; at Mt. Sinai Hospital every Friday at four, and at the Kingston Avenue Hospital every Friday at four. The clinics will continue for the next five or six weeks.

Health of the Canal Zone.—The chief health officer of the Canal Zone reports that no cases of yellow fever, smallpox, or plague originated on or were brought to the isthmus during the month of June, 1916. In fact, the last case of smallpox on

the isthmus occurred in a passenger from a steamer arriving at Cristobal on February 3, 1915; the last case of smallpox contracted on the isthmus was in 1907. The last case of yellow fever contracted on the isthmus occurred in November, 1905, while the last case of bubonic plague contracted there dates back to August, 1905. During the month of June the health of the employees at the canal remained good, the total admissions to hospitals and quarters being 756, a rate of 287.99, as compared with 285.45 for the preceding month, and 369.87 for the corresponding month of last year. The total number of deaths from all causes among employees was 20, of which 17 were due to disease, giving a death rate of 6.48, which is higher than that for the same month of 1915. There were no cases of typhoid fever during the month. A census of the Canal Zone completed shows a total population of 31,048, including employees, non-employees, and military garrisons, within the Zone limits. The population of Panama City is now 60,778 and of Colon 24,693; during the month of June the death rate in the former was 30.01 and in the latter 24.30 per 1,000.

Army Medical Corps Examinations.—The Surgeon General of the United States Army announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held on September 5, 1916, at points to be hereafter designated. Full information concerning these examinations can be procured upon application to the "Surgeon General, United States Army, Washington, D. C." The essential requirements are that the applicant shall be a citizen of the United States, between 22 and 32 years of age, a graduate of a recognized medical school, and of good moral character and habits, and shall have had at least one year's hospital training as an interne, after graduation. The examinations will be held simultaneously throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen traveling expenses as much as possible. In order to perfect all necessary arrangements for the examinations, applications should be forwarded at once to the Adjutant General of the Army. There are at present over two hundred vacancies in the Medical Corps of the Army.

Extra Milk Depots.—In response to the appeal of mothers in the Williamsburg and Brownsville districts of New York, Nathan Straus has promised to continue the maintenance of the emergency milk depots which were established in these districts early in the summer. The original purpose was to supply milk for the children of the locked-out garment workers, and this necessity having largely passed the closing of the depots was announced. The announcement, however, brought forth such urgent requests for the continuance of the charity that it was decided to keep the depots open for the present, and if the demand warrants it to make them permanent.

Exchanging Surgeons.—Drs. Hugo Zieschank and Otto Glantz, two German army surgeons, sailed from New York last week for Holland, en route for Germany, having been sent from Australia to be exchanged for two British surgeons now prisoners in Germany.

Death of Aged Indian.—Chief Givan-Ha-Day (Falling Snow), 104 years old, and said to have been the oldest Iroquois Indian, died in a hospital in Toledo, Ohio, on August 12. The chief had gone to Toledo a few days before to take part in a play given by the Boy Scouts, and succumbed to the infirmities of old age.

American Chemical Society.—A meeting of this society will be held in New York, in conjunction with the second national exposition of chemical industries, on September 25 to 30, 1916. Sessions will be held at Columbia University and at the College of Physicians and Surgeons, New York, as well as at the Grand Central Palace and at Rumford Hall in the Chemists' Club Building. A detailed program will be issued shortly by the secretary of the society.

Personals.—Dr. Albert Warren Ferris, formerly medical expert and director for the Commissions for the Reservation of Saratoga Springs, has gone into practice in that city. No physician is any longer connected with the State control of the springs and bath houses.

Dr. Charlton Wallace of New York announces his removal to 11 East Forty-eighth Street.

Dr. Isham G. Harris, formerly medical superintendent of the Mohansic State Hospital, Yorktown, N. Y., has been appointed superintendent of the Brooklyn State Hospital, succeeding Dr. Elbert Somers, who resigned on August 1.

Gen. William C. Gorgas, U.S.A., head of the Yellow Fever Commission of the International Health Board of the Rockefeller Foundation, arrived at Bogata, Colombia, from Panama, on August 9. General Gorgas will consult with the Colombian government on sanitary conditions of ports in that country.

Glanders Diminishing.—The Department of Health of New York City reports that the success of the administrative measures for the control of glanders among horses during the past year is shown by the decrease in the number of cases observed. These measures embrace the sanitary control of all stables in the city, the closing of public horse troughs, the making of specific tests on all horses exposed to infection and the destruction of all animals reacting, the supervision of horse-shoeing establishments, and the distribution of circulars containing information on the disease, among horse owners, stable keepers, etc. During the first quarter of 1914, 229 cases of glanders were reported, of 1915, 232 cases, and of 1916, 127 cases; during the second quarter of 1914, 313 cases, of 1915, 161 cases, and of 1916, 82 cases; during the third quarter of 1914, 227 cases, and of 1915, 145 cases; and during the last quarter of 1914, 384 cases, and of 1915, 166 cases. It will be noted that the reduction has been steadily progressive.

Obituary Notes.—Dr. EDWIN BASSETT TEFFT of New Rochelle, N. Y., a graduate of the University of Buffalo, medical department, in 1864, a member of the American Medical Association, the Medical Society of the State of New York, the Westchester County Medical Society, and the New Rochelle Medical Society, and consulting physician to the New Rochelle Hospital, died at his home, after a long illness, on August 6, aged 72 years.

Dr. GEORGE S. CRAWFORD of Clifty, Ind., a graduate of the Medical College of Indiana, Indianapolis, in 1874, and a member of the Indiana State Medical Association and the Decatur County Medical Society, died at his home on July 26, after a long illness.

Dr. MICHAEL KELLY of Fall River, Mass., a graduate of Bellevue Hospital Medical College, New York, in 1885, and a member of the Massachusetts

Medical Society and the Medical Society of Bristol County, died at his home, after a long illness, on July 28, aged 61 years.

Dr. JAMES HUDSON WHEELER of Pittsfield, Mass., a graduate of the Detroit Homeopathic Medical College, Detroit, Mich., in 1873, died, after a long illness, on July 25, aged 69 years.

Dr. JOSHUA S. WOOD of Irvinton, Ga., a graduate of the Atlanta Medical College, Atlanta, Ga., in 1877, died at his home, after a long illness, on July 20, aged 72 years.

Dr. ANDREW P. WILSON of Los Angeles, Cal., a graduate of the University of Southern California, College of Medicine, Los Angeles, in 1902, and a member of the American Medical Association, the Medical Society of the State of California and the Los Angeles County Medical Society, died suddenly on July 20, aged 50 years.

Dr. WILLIAM F. FAIRBANKS of Kansas City, Kan., a graduate of the Western Reserve University, School of Medicine, Cleveland, in 1886, and a member of the Kansas Medical Society and the Wyandotte County Medical Society, died at his home on July 22, aged 56 years.

Dr. LOUIS HORNBY FRASER of Presque Isle, Me., a graduate of the College of Physicians and Surgeons, Boston, in 1910, and a member of the Maine Medical Association and the Aroostook County Medical Society, died suddenly on July 23, aged 43 years.

Dr. ALVAH C. LEWIS of Salt Lake City, Utah, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1877, and a member of the Utah State Medical Association and the Salt Lake County Medical Society, died in San Diego, Cal., on July 12.

Obituary.

JOHN BENJAMIN MURPHY, M.Sc., M.D., LL.D.

CHICAGO.

Dr. JOHN B. MURPHY of Chicago, professor of the principles and practice of surgery in Northwestern University, died suddenly, from heart disease, at his summer home on Mackinac Island, Mich., on August 11. Dr. Murphy had been in poor health as a result of overwork during the winter, but was not thought to be dangerously ill; his condition was considered to be partly the result of his having been poisoned at the banquet given to Archbishop Mundelein at the University Club, Chicago, last winter.

Dr. Murphy was born in Appleton, Wis., on December 21, 1857, and was educated in the public grammar and high schools, afterward entering Rush Medical College, Chicago, from which he was graduated in 1879. After three years of general practice he went to Germany for study, and on his return he entered the field of clinical surgery in which he achieved great distinction, and to which he had contributed largely. In 1902 he was awarded the Laetare medal by Notre Dame University, a medal given each year to a Catholic layman who has done conspicuous service to humanity, science, art, or religion, and his work was recognized also by the University of Illinois which bestowed the degree of LL.D. on him in 1905, by the Catholic University of America, which gave him the same degree in 1915, and by the University of Sheffield, England, which in 1908 honored him with the degree of M.Sc. In addition to his work in the Northwestern University Medical School, Dr. Murphy was professor of clinical surgery in the Chicago Postgraduate Medical School, advisory surgeon of the Cook County Hospital and the Alexian Brothers' Hospital, chief surgeon at Mercy Hospital, and attending surgeon at the West Side Hospital. He was a member of the American Medical Association, of which he was president in 1911, the Illinois State Medical Society, the Cook County Medical Society, the American Association of Obstetricians and Gynecologists, the American Surgical Association, the Southern Surgical and Gynecological Association, the Western Surgical Association, the Chicago Orthopedic Society, the Chicago Surgical Society, the American College of Surgeons, and the Mississippi Valley Medical Association, an honorary member of the Royal College of Surgeons of England, and a life member of the Deutsche Gesellschaft für Chirurgie, and of the Société de Chirurgie of Paris.

Dr. Murphy, besides being gifted with an exceptional technical skill, was a man of striking originality, and he enriched medicine with many useful inventions; two of the most noted of these were the well-known "button" for intestinal anastomosis, and artificial pneumothorax, by the injection of nitrogen into the pleural cavity, for the compression and "splinting" of the tuberculous lung.

Correspondence.

A SUGGESTION IN THE PREVENTION OF INFANTILE PARALYSIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It seems well proven that infantile paralysis is an infectious and communicable disease, due to a specific virus which exists constantly in the central nervous organs and upon the mucous membrane of the nose, throat, and intestines in persons suffering from it. The virus enters the body by way of the nose and throat and is known to leave it in the secretions of these organs, and is distributed by sneezing and coughing and by articles contaminated with these secretions. In the interior of the body it is probably destroyed in a few days but persists in the mucous membrane of the nose and throat several weeks; it disappears from the nose and throat in humans, in most cases in four weeks, though it has been known to persist for a number of months. The virus has been found in the nasal secretions of healthy persons, who come in contact with the sick—therefore both the healthy carrier and the chronic carrier have to be reckoned with.

The fact that the virus has never been demonstrated in the blood of the sick discredits the idea that it can be spread by blood-sucking or biting insects. A period of six weeks is considered right for the length of quarantine. In the light of the brilliant work lately done on this disease by many eminent men, it is conspicuous that if the nasal secretions can be kept free from contamination with the harmful virus, then the spread will stop. This virus must contain an organism specific to the disease, though never yet definitely brought to light.

Isolating the cases early and care with the hands and secretions, together with quarantine sufficiently long, are our best weapons of defense. This is being done, but there will continue to be cases that escape notice. One may ask, can we render the mucous membrane resistant by the use of an antiseptic in the nose and throat that will destroy the virus or so lower its virulence that it cannot take hold?

An antiseptic possessing the power to destroy the virus and in no way injurious to the Schneiderian membrane should be given a trial. The one that seems most to possess this bactericidal power, and at the same time is nonirritating to the nasal mucous membrane, is a solution of colloidal silver. It clears the nasal mucosa of the persistent influenza bacillus better than anything I ever used. If every mother in infected districts would put into each nostril of her children twice a day one medicine dropper full of 10 per cent. colloidal silver solution for a period of six weeks, no harm would come from it but to the children's clothes—and who knows what good. The results might be brilliant, and this is here offered as a suggestion probably worthy of trial.

JOHN W. WINSTON, M.D.
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A PREVENTIVE AND CURE FOR POLIOMYELITIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Last year I immunized a monkey with milk of magnesia (MgO_2H_2) against poliomyelitis by injecting the following into the peritoneal cavity and spine: Milk of magnesia 0.5 c.c., secretions from nose and throat 0.5 c.c., add sterilized distilled water 5 c.c.; this thins it enough to pass needle. Waiting ten or fifteen days after inoculation, no symptoms developed. The secretions from the nose and throat in poliomyelitis are acid. The blood and spinal fluid are subalkaline. The point of entrance lies in the nose and throat and the virus thence passes to the intestine. Now MgO_2H_2 increases alkalinity and when the virus comes in contact with it decomposition or neutralization is the result. As a preventive I have given milk of magnesia to over 150 children since July 3 living in infected districts and not one has contracted the disease. As the virus enters the nose and throat passing to the intestine, it can readily be seen how efficacious MgO_2H_2 is. Milk of magnesia is slowly soluble and mixes thoroughly with the virus, besides remaining in the mouth and intestine much longer than some more soluble hydroxide. Dosage: Children, 1 to 2 years, 15 to 20 drops; 3 to 4 years, ½ teaspoonful; 5 to 7 years, 1 teaspoonful; children older than 7 years, 1 to 2 teaspoonfuls, in water every four hours.

As a cure I would suggest a serum published by me in the *International Clinics*, Vol. IV, 24th Series, under "Treatment of Lobar Pneumonia." This serum can be used for any infectious disease. It produces active immunization by inducing leucocytosis and increasing the antibodies or defensive enzymes. It is prepared as follows: Dried horse serum from 500 c.c. of fluid serum; sodium carbonate (anhydrous), 1.62 grams; sterilized distilled water, 500 c.c. Dissolve the dried horse serum in water, then add the anhydrous Na_2CO_3. Dose: 30 c.c. to 100 c.c. introduced into the general circulation, either intravenously or hypodermically. This dosage for adults. Children in proportion to weight. Intraspinally 5 c.c. to 15 c.c., first withdrawing this quantity or a larger amount of spinal fluid. Often one dose cures a case of poliomyelitis. Leucocytosis and immunity take place and the subalkalinity is overcome. When the spinal fluid is normally alkaline the enzymes there are activated. The horse serum and Na_2Co_3 bring about this result.

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OUR LONDON LETTER.

(From Our Regular Correspondent.)

NERVE INJURIES IN WAR—NERVE SHOCK—FUNCTIONAL PARALYSIS—MODERN TESTING—TORN NERVES—HARVEIAN SOCIETY'S CLINICAL MEETING.

LONDON, July 22, 1916.

MAJOR C. F. BAILEY, R. A. M. C., has contributed a paper on Nerve Injuries in War Time to the Brighton Medico-Chirurgical Society. He opened with a warning against jumping at a conclusion, and emphasized the importance of careful search for sensory defects, particularly loss of epicritic sensibility, and then mentioned the fallacies that may arise and the difficulties experienced with foreigners, maligners, and patients of little intelligence. He considered condenser-testing of great value as superseding faradic and galvanic muscle-testing. To obtain extreme accuracy he tested doubtful muscles against normal ones on the opposite side. He referred also to the difficulty experienced in preventing the powerful currents necessary to cause contraction of damaged muscles, from overflowing and so setting up contraction in the opponents of the damaged ones, for that would be injurious instead of beneficial. At the Eastern General Hospital cases which had been operated on proved the accuracy of the diagnosis obtained by the condensors. Accounts of various cases of injured nerves were given, including hypoglossal, spinal accessory, third and fourth cervical, posterior thoracic, ulnar, median, musculo-spinal, sciatic, etc.

Major A. H. Buck, R. A. M. C., president, discussed cases of nerve-shock and asked whether in those in which the nerve is constricted, but not divided, paralysis is shown by complete reaction of degeneration and further if the trunk of the nerve is ruptured in its course does it recover function without operation?

Captain Gervis referred to the extreme accuracy of modern methods of testing and asked how the difference in skin resistance is allowed for. Lieut.-Col. Jowers asked abou the condition of nerves supposed to be functionally paralyzed.

Dr. E. R. Hunt reported a case of local anesthesia immediately following extraction of a tooth (lower molar), due, it may be presumed, to injury of the mental branch of the inferior dental nerve. Major Bailey (replying) said cicatricial constriction might produce complete reaction of degeneration. If this were complete, or even of high degree, it indicated exploration; if the nerve was found to be torn across, the ends might be so close that recovery was possible, though not probable and so was a negligible consideration. The difference of skin resistance was met by interposing such a large constant resistance that the variation in the skin could be neglected.

At the Harveian Society's clinical meeting the following cases were shown: (1) Septic papillomatosis of lower extremity, producing great over-overgrowth; (2) soft sore which had lasted thirteen years and led to extraordinarily extensive scarring; (3) intrathoracic tumor in a young woman, *x*-rays revealed a shadow behind the upper part of the sternum and the microscopical examination supported the view that it was lymphadenomatous; (4) multiple osteomata developing in an adult (male); (5) a man who had been operated on for tempero-sphenoidal abscess; (6) a patient with stone in ureter; an *x*-ray was shown with an opaque bougie

in the ureter alongside the stone; (7) woman with enlarged liver (jaundiced); (8) photograph of patient who survived three days after an electrical burn caused by a current of 11,000 volts which had destroyed three of this patient's limbs.

Mr. J. E. R. McDonagh, in his Hunterian Lectures (R. C. S.), mentioned some points as to the use of intramine and ventured to prophesy that this drug is going to play a very important part in the treatment of syphilis, and not only so, but in all chronic infections, since it has already been shown to be of considerable value in tuberculosis and in chronic gonorrhea. He even thinks it probable that it may find a place in the treatment of malignant disease.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 3, 1916.

1. Results Obtained in the Treatment of Diabetes Mellitus. May 1, 1915—May 1, 1916. Elliott P. Joslin.
2. Definition and Detection of Acidosis in Diabetes Mellitus. Albert A. Hornor.
3. Observations on the Blood Sugar in Diabetes Mellitus. Orville F. Rogers, Jr.
4. Tests of Renal Function from the Standpoint of the General Practitioner. Francis W. Peabody.
5. Eye Changes in Renal Diseases—Their Diagnostic and Prognostic Value. Peter Hunter Thompson.
6. The Physiological Point of View and Autopsies. Francis J. McCrudden.

1. Results Obtained in the Treatment of Diabetes Mellitus.—Elliott P. Joslin refers to two former communications on this subject in which there was a note of hopefulness unusual in an article on diabetes and presents the present communication because it seems to show that these new hopes and explanations of avoidable causes of death were justified. Speaking roughly, he says that the average duration of life of 408 of his fatal cases has been five years, and that of 490 of his living cases has already reached six years. During the year ending May 1, 1915, 211 cases of diabetes came under his observation and of this number 15 per cent. died; during the subsequent year 314 cases were seen and 11.7 per cent. of these have died. A conservative estimate would place the decrease in mortality over the previous year at 20 per cent. These figures become still more encouraging when the writer adds the study of thirty-seven fatal cases seen this last year which show that death might have been deferred in about one-half of these if the methods of treatment now in general use had been adopted. A comparison is also made of the duration of fatal cases of diabetes in Massachusetts for 1915, compared with the author's total fatal cases. This shows that the greatest difference in mortality between the statistics of the State and those of the writer lies in the early decades of life. A further startling difference lies in the number of cases in each group who succumbed during the first year to the disease. In the writer's series of 490 cases of diabetes, 94 per cent. have already passed the first year of the disease, the danger zone of the diabetic. In a study of the causes of death in 408 cases of the author's series it was found that two out of every three died of coma, that 87 per cent. of all those who succumbed during the first year of the disease died of coma, and that this was the case in 100 per cent. of fatal cases in children. Therefore, if the mortality of diabetes is to be reduced, our energies should be directed first toward the avoidance of coma, because the treatment of coma is so unsatisfactory; and, second, particular attention should be exercised in the management of cases of diabetes in the first year following the detection of the disease. Furthermore, all cases should be persistently followed up, and the good effects of treatment should not be allowed to lapse by indifference or neglect.

2. Definition and Detection of Acidosis in Diabetes Mellitus.—Albert A. Hornor observes that it is easy to note the drowsiness, exaggerated respiration, and dry skin, so characteristic of the diabetic about to die in coma. So seldom does the patient recover and so temporary are the few recoveries recorded that it is manifestly necessary for us to recognize precomatose conditions if we would save the diabetic patient. The author discusses the demonstrable differences between the metabolism of a comatose diabetic and the metabolism of a healthy individual, and says in conclusion tht the acidosis of diabetes mellitus, aside from its clinical picture of exaggerated respiration, drowsiness, and rapid pulse, may be defined as a condition in which the carbon dioxide tension in the blood, and consequently, in the alveolar air is reduced; the acetone bodies in the urine and blood are increased and associated with this is a rise in the excretion of ammonia; glycosuria is marked, and, saving exceptional cases, toward the end of prolonged coma, the carbohydrate balance is markedly negative. All these factors are important in determining the degree of acidosis, and, where time and facilities permit, should be ascertained. The detection of glycosuria, the demonstration of a positive ferric chloride reaction, and the determination of a diminution in the alveolar carbon dioxide tension, are the procedures suitable for beside use. The carbohydrate balance is also a valuable indication and one surely to be determined, but, unfortunately, it must always furnish information, in part, at least, a day late.

3. Observations on the Blood Sugar in Diabetes Mellitus.—Orville F. Rogers, Jr., aims to present some conclusions as to the value or necessity of determining the blood sugar in treating diabetics, either from a prognostic or a therapeutic standpoint. He states that diabetics have a higher blood sugar when they are excreting sugar in the urine than they do when the urine is rendered sugar-free. The threshold of sugar excretion varies in different diabetics and apparently in the same individual at different times. Sometimes the blood sugar returns to normal under treatment, and this is generally in the milder cases, though there are some exceptions to the rule. A persistently elevated blood sugar may be an indication of the greater severity of the disease or it may occur in apparently mild cases, but generally associated in the latter instances with some renal impairment. By keeping the carbohydrate intake well below the limit of tolerance, as shown by the appearance of glycosuria, it has been found that the blood sugar will almost, if not quite, sink to normal, and their experience leads to the belief that efficient treatment can be carried out in most instances, using the urinary sugar alone as the therapeutic guide. There are a certain number of severe cases with marked acidosis or nephritis in which the true picture of the condition is much illuminated by direct blood examination, both for sugar and alkali reserve.

6. The Physiological Point of View and Autopsies.—Francis H. McCrudden states that at the Robert B. Brigham Hospital they are demonstrating to physicians, students, patients, and others, the usefulness of the physiological point of view of the problem of treatment in chronic disease, and it is evident that the patients appreciate its usefulness. From the large proportion of cases of death in which permission for autopsy is obtained, it has become evident that their ideas are spreading to the relatives of the patients. Since the hospital opened on April 1, 1916, complete autopsies have been carried out in 70 per cent. of all

those dying. No other American hospital has attained results that at all approach these. While many factors may have contributed to this unusually high percentage of autopsies, in the last analysis success depends upon the degree to which the relatives can be made to appreciate what has been done to help the deceased and the extent to which they can be made to understand that in giving permission for a post mortem examination they may be contributing something toward helping other patients. The figures presented bring out another point, namely, that the emphasis laid on the physiological point of view need not lead to any neglect of pathological anatomy, since in this hospital the direct result has been an increase in the possibilities for pathological-anatomical studies.

New York Medical Journal.

August 5, 1916.

1. Shoes. Physiological and Therapeutic. Dexter D. Ashley.
2. Herpes Corneæ "Febrilis." Samuel Theobald.
3. The Management of the Complications of Pregnancy. John A. McGlinn.
4. Syphilis and Tuberculosis in the Same Lung. Robert A. Keilty.
5. Removal of an Interstitial Fibromyoma. John A. Sheehey.
6. The Nephritic Toxemia of Pregnancy. Arnold H. May.
7. The Pathogenesis of Psoriasis. Abner H. Cook.
8. Medical Women (Conclusion). Mary Sutton Macy.
9. Some Orthopedic Principles in Pediatric Practice. Samuel W. Boorstein.
10. Some Eye Symptoms of Diagnostic Value. John L. Decker.

1. **Shoes, Physiological and Therapeutic.**—Dexter D. Ashley emphasizes the fact that we should not try to combine all the qualities in a single shoe to meet all conditions, occupations, and positions in life. He says that in prescribing shoes the doctor's path will be smoother if he can modify the shoes commonly worn by the patient or, if these are impossible, direct him to select a fairly good trade shoe to be modified. Seldom is the custom shoe perfect or exactly as designed, and the patient will expect much more from a "made-to-order" shoe in the way of immediate relief of symptoms. Comparing the outline of the foot with the shoe of civilized man, ordinary shoes would appear as a monstrosity to us were it not that long association with these forms has dulled our perceptions. The physiological shoe for approximately normal strong feet should conform to the foot outline without undue restraint. The sole should be strong, elastic, straight to the floor line, with sufficient curve to prevent stubbing. It should be broad enough to carry the vamp, and may have a pointed or rounded toe. The center of the sole should correspond with the center of the foot. The welt should be wide enough to protect the vamp. The insole should be of flexible leather, and should be flat or very slightly convex in the anterior part behind the anterior metatarsal arch. The shank should be rather narrow, yielding, and elastic, tending to the outer side. The heel should be as wide as the individual's heel in a snug counter and ⅝ to 1 inch high for adults. It should be built straight down from the rand and set well forward, centering under the os calcis. Since most of us have become accustomed to unnatural positions of the feet, to place them at once in an approximately physiological position would arouse pain and discomfort by bringing into action unused muscles, ligaments, and weight-bearing facets. The writer points out in detail the defects of ordinary shoes, and shows skiagraphs of feet taken through the shoes which illustrate the mechanical disadvantages of faulty construction.

2. **Herpes Corneæ "Febrilis."**—Samuel Theobald writes with special reference to the etiology of this condition. He thinks that the qualifying term "febrilis" is not well chosen; for though herpes labialis and, perhaps more general, facial herpes not infrequently occur as an accompaniment of "colds," attended by fever, this is, according to his observation, not true of corneal herpes. He says further that the severe pain which some describe is not, in his experience, a usual symptom of this condition. He feels that the primary lesion which gives rise to simple herpetic keratitis, and which explains the corneal hyperesthesia, is situated in the ciliary ganglion, and shows why he thinks this view is tenable. In the treatment of herpetic keratitis the local remedies which he has found most useful are holocaine and atropine; frequently one, sometimes both, of these are supplemented by instillations of dionin. The rapid subsidence of the keratitis is seldom observed and the patient should be prepared for a somewhat tedious recovery.

3. **Management of the Complications of Pregnancy.**—John A. McGlinn discusses a number of complications of pregnancy with which he has had personal experience. In two instances in which pregnancy occurred in a retrodisplaced uterus the uterus became incarcerated. In both of these instances, it being impossible to replace the uterus manually, the abdomen was opened and the uterus freed from incarceration by internal manipulation. One of these patients miscarried, the other was delivered at term of a living child. In cases of this kind the author is opposed to both abortion and the rupture of the membranes unless laparotomy is positively contraindicated. He warns against attributing a right-sided abdominal pain to appendicitis in every case, since the infection of the right urinary tract is a more frequent cause of this pain than appendicitis. In discussing such complications as appendicitis, intestinal obstruction, and fibroid tumors of the uterus, one point which has impressed the writer is the frequency of postoperative abortion. Finally he protests against the tendency on the part of reputable physicians and surgeons to terminate early pregnancy because vomiting is aggravated, and says that as a matter of fact very few cases of toxenia of early pregrancy call for the termination of gestation. The majority of such cases are not toxic at all, and the condition is cured under proper treatment.

6. **The Nephritic Toxemia of Pregnancy.**—Arnold H. May points out that the growing uterus, variously weighted, depending on the development of the child, by pressing on the renal excretory apparatus, is a factor in the etiology of the nephritic toxemia of pregnancy, and advocates as a prophylactic measure in cases in which there is a predisposition to this condition, and as an adjuvant factor in the treatment where the disease already exists, the use of a special bed. This bed consists of a headpiece and a footpiece separated by an area of about 2 feet, each part having a separate spring and mattress. Between these parts the bed is open, except for an adjustable sling made either of rubber or cloth, preferably the former. The rubber sheet is sufficiently long so that it can be depressed to various degrees to accommodate the abdomen. The patient assumes the recumbent position with the face down. By this means a great degree of comfort may be assured the patient and pressure is withdrawn from the kidney.

7. **The Pathogenesis of Psoriasis.**—Abner H. Cook reports ten cases in which the skin condition was unquestionably psoriasis, all of whom were treated with emetine hydrochloride, and three recoveries resulted; these three patients had pyorrhea alveolaris with *Endameba buccalis*. One case of pyorrhea failed to respond to the three courses of emetine, and there was no improvement in his psoriasis. One patient had a seminal vesiculitis, and after eradicating the disease with autogenous vaccine and other appropriate measures the psoriasis cleared up. Fistula in ano, discharging pus,

was found in one case; after operation the fistula healed and a complete recovery from psoriasis resulted. The removal of infected tonsils was followed by the disappearance of the psoriasis in one case. Syphilis was the only infection found in one case, and iodides and mercury had no effect upon the psoriasis. Two patients having psoriasis but no other disease or infection were dismissed without relief. The cases of recovery from psoriasis, after the removal or cure of other infections, strongly suggest that these infections caused the disease. Further, on account of the character of the infections it is suggested that the organisms most likely causing psoriasis were the staphylococci and streptococci.

8. **Medical Women in History and Present-Day Practice.**—Mary Sutton Macy concludes a serial article on this subject, which she summarizes as follows: "What have women accomplished in medicine since they began its practice?" (1) They have made a large proportion of permanent contributions to medical science, especially if we take into consideration the fact that historically they have always been in a minority in the profession; and (2) repeatedly crowded back and even out of the profession by the aggressiveness and numbers of their medical brethren, they have as repeatedly —and let us hope at last permanently—proved their ability to compete on equal terms with a fair degree of success and at least an average proportion of scientific achievement of the first rank. They have done this in spite of a most obstinate spirit of opposition on the part of their medical brethren; in spite of the seemingly insurmountable obstacles placed in their path by dogged masculine determination. Their courage has been dauntless, each attack more determined than those preceding and actuated by the keenest sense of justice and of fair play.

Journal of the American Medical Association.

August 5, 1916.

1. Adenomyoma of the Rectovaginal Septum. Thomas S. Cullen.
2. Peter Parker, the Founder of Modern Medical Missions: A Unique Collection of Paintings. C. J. Bartlett.
3. Thyroid Extract in the Treatment of Malignant Uveitis. James Bordley, Jr.
4. Effects of Heat on the Eye. William E. Shahan.
5. Orthopedic Surgery in War Time. Robert B. Osgood.
6. A Plan of Treatment in Infantile Paralysis. Robert W. Lovett.
7. Specific Treatment of Infantile Paralysis: Preliminary Note. Abraham Sophian.
8. Focal Infection in Relation to Certain Dermatoses. M. L. Ravitch.
9. The Diet of Children After Infancy. J. H. Mason Knox.

1. **Adenomyoma of the Rectovaginal Septum.**—Thomas S. Cullen. (See MEDICAL RECORD, June 17.)

2. **Peter Parker, the Founder of Modern Medical Missions.**—C. J. Bartlett says that the laying of the corner stone of the hospital for the Yale Medical School in Changsha, China, which occurred some few months ago, makes this a fitting time to recall that this work is the natural outgrowth of that begun by another Yale man eighty years ago. His name was Peter Parker, and to him belongs the distinction of being the founder of modern medical missions. The writer reviews the biography of this remarkable man, picturing him as a student in both the divinity school and medical school at Yale and describing both his medical and missionary work in China. His great work began with the opening of the Ophthalmic Hospital in Canton in November, 1835, as a missionary hospital. This institution was forced to extend its scope so as to include general surgical cases. A number of unusual cases occurring in the early history of the hospital are reported. Of special interest in this connection is a collection of between eighty and ninety oil paintings illustrating surgical conditions as Dr. Parker found them in China. When the first commissioner to China reached there in 1844 he appointed Dr. Parker as secretary to the legation, and from that time he added onerous diplomatic undertakings to his missionary and medical work. This biography is of particular interest because of the emphasis that it places on Dr. Parker's greatest accomplishment. He was a missionary in the strict sense of the word, and a diplomat of no mean order, but his chief contribution to the spread of civilization was as a medical man in founding medical missions. This article is of further interest in setting forth those qualities of mind and heart which should form the ideal of one who would choose this field as a life work.

3. **Effects of Heat on the Eye.**—William E. Shahan describes his experiments on animals made to determine the physiologic limit of heat tolerance for stated lengths of time and the thermaphor which he used in making the experiments. It is evident from these experiments that the *substantia propria* has no sharply defined limit of physiological tolerance to heat, but that the effects on it vary increasingly with increase in the intensity of the heat applied. It would appear, however, that 130° F. (54.4 C.) is as high as it is safe to go without producing gross permanent changes. There seems to be excellent theoretical reasons for believing that the cornea will stand more heat than certain invading organisms, such as the pneumococcus of ulcus serpens that have a relatively low thermal death point. Experiments in ulcus serpens indicate that any temperature up to 130° F. applied directly to the ulcus serpens for ten minutes has no beneficial effect whatever. It is probably even harmful. The writer believes, however, that before heat is discarded as useless in these conditions it is necessary to investigate another method of using it, namely, that of applying higher degrees for shorter lengths of time. An investigation of this kind is now under way.

6. **A Plan of Treatment in Infantile Paralysis.**—Robert W. Lovett presents a plea for a definite uniform plan for the treatment of infantile paralysis in all of its stages, for a direct attack on the disease based on its pathology, and for persistency and precision in that therapeutic attack, with special care as to the avoidance of fatigue from over-exercise and over-treatment. It is the belief of the author that nowhere in orthopedic surgery does the difference between the best and indifferent treatment have more effect on the ultimate result than in this disease. During the first stage of the disease the essayist emphasizes the importance of quiet and advises that the feet be kept at right angles to the legs to avoid the most common deformity, dropped foot. Toward the end of this period, which may be assumed to have ended when tenderness has disappeared, immersion in a warm salt bath is desirable. During the second stage, which may be assumed to begin with the disappearance of tenderness and to last for two years or more, the problem is to restore the maximum function to the affected muscle and to study most carefully the measures most likely to accomplish this end. With the acute stage over it is on the whole desirable to get the patient on his feet, *i.e.* to institute ambulatory treatment. In the writer's opinion muscle training is the measure of greatest value at this stage, being one of the most powerful factors in determining ultimate muscular function. It should always be borne in mind that fatigue and overtreatment by massage and exercise are detrimental factors of the highest importance too little attended to. During the third or stationary stage, the requirements of the preceding stage as to care of the muscles still exist but are less urgent. Even in this stage muscle training may accomplish much.

The dominant requirements of this stage are operative, and are, first, the correction of the deformity, and, second, operations to improve function and secure stability. Finally the author discusses the various operations that have been employed for the improvement of function.

8. **Focal Infection in Relation to Certain Dermatoses.**—M. L. Ravitch reports ten cases of skin disease in which the etiology was obscure and which were resistant to treatment, and in which the discovery and removal of a focal infection resulted in a disappearance of the dermatosis. He states that he might have cited many more cases. In commenting on these cases, he says that not all systemic and skin derangements are due to focal infection. A great many obscure diseases may be traced to faulty internal secretion, which offer a great field for the clearing up the etiology of obscure diseases; but, again, faulty internal secretions may be due to focal infection. All these things teach one to be on his guard and to make thorough examination in doubtful cases. The skin should be considered not as surface only, but as a cutaneous organ, as capable of infection from within as any other organ.

9. **The Diet of Children After Infancy.**—J. H. Mason Knox. (See MEDICAL RECORD, June 24, page 1164.)

The Lancet.

July 15, 1916.

1. An Inquiry into the Natural History of Septic Wounds. (A Report in Three Sections to the Medical Research Committee.) Kenneth Goadby.
2. Digitalis in Aortic Incompetence. Seymour Taylor.
3. Abdominal Pregnancy, Probably Primary. Frederick J. McCann.
4. Indications and Contraindications in the Pneumothorax Treatment of Pulmonary Tubercle. Clive Riviere.
5. A Case of Oblique Hemianopia from Wound of Optic Chiasma. Purves Stewart and A. D. Griffith.
6. Early Ether Analgesia. D. P. D. Wilkie.

1. **An Inquiry into the Natural History of Septic Wounds.**—Kenneth Goadby has made a study of the bacteriological flora of wounds from the moment of admission to the hospital, and subsequently through the various stages of the illness, correlating the bacteriological knowledge with the clinical symptoms, surgical treatment, and sequelæ. The condition of the blood was also studied in relation to the degree and variety of sepsis, and particular attention given to the benefit or otherwise of the use of bacterial vaccines. As the inquiry progressed other problems related to the persistence of unhealed wounds with sinus formation, and the appearance of general disturbance with secondary attacks of fever and inflammation, often associated with trivial surgical interference with the wound, demanded special attention. The inquiry is divided into three main lines of research, necessitating the division of the report into three sections, namely, (1) Sinuses and sinus formation; (2) Vaccine therapy and wound infection; (3) General tissue reactions in wound infection. In the first section of the report the author concludes that there is a preponderance in infected wounds of certain classes of anaerobic bacteria—namely, organisms referable to the groups: 1. *B. œdematis maligni;* (2) *B. perfringens* (Veillon); and (3) *B. hibler;* that there is a small incidence of *B. tetani*, at present only in cases of clinical tetanus; that wounded tissues, especially sequestra, contain anaerobic bacteria months after the original injury, even when the external wound has healed; that infection of the wounded and partially healed tissues with anaerobic bacilli predisposes to sinus formation; that persistent infection of the wounded tissues is the chief, if not the essential, factor of the "flares" occurring after operations upon sinuses; that the use of appropriate vaccine therapy is an important and urgent concomitant of surgical treatment in the prevention of "flares" after secondary operation, and in the prevention of sinus formation and secondary hemorrhage; that the biological activity (digestive activity) of anaerobic bacilli is more important than the specific infectivity. As a result of his investigations into sinus cases generally the author suggests as a routine treatment of chronic sinuses resulting from gunshot and other projectile wounds that the case be treated as though anaerobes were present. An autogenous vaccine, preferably a sensitized one, should be made from the organisms in the sinus; streptococci and the coli or proteus group must be included when present. Such cases should not be operated upon until efficient immunization (three weeks at least) has been carried out. From the results recorded in this report it would appear that the anaerobic bacteria, even if present in the sinus, may be disregarded, provided precautions are taken to immunize the patient before operation and to provide an efficiently drained wound. All chronic sinuses which alternately heal and break down should be treated by vaccine therapy before subsequent surgical procedure is adopted.

2. **Digitalis in Aortic Incompetence.**—Seymour Taylor records further experiences confirmatory of opinions that he has previously expressed as to the effect of digitalis in aortic incompetence. He states that as he lives longer and sees more cases, and registers the results of treatment, or the failures and successes of prognosis, he becomes more impressed with the value of clinical experience as against theories of the laboratory or the seductive whisperings of a physiological instrument. The writer has for many years recorded the life histories of patients who have suffered from aortic regurgitation, recorded their longevity, their mode of death whether lingering or sudden, and compared a series of cases treated with digitalis, and another series of cases in which the drug has no place in the defense. He finds that sudden death in the cases treated with digitalis is by no means uncommon. If in addition to aortic insufficiency the patient has also mitral regurgitation, then digitalis is a useful remedy. The chief object of this present communication is to put on record some additions to the number of cases having aortic regurgitation who have survived to old age and to whom digitalis has never been given, though he has had them under his care for ten to fifteen years. In cases having attacks of dyspnea and requiring medication he has treated successfully by small doses of trinitrin (gr. 1/200), and a very diminished dietary, usually about a third of the daily amount, with one day's fasting each week.

4. **Indications and Contraindications in the Pneumothorax Treatment of Pulmonary Tubercle.**—Clive Riviere states that pneumothorax treatment should be borne in mind as soon as ulcerative processes appear in the lungs and where life is threatened, but it must not be postponed until life is in danger, for it is mostly then too late. The high function of pneumothorax therapy is to restore the lost cases to health; but the bad outlook must be recognized in good time if pneumothorax treatment is to succeed. A phthisis case may be to the initiated "lost," so far as ordinary methods of treatment are of avail, long before the end is in sight. It is at this stage, and even before, that the suitability of pneumothorax must be decided upon if a clear other lung, absence of widespread adhesions, and a reexpansible lung are to be with any likelihood attained. On the other hand, it must be admitted that the advanced, apparently unilateral, hilus tuberculosis cases are seldom met too late for this treatment, and it is remarkable how often the pleura remains sufficiently unadherent to allow the production of an efficient pneu-

mothorax over disease extending even from apex to base. The writer mentions the following contraindications to pneumothorax, bilateral involvement, advanced emphysema, asthma, disability of the circulatory organs and kidneys, intestinal tuberculosis, and diabetes. Dyspnea in itself he does not consider a contraindication; neither does he consider laryngeal tuberculosis a contraindication unless very advanced. Pneumothorax may be an emergency operation for bleeding otherwise uncontrollable and likely to prove fatal, or it may be undertaken for some cases of recurrent hemoptysis.

6. **Early Ether Analgesia.**—D. P. D. Wilkie recommends a method of producing ether analgesia for minor operations for which a local anesthesia is unsuitable and where the aparatus for administering nitrous oxide and ethyl chloride are not available. His method of producing brief analgesia is, after having made all preparations for the operation, to place a Shimmelbusch mask over the patient's face and to pour 3 drachms of ether over the mask and bring a folded towel over the face and mask and keep it closely applied. It will be found that in from thirty to fifty seconds, provided the patient breathes deeply and regularly, the stage of analgesia has set in and will last from fifty seconds to three minutes, the usual duration being slightly less than two minutes. The writer finds this method suitable for such minor operations as incision and scraping of multiple abscesses of the neck, removal of septic ingrowing toe-nails, circumcision, cutting of projecting portions of two phalynges with bone forceps, etc. The patient is usually able to walk out of the operating room and feels no unpleasant after effects.

British Medical Journal.

July 15, 1916.

1. Some of the Principles and Problems Related to the Treatment of Gunshot Fractures. Hey Groves.
2. A Reconsideration of the Principles and Methods of Hugh Owen Thomas. 1. Some Reflections on Thomas's Splints. (To be continued.) J. Linn Thomas.
3. An Extension Splint for Fractures of the Humerus. Donald Hingston.
4. A Method of Treatment of Shell Shock. E. T. C. Milligan.
5. Gunshot Wound of Spinal Cord and Trachea: Recovery. G. W. Thompson and G. W. Stanley.
6. Eusol and Other Methods of Wound Treatment. C. W. Duggan.
7. The Danger of Iodine Solutions for Sterilizing the Skin in Abdominal Operations. A. Ernest Maylard.
8. Extraction of Intracranial Foreign Bodies. Sidney Matthews.

1. **Some of the Principles and Problems Related to the Treatment of Gunshot Fractures.**—Hey Groves writes from his experience in the Queen Alexandria Military Hospital, where he was also entrusted with the founding and administration of a central splint factory which has brought him in contact with a great number of medical officers and the various conditions under which military surgery has to be undertaken. In his opinion the plan of having a factory where fracture apparatus can be made on the premises of the hospital is a simple, efficacious, and economical plan which should be adopted by all large military hospitals; it encourages the trying of new ideas, and the treatment of severe gunshot wounds under modern conditions presents new problems that require solution. It has been well said that every severe case of gunshot wound complicated by fracture presents two stages. In the first there is a wound complicated by a fracture, and in the second there is a fracture complicated by a wound. At no stage can either be neglected, yet the infected wound claims first attention, and that until it has been restored to a healthy and healing condition. From the earliest possible moment, and until bone union is firm, the limb must be immobilized and placed in such a position that the wound can be frequently dressed without moving it or without changing the relative position of the bone fragments. Having secured immobilization, the main points in the treatment of the wound are that within forty-eight hours every wound, except the clean through-and-through bullet wound, should be disinfected by excision and the removal of foreign bodies. At a period of a week or ten days after the injury disinfection of wounds seems hopeless and a selective method must be adopted, leaving those alone in which infection is quiescent and opening up those only in which it is active. It is easy to state this principle but a matter of some difficulty to carry it out correctly. There is no doubt that a ragged shell wound with a retained missile must be opened up early and freely, and, equally, that clean perforating wounds should be left alone, but there is a large class intermediate between these which gives trouble and anxiety. The only safe rule to follow would seem to be to open up all cases in which there is any doubt. An irregular temperature, local tenderness, a rising leucocyte count, and an infection by the streptococcus, B. pyocyaneus, coliform or gas-producing bacteria, are all facts which require immediate operation. In cases in which it is not possible to open up deep pockets and in which if a tube only is left a troublesome sinus results, whereas gauze packing is painful and difficult, a special plugging instrument has been found very helpful. This device was invented years ago for packing the uterus, and consists of a metal tube and a stylet terminating in a Y-shaped fork. The tube is inserted at the bottom of the cavity to be packed and the ribbon gauze is pushed in by the stylet. The writer expresses no opinion as to the relative advantages of various antiseptics, as his experience has consisted largely in the treatment of cases ten days after injury, at which time mechanical drainage and lavage must be the all-important elements of treatment by which the tissues can disinfect themselves.

4. **A Method of Treatment of Shell Shock.** — E. T. C. Milligan describes a well-known treatment of hysteria which has been used successfully in the treatment of shell shock. This consists in the administration of chloroform slowly, in a quiet room and apart from other patients, and when a suitable degree of anesthesia is induced in suggestion carried out by the anesthetist. In all types of cases suggestion is continued until the patient has fully recovered consciousness. When quite rational the man is assured of his cure, promised a rest, given morphine, and allowed to enjoy a much-needed sleep. The aftertreatment consist of prolonged rest and change of surroundings. Cases of loss of memory, loss of speech, loss of hearing, hysterical attitudes of the limbs, and loss of function have been successfully treated in this way.

La Presse Médicale.

July 20, 1916.

Application of Pachon's Method to the Study of the Cardiopulmonary Circulation.—Colleville quotes Naegeli as stating that tuberculosis appears at puberty in 96 per cent. of individuals. The hardships of the present war may increase the number of cases of active tuberculosis to a "shuddering" extent. We must be prepared to recognize incipient and quiescent cases, and recently it has been stated that Pachon's oscillometer and Schick's cutireaction are likely to form the best routine methods for this purpose, the former being especially calculated to reveal the lowered blood tension of the tuberculous. The author appears to have devoted himself chiefly to the question of recovery from tuberculosis in the troops. Oscillographs reveal nerve depression, and the influence of the innervation upon the cir-

culation is of the greatest significance for the tuberculous. In the nontuberculous with nervous depression it is impossible to increase the respiratory capacity, and they rebel against all exercise. If either a physical or psychical stimulant favorably modifies this state of adynamia it is at once shown in the oscillograph, which first shows overactivity and then assumes the normal. The same law is in evidence in the nervous tuberculous subject. Bearing in mind that respiratory capacity depends in part on the elasticity of the lungs as well as on the intrapulmonary circulation, these two factors must be studied in common. In lungs which retain their elasticity respiratory gymnastics are in order; in others we must use an excito-cardiac medication, such as cachets of sweetened camphor. A tuberculous subject is not fatally deprived of power of ventilating his chest. It is to be hoped that oscillographs may be made to afford a basis for a classification of tuberculous subjects.

Forearm Prosthesis.—Ducroquet discusses this subject extensively in connection with amputations of the forearm. There should be three so-called points of fixation in the latter, viz., the point of support for the apparatus, which is the lower part of the arm; the point of counter-ascension, the upper part of the forearm, and the elbow joint. In other words, we have the forearm prosthesis, which covers and protects the stump; an armlet for the upper arm, and a hinge mechanism connecting the two, with perhaps a sling over the shoulder. This apparatus is, of course, old and simple, and serves but as a base for special prosthesis. For the mechanic an artificial hand is, of course, out of the question. The object of prosthesis at present is to invent apparatus to enable him to work at his trade. The simple hook may be used by various kinds of laborers, but each man must have more than one kind of apparatus. The gardener uses a special ring which plays in a sort of stirrup, also a spade holder. The vinedresser needs a pruning hook to immobilize branches which have to be cut or sawed away. The chauffeur can employ a so-called "bell" as a substitute for his closed hand on the lever of his machine, the bell being held in a fork. A single apparatus is in use for holding saws and hammers. A complete set of apparatus has been devised for brushmakers. On the other hand, the commercial traveler requires no technical prosthesis but a specially articulated hand with considerable prehensile ability. Many inventors appear to be occupied in perfecting special forms of prosthesis.

Le Bulletin Médical.

July 21, 1916.

Elie Metchnikoff.—Roux, long the chief assistant of the deceased scientist, gives some reminiscences concerning the latter which are not contained in the numerous necrologies. Three minutes before the end came Metchnikoff was conversing with Roux and others. By advice of Widal, his physician, he had taken to his bed three days before. Death occurred from syncope due to a slight change of position. The entire period of treatment was seven months. In May, 1915, when he had attained his seventieth birthday, the officers of the Pasteur Institute held a celebration in his honor. Roux, who was unable to be present, addressed a letter to his colleague in which the latter's great services to science and humanity were reviewed. His seventy years were pronounced a short term for the work accomplished by him, which was sufficient to have made several men eminent. After the reading aloud of this letter Metchnikoff conversed familiarly with his colleagues on the subject of longevity. He spoke of having reached the end of his career. The statistics of the Italian Bodio furnished the proof that the Psalmist's estimate was in the main correct. He was fortunate in having attained it, for longevity was hereditary and none of his immediate relatives had reached such an age. He spoke of Lister, who died at eighty-five, his father at eighty-three, and his paternal grandfather at ninety-three. That he was alone among his own relatives to reach seventy he ascribed to the carrying out of his own theories of combating autointoxication. He mentioned especially Welch's bacillus as an implacable enemy of mankind, not only to the wounded in the present war but to all in times of peace as well, as an intestinal denizen. He had used the lactic acid bacillus for some eighteen years as part of his food regimen. The science of longevity is in its infancy and we are as yet ignorant as to why the aged die at so great a rate from pneumonia and malignant growths. What we seek at present is not great longevity in the individual but how to cause all men to reach the age of seventy. As for cancer, he believed firmly in its exogenous origin. He would like to see two plans of prevention carried out in the elderly, to wit, sterilization of all food and absolute cleanliness of the skin. As another preventive factor against premature senility he advocated a suitable mental state, freedom from pessimism and from fear of death and disease. In this connection he quoted Tolstoi, who in speaking through certain characters appeared to regard the prospect of death as sufficient to destroy all ambition and endeavor. The desire to live may vary inversely with the age, but the cessation of this desire should be natural only in those who have reached advanced years and with it a satiety of life. In the future the old man may succeed better in retaining the full possession of his faculties and with it the desire to live. The great war is mentioned in this connection, as if it had produced conditions which militated for the time against progress in the science of macrobiotics, but the interruption will only be temporary. The great scientist's body was cremated and his ashes will rest in the Pasteur Institute in a large urn of red marble.

Death Following a Sting by a Wasp.—Recently death occurred to an engine room artificer of Portsmouth, England, who had been stung by a wasp while sleeping on board his ship. The swelling of his neck was so great that he had to be sent to the Haslar Hospital, where he died on the following day. At the inquest Surgeon Caldwell Smith ascribed death to bacterial infection caused by the wasp's sting. The deceased was a healthy man, hence the virulence of the infection must have been extreme. A verdict of accidental death was rendered.—*The Medical Times.*

The Corroborative Diagnosis of Mastoiditis by Means of the X-Ray.—Harold Hays says that the diagnosis of mastoiditis, as a rule, can be made readily from both the subjective and objective findings. Such further data as those observed by the *x*-ray are not necessary. Yet we are inclined to make use of every aid to confirm our diagnosis, particularly in those doubtful cases in which the question arises as to the advisability of operation. The majority of the cases of mastoiditis are operated on without the corroborative evidence of the *x*-ray picture. In those cases which do not respond to treatment, and where certain complications are set up, such as sinus thrombosis and epidural abscess, the *x*-ray findings will frequently determine the condition of the underlying bone before extensive destruction has taken place. Proper *x*-ray pictures of the mastoid are of decided value in determining the necessity for immediate operation.—*New York Medical Journal.*

Book Reviews.

CANDY MEDICATION. By BERNARD FANTUS, M.D., Professor of Pharmacology and Therapeutics, College of Medicine, University of Illinois, Chicago. Price, $1.00. St. Louis: C. V. Mosely Company, 1915.

DR. FANTUS' little book on candy medication belongs primarily to the prescription pharmacist and the country practitioner who must dispense his own drugs, for it gives in detail the method of preparation by which a number of drugs may be given in candy form. However, the introduction of the book and the method to the pharmacist will depend largely on the physician and especially the pediatrist. Up to this time the most palatable doses have been prepared by the large drug houses. This new method of prescription preparation which Dr. Fantus presents should prove useful for the ill-controlled adult patient as well as for children bebetween 3 and 10, as Dr. Fantus suggests. He gives formulas for fifty-seven medications, but on looking through the list one finds rather a large number which would be infrequently used for children. No doubt other drugs will be added to the list in the near future. It would seem a definite mistake to give hexamethylenamine in the form of candy tablets. This drug irritates the kidneys unless given with the sufficient amount of fluid. If a patient is given tablets, there is no assurance that the necessary amount of water will be taken, and, moreover, hexamethylenamine is entirely tasteless in the proper amount of water.

THE AFTER-TREATMENT OF OPERATIONS: A MANUAL FOR PRACTITIONERS AND HOUSE SURGEONS. By P. LOCKHART-MUMMERY, F.R.C.S., Eng., B.A., M.B., B.C. Cantab. Senior Surgeon, St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, The Queen's Hospital for Children, London, and Honorary Surgeon to King Edward VII Hospital for Officers; Special Consulting Surgeon to City of London Military Hospital and Fulham Military Hospital; Jacksonian Prizeman, and Late Hunterian Professor, Royal College of Surgeons. Fourth Edition. Price, $2.25 net. New York: William Wood & Co., 1916.

THIS book, which has already reached its fourth edition, is one that should be of much value to at least three classes of readers—nurses, members of house staffs, and general practitioners, particularly those in the country who are often called upon to operate when no expert surgeon is available or who must look after the patient after the operation itself has been done by a consulting surgeon. We may also say that there are comparatively few surgeons, with the possible exception of those connected with an active metropolitan hospital service, who will not find many valuable suggestions in this little book; for the text is written by an experienced surgeon of world-wide reputation and embodies, to a large extent, the methods he has himself found most efficacious. The book has been brought up to date in many ways. As evidence of this we find a short but remarkably meaty chapter on the treatment of gunshot wounds, while the chapter on surgical shock has been rewritten and the influence of Crile's recent teachings is very manifest.

Books of this sort are needed; for we thoroughly agree with the author in the statement that it has become too common to think that the operation is everything and that the after treatment is merely a matter of course. On the contrary, while, as he says, the operation is the most showy part of the treatment, many a case is saved or lost through skillful and careful or careless work on the part of the doctor or nurse after the operation itself has apparently been successfully done. This is one of the books with a mission; and the nurse, interne, or practitioner who is familiar with its teachings will save many patients who might otherwise be lost and will certainly make a host of others more comfortable during their convalescence.

THERAPEUTIC BY-WAYS: Being a collection of therapeutic measures not to be found in the text books. Collected from all sources. Condensed and arranged. By DR. E. P. ANSHUTZ. Price, $1.00. Philadelphia: Boericke & Tafet, 1916.

EVEN though we have not the faith in the doctrine of similars and in the efficacy of high potencies, we may read much of interest in Anshutz's "Therapeutic By-Ways." He has had patience for years to gather from the men and books which passed his way, and much from past superstitions has gone into his little book. His one very sensible comment on experimental pharmacology is the following: ". . . for why may not the infinitesimal do that which the crude and the palpable may not do? Does man, in this day, still hold to the belief that because he cannot see a thing it does not exist? If he does he kicks over the best in modern science and makes his senses the arbiters of science."

TONSILS AND ADENOIDS: TREATMENT AND CURE. From the Standpoint of the Physician and Laryngologist. No Preference to that of the Surgeon and Laryngectomist. By RICHARD B. FAULKNER, M.D. (Columbia University). Price, $1.00. Pittsburgh, Pa.: The Blanchard Company.

THE TONSIL AND ITS USES, VOCAL, MECHANIC AND PHYSIOLOGIC. By RICHARD R. FAULKNER, M.D. (Columbia University). "The tonsil is an organ that must be respected."—Lermoyez. "You have no right to destroy it."—Von Levinstein. "It is absolutely necessary in the modulation of the singing voice in crescendo and diminuendo."— Lamperti. "It is the sound-post in the mechanism of speech and song."—The Author. Price, $1.00. Pittsburgh, Pa.: The Blanchard Company.

THESE two books are so closely related that it seems suitable to notice them together. The pamphlet on tonsils and adenoids is one of brief statements and references to the author's larger book. The "Note" on the first page reads: "The figures in the body of the text refer to pages in my book on 'The Tonsils and the Voice.' The reader is advised, in every instance, to refer to the page indicated and read what is there set forth," and ninety-two page references are given in twenty-three pages! The book has, however, some excellent advice as to the treatment of diseased tonsils, and Dr. Faulkner's association with those to whom the voice is of such vital importance gives his opinion weight.

The author seems given to superlatives, and such statements as "Pain anywhere not associated with increased temperature must be looked upon as reflex," can scarcely be accepted. What about the more than occasional gangrenous appendix where there is no rise of temperature for several hours after the beginning of pain? And the headache of hypophyseal tumor is certainly not reflex according to his use of the word.

One-third of "The Tonsil and Its Uses" is taken up with quotations from medical and musical people. One of the author's deductions is that "persons who have large tonsils are generally healthy." Such a statement needs indisputable statistics to back it. However, when all is said, Dr. Faulkner is working in the right direction—toward the intelligent medical treatment of diseased tonsils as against indiscriminate tonsillectomy and tonsillotomy.

MANUAL OF VITAL FUNCTION TESTING METHODS AND THEIR INTERPRETATION. By WILFRED M. BARTON, M.D. Associate Professor of Medicine, Georgetown University, Attending Physician to Georgetown University Hospital. Price, $1.50 net. Boston: Richard G. Badger, 1916.

THE author has collected from the literature the methods for testing the functional capacity of the liver, kidney, pancreas, heart and the ductless glands and has thereby rendered a great service to the many who lack the time and energy to search them out independently. While in several instances the methods are described with insufficient detail, nevertheless the references are given and those unfamiliar with chemical methods can find the technique in full in the original sources. The book is a welcome one and should find a wide circle of readers. The discussion of the value of the various tests described is, as a rule, brief and well-considered and the author has not allowed his enthusiasm to warp his judgment.

THE MEDICAL CLINICS OF CHICAGO. May, 1916. Volume I—No. 6. Published Bi-monthly. Price, $8 per year. Philadelphia and London: W. B. Saunders Company.

THIS number closes the first volume of the Medical Clinics, and a comparison with the first number shows a very definite improvement during the year. The number of cases discussed in a single issue has decreased, and there is more thorough discussion of the conditions presented. In this issue there are presented about eighteen cases from ten clinics. There are very interesting discussions of the Allen treatment of diabetes and of rickets, although in the latter the blood changes which may appear in the course of the disease are not adequately pictured. There is appended a very complete index for the volume.

Society Reports.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, June 7, 1916.

THE PRESIDENT, DR. RICHARD H. HARTE, IN THE CHAIR.

Glucose Formation from Protein in Diabetes.—Dr. N. W. JANNEY of New York in this communication emphasized the importance of the exact knowledge of the maximum extent of glucose formation from protein in diabetes for the clear understanding of the glycosuric process and its dietary treatment. Various criticisms he said could be offered to previous experiments to this end which had been made upon human diabetics and depancreatinized dogs. A critical study of phlorrhizin diabetes had led to the conclusion that glucose formation from protein in this condition represented essentially the same process as that occurring in the human glycosuric subject. Therefore a technique had been developed permitting of quantitative determination of the amount of glucose arising from protein fed to animals made completely diabetic with phlorrhizin. The results so obtained were applicable to the problems presented by diabetes mellitus. It could thus be actually demonstrated experimentally that 58 per cent. of glucose as a maximum could originate from the body proteins of man. This corresponded to the urinary glucose (nitrogen ratio 3.4:1), which was of diagnostic value. If the glucose excreted by fasting diabetics should show this relation to the nitrogen, the severest form of diabetes was present. The more nearly and the more quickly the G:N ratio approached 0:1 on fasting, the more favorable the diagnosis. In these experiments, he observed, it had also been shown that practically all the sugar, and *no more*, excreted by fasting completely diabetic animals arose from protein. It was therefore evident that glucose formation from fat in diabetics was inconsiderable. By use of the new method of experimentation a series of pure isolated proteins had been found to yield large amounts of sugar in metabolism varying from 48 to 80 per cent., according to the protein examined. Contrary to existing opinions, the animal or vegetable origin of proteins was found to bear no relationship to their ability to produce glucose in the animal organism. Variations in the amounts of sugar arising from individual proteins were essentially due to the differing amounts of glucose yielding amino-acids entering into the make-up of the protein, although certain alimentary factors influencing digestion also played a rôle.

In another investigation glucose formation from various meats had been similarly studied. Beef, rabbit, fish (halibut), chicken, and eggs were found to give rise in the diabetic organism also to considerable amounts of glucose, 36 to 48 per cent., calculated for water-free solid material. It could likewise be ascertained that from bread 61 per cent. of sugar was formed in the diabetic's body. Von Noorden's food tables for diabetics were regarded by Dr. Janney as very inadequate, since they did not take into consideration the large amounts of sugar arising in metabolism from protein. The new data alluded to rendered it possible, however, to compare the combined amounts of carbohydrate present in and arising within the glycosuric organism from various protein foods to that of bread. An accurate diet table for diabetics could thus be calculated in which was represented the actual relative adaptability to the diabetic dietary of protein foods as compared with bread. It was estimated that approximately 250 to 350 parts of the usual varieties of cooked meats were found to be equivalent, from the standpoint of sugar production, to 100 parts of bread. Eggs were said to present a decided advantage over other forms of protein food, 525 to 600 parts of eggs, whether boiled, raw, or fried, being equivalent to 100 parts of bread. Regarding the glucose production from proprietary protein foods, contrary to the prevailing opinion, the effect of the high protein content of such products was to cause so much sugar production in metabolism that in nearly all cases these gluten and albuminous preparations were more harmful to the diabetic than equal amounts of wheat bread. Since increased glycosuria resulted from ingestion of carbohydrates, proteins, and fats (the latter by indirect action), the author said it was now quite evident that the only way to rest the glycolytic function was to practically abstain from all food whatsoever. The rationale of the Allen fasting treatment for diabetics was therefore emphasized by these researches. In view of the extent of sugar formation from protein, it was also clear that the classical "strict" diet for diabetics should no longer be ordered. A mixed diet containing moderate amounts of protein and fat and low amounts of carbohydrates was said to be more palatable and to present no greater disadvantages than the high protein and high fat diet. The results of chiefly scientific importance obtained in the series of investigations mentioned, Dr. Janney said, had been described in articles which had appeared elsewhere; the detailed results referable to the diabetic dietary were in course of publication.

Dr. JAMES E. TALLEY of Philadelphia expressed his gratification at having a scientific demonstration of the fact that the protein of egg was better borne than other proteins. From experience with patients with poor tolerance for some time after their starvation cure some practitioners had come empirically to such conclusion. He regarded as troublesome problems with these patients satisfying calory needs, the appetite, and the family apprehensions.

Dr. GEORGE M. PIERSOL expressed his interest in having more scientific data concerning the rationale of the Allen treatment, which all agreed had in the last year proven to be the most successful means of combatting diabetes. Since this rationale had always been a matter of conjecture and some controversy, all explanatory evidence was of great value.

Dr. JANNEY, in closing, cautioned that the results given be not taken too positively. They were to be considered, if possible the most reliable known at the present time, still merely as a general guide in the protein feeding of diabetics. To accept that a certain protein should be entirely discarded for another owing to a difference of a few grams in sugar formation was assuming an unwarranted position, owing to the various digestive and other factors involved. When, however, the glucogenetic capacity of one food was strikingly less than that of another—for example, eggs as compared with meats, or meat as compared with commercial preparations high in protein—then it was that the practical utility of this new data became most important.

The Physical Cultural Effect of Preparedness.—Colonel WILLIAM H. ARTHUR, Medical Corps, U. S. A., president of the Army Medical School, presented a paper under this title.

Individualism and Decadence.—Dr. ROBERT T. MORRIS of New York under this caption took up the question of struggle, beginning with the struggle of inorganic elements for place in the periodic table. Struggle occurred, he said, not only between the cells of an individual but between individuals in a family, between families in a town, between towns in a State, and between States in a great organization of States, and that conflict would continue, as it belonged to the laws of evolution. As civilization advanced the periods of peace between large groups of civilized people would be of longer duration, but the warfare and struggle when they did come would be more terrible. He stated that at the present time almost all the Aryan nation groups were declining, but that the progressing Slavic groups were bound, according to the laws of nature, to attack the rest of us at some time in the not very distant future; further, that a nation like Japan, which had formerly been content with esoteric philosophy, would struggle for dominion over the world whenever such a nation developed exoterically. Mass action of the people in a nation of the future would be accomplished through the agency of patriotism. Patriotism, he observed, was a nasty little prejudice given to man by nature, apparently for the purpose of keeping him in herd form in nations, which prejudice was flatly opposed to the beautiful ideal of the brotherhood of man. He believed that there was need for military training in America, provided the people had a sentimental wish to retain their identity as a nation; if not, they might continue in the development of that individualism which led to early decline, rendering them more vulnerable to the attack of a predatory nation, which predatory nations were developing on all sides. The United States of America might be regarded at present as a big, helpless, fat, juicy rabbit waiting to be taken, and the people as too fat to fight. In considering the elements of many nations now included in the people of America it was to be noted that these different elements were being hybridized; crosses were being made between species, which did not give large possibilities for mass action. Plant and animal breeders claimed that specific

hybrids, or crosses between species, did not make durable types. The strongest nations were those belonging to crosses between varieties and not species. In this country, the author said, the people were not crossing species freely. With the introduction of various conflicting elements there was not quite the freedom of which the people of this country had boasted, but a more or less discreet autocracy instead of such concrete autocracy as might belong to a responsible king. The politician exercised a discreet autocracy in every town, hamlet, and State, and there was not the freedom which had been claimed. Furthermore, the people of this country were developing that most valuable and, at the same time, most dangerous trait known as individualism. In the regard for the individual rather than for the State there was occurring that rapid fall in birth rate which belonged to older countries. The birth rate he regarded as a sort of gage which indicated what was in the boiler of a country. Military training was of advantage in that it allowed young men to feel that by mass unit action they were working for each other and for the State. Military training gave them intelligently the idea of mass action, which would hook out the hyphen between this and the older countries. Incidentally it taught them deference to authority and self-control in the interest of personal physical health.

Prof. WILLIAM A. STECHER, Director of Physical Education in the Public Schools of Philadelphia, felt that in the discussion of military training sight was being lost of the fact that the elements of training upon which most weight was placed were not those of which most people were thinking when speaking of military training. A study of the training given to the youth in European nations would show that real "military" training did not begin until the young man entered the army at nineteen or twenty years of age. As soon, however, as the boy—and the girl—entered school, pre-military training began in the form of sufficient and effective physical training. He felt that the recent movement for preparedness had made people realize that which teachers had always known, that physical training had also a mental and a moral end. That which was being asked for under the term "military training" really should be termed "more effective physical training." He would agree not only that every young man should serve his country, but that his training for good citizenship should begin as soon as he entered school. Specific military training in the elementary schools he regarded as entirely out of place, because he made a distinct cleavage between premilitary work and military work. He advocated military training and believed that the medical profession could help very materially in securing in the public schools the type of training fitted for the growing youth. Could boards of education be told by the medical profession that a few minutes of physical training per day would never make a healthy boy or girl, but that they should have from an hour to an hour and a half of physical training per day, in the open air if possible, the country would have young men at nineteen years of age physically fit to join the army.

Dr. A. C. ABBOTT referred to his impressions upon reading "The First Hundred Thousand," the story of a Scottish regiment recruited from men in all walks of life, consisting in the beginning of an ignorant, heterogeneous mob, but after a few months of training becoming a coordinated, well-disciplined, self-reliant fighting machine which gave good account of itself at the opportune time. An advantage equally important, the result of team work in a trained company of men, was the acquisition of ability to take and act upon orders without losing self-respect and learning thereby how to give orders. He would urge the reading of Mr. Maxim's "America Unprepared," which book showed modern warfare to be a matter largely of machinery. In Dr. Abbott's opinion modern warfare had become a new science, demanding special training. He advocated preparedness. He believed in compulsory military service and that the real preparedness should be as full an education in the construction and workings of the modern machinery of warfare as was possible to be given.

Dr. JAMES M. ANDERS felt that physicians should take advantage of every opportunity of pointing out the health value, if nothing more, of training in the camps of the country. He agreed with Professor Stecher that the physical training in the public schools should be carried at least to the level of competent and satisfactory industrial work. Were this done, beyond doubt better material would be furnished for the making of soldiers. He agreed also with the statement of ex-President Roosevelt that military preparedness implied industrial and economic preparedness, and referred to the testimony of Col. E. F. Glenn before the Senate committee to the effect that military drill should begin in the public schools at the age of twelve and should be given for twenty minutes daily for every school day of every year up to the age of sixteen years. Colonel Glenn would not put a gun into their hands during this period, and would not have them called out until they reached the age of eighteen. This, it seemed to Dr. Anders, would be a feasible plan, although not in accord with the views expressed by Professor Stecher, which would make for better preparedness. He emphasized the point that efforts at preparedness should commence as early as possible in life, whether considered from the health, industrial, economic, or military standpoint.

Dr. JAMES TYSON called attention to a line of training apparently too elementary for consideration but which was important—that involved in the ordinary physical acts of walking, sitting, and standing. In this respect girls and boys were too often left to chance, and grew up under conditions favoring deterioration of the anatomy and physiology of the body.

Dr. MORRIS, in closing, said that military training allowed young people to think in terms of the State instead of in terms of the individual.

NEW YORK ACADEMY OF MEDICINE.

JOINT MEETING OF THE SECTIONS ON OBSTETRICS AND PEDIATRICS.

Held March 28, 1916.

DR. GEORGE W. KOSMAK IN THE CHAIR.

Dr. KOSMAK, at the request of Dr. Haynes, the chairman of the Section on Pediatrics, pointed out briefly the reasons why such a joint meeting of the Section on Obstetrics and the Section on Pediatrics should prove of interest and advantage to the members of both sections and to the general practitioner. He stated that the trend of modern medicine had been toward specialism, and that although this development had undoubtedly contributed to the advance of medicine and aided in its transformation from an art to a science, it was essential to remember that the various apparently isolated organic systems of the body were more or less closely interrelated and interdependent. Therefore the practitioner in the special branches of medicine was subject to the same necessity for coordinating his work with that of the immediately related subjects. This was of peculiar significance in the question which was brought up for discussion this evening, namely, "The Care of the Newborn Infant from the Obstetric and Pediatric Standpoints." The obstetrician unfortunately had concerned himself more with the care of the mother than with that of the infant and usually had dismissed the latter from his mind unless some startling abnormality occurred. The pediatrist was necessarily interested in the baby as such and only too often was called in to care for a child with errors of growth and nutrition that might have been corrected or perhaps avoided earlier in its life. The subject of prenatal development was receiving increased attention by research workers, but unfortunately the practitioner of medicine was unacquainted with their observations and their practical application to the human subject had not been extensively made. In the lower animals several investigators had shown the effects of injurious substances on the development of the embryo and within the past year Werber had succeeded in producing deformities of the most varied type, such as cyclopia, ear defects, hydrocephalus, and alterations in the circulatory apparatus by exposing the fertilized eggs of one of the teleost fishes to oxybutyric acid and to acetone. These experiments led one to believe that possibly various toxic products in pregnant women resulting from altered metabolism might account for departures from normal fetuses at birth or even for defects that manifested themselves in individuals later in life. Such imaginings brought one into the field where it was difficult to distinguish between fact and fancy, but they should lead to further experiments on higher animals and to more detailed observation on the human subject. It was in such fields as these that the obstetrician and the pediatrician must extend their attention, for by correlated work it would be possible to contribute something more definite than the fanciful theories referred to

which would in time make for the betterment of the race. Dr. Kosmak said he hoped that this meeting and similar ones would tend to bring these two specialties closer together and by their united work bring the subjects to be discussed more prominently before the general practitioner.

Correlation of the Pediatrist and Obstetrician.—Dr. Roger H. Dennett presented this paper in which he stated that in no other branch of medicine was there a specialty which called for both surgical technique and the peculiar mental attitude of the internist. These two specialties had been combined in a mediocre sort of a way, but no single individual had ever achieved eminence in both. Ever since specialism had developed it had been the custom for the obstetrician to take care of the newborn baby from birth until the second, third, or fourth week of life. The pediatrician had been the consultant only, called in when things went extremely wrong. Dr. Dennett said there was not in New York City, to his knowledge, a public lying-in service, large or small, or a private obstetrical institution, in which newborn babies were visited each day by a pediatrician, just as the mother was cared for by an expert. There could be no question but that the study of congenital disease was one of the most neglected, and at the same time most needed, phases of medicine. Here was the first reason why the pediatrician should have the care of infants from birth. A second reason was that the mortality could in all probability be enormously reduced if proper attention were given to these diseases. Finally, infant morbidity and its peculiarly distressing accompaniments might be lessened during the first year by preventing many cases of malnutrition and gastro-intestinal disturbances. The Bureau of Child Hygiene of the New York Department of Health was now making an investigation of the subject of the early mortality from congenital diseases and had shown that 40.3 per cent. of all the deaths under a year were due to congenital diseases, whereas the deaths from respiratory or diarrheal diseases were little more than one-half that number, 23 per cent. The Health Department further stated that 70 per cent. of all deaths due to congenital causes might be classed as preventable, and that 48 per cent. of these deaths occurred in the first ten days of life. When it came to the subject of morbidity, statistics were less available, but it was probably the general opinion of pediatricians that at least 50 to 75 per cent. of all their difficult feeding cases could have been averted had the pediatrician had the opportunity of supervising the infants' fare from birth. Though there might be some question as to the advisability of the obstetrician turning over all his infants at birth to the pediatrician, there could be no question but that both the infant mortality and morbidity might be lowered by doing so when the infant was two weeks of age. That was, whenever the obstetrician discharged the mother he might recommend that a pediatrician be consulted who should give the infant a thorough physical examination and also give dietetic and hygienic advice for future use. The follow-up work which the Babies' Welfare Association was now doing was a step in the right direction so far as public institutions were concerned. This organization had cared for four thousand cases last year, and this year the numbers were growing as the work was becoming better known. In the opinion of the essayist the proper correlation of the pediatrician and the obstetrician might be brought about in the following ways: (1) By giving as much careful attention to the appointment of the pediatric staff of the lying-in hospitals as was given to the appointment of the obstetrical staff. (2) The pediatrician once having been appointed should make his daily rounds and study and observe his cases from a clinical, laboratory, and pathological standpoint, as he was now doing in his own children's and babies' wards. (3) The obstetrician should educate the laity to expect his duties to end, so far as the infant was concerned, after it had been washed and dressed, with the possible exception of the care of the cord. (4) If the obstetrician cared for the infant as well as for the mother up to the time that the mother's convalescence was completed, he should recommend that the infant be then put in the care of a pediatrician.

On the Need and Value of Systematic Prenatal Care.—Dr. Ralph Waldo Lobenstine read this paper in which he said that to be of real value prenatal care must be systematic, intelligent, and untiring. The whole scheme of prenatal care must begin with intelligent understanding and cooperation on the part of the expectant mother. In order to accomplish the best results not only must the women of the community be aroused but the doctors themselves. There had been a failure to recognize the fact that prenatal care would prevent the development of, or at least lessen the frequency of, many of the serious complications of pregnancy, would prevent many unnecessary maternal deaths, would prepare the mother for labor, lessen invalidism, and exert a deep influence on the welfare of the infant. It was truthfully claimed that 90 per cent. of American women were absolutely without proper prenatal care. Of all the progressive countries the United States was the most backward in this regard. The finest skill at the time of delivery might not and frequently did not save the life of the child, or even that of the mother, when prenatal care had been insufficient or entirely wanting. Health statistics were particularly difficult to deal with in this country because of the incomplete registration area and because even in this area birth records and still-birth records were very incomplete. We had practically no record of the large number of abortions, spontaneous and induced, that occurred annually. Bacon of Chicago, however, in a careful statistical study, estimated that annually approximately 80,000 infants lost their lives at the time of birth or during the first two weeks post partum as the result of injury at the time of birth. If to this number were added those that died *in utero* prior to the onset of labor, there was probably an annual loss to the country of 150,000 infants. To this number must be added the great number of early miscarriages, which, when spontaneous, were more or less dependent on the same causative factors as were to be found in the case of the non-traumatic still-births and subnormal infants. According to the Children's Bureau in Washington among all babies dying under one month of age nearly three-quarters died of causes operative before birth. In the larger proportion of cases these causes were malformation, congenital debility, premature birth, and injuries at birth. The causes of death in the newborn during the first four weeks of life appeared then to be due not to diseases successfully attacking a previously healthy child, but to physiological unfitness in the newly born to maintain an independent existence. Actual death was one thing, but we had another problem in the child that lived for a while or for many years, immature in body and mind, or actually deformed. These abnormal or subnormal beings were thus partly because of causes over which we had more or less control, and partly because of factors arising in the course of pregnancy over which we might at times be almost powerless. The more common antenatal causes of death were syphilis, alcohol, renal and cardiac disease, sexual excess, deficiency in food supply of the mother, subnormal state of the father, as well as of the mother, at the time of conception, and bad physical environment during pregnancy. The less tangible antenatal factors were gonorrhea, the heavy use of tobacco, opiates, and the complex toxemias of pregnancy. The essayist considered these factors more in detail and expressed the belief that even the so-called low grade toxemias of pregnancy were often responsible for conditions of malnutrition, acidosis, and hemorrhagic disease and had received far too little attention. Syphilis and gonorrhea together were responsible for over 50 per cent. of spontaneous abortions and premature interruptions of pregnancy, and in addition for the high infant mortality during the early weeks of life. The evil effects of overfatigue had commonly been disregarded. Freedom from anxiety, particularly during the last six weeks of pregnancy, not only assisted the parturient herself but reacted in a most gratifying manner upon the offspring. The ultimate blame for this high mortality in both mother and child was to be explained by the ignorance or indifference on the part of a large section of the community, in matters concerning parturition; poverty with its perplexing problems; insufficient obstetrical training of the physician; the midwife question, and lack of prenatal care. The remedy lay in publicity without exaggeration, general improvement of social conditions, and in the gradual elimination of the midwife. They should work with this end in view, but in the meantime, an adequate practical plan should be developed in order to offer these poor patients safer medical attention, greater hospital facilities, and more adequate home nursing. National legislation would accomplish much and an ever closer cooperation between milk stations, prenatal clinics, social workers, doctors, and midwives would gradually place the latter in their proper sphere, namely, that of trained obstetrical attendants. The status of the doctor called for serious

consideration. The disheartening conditions to be found among doctors practising obstetrics in this class of the community were due to circumstances brought about partly by faulty training and partly by sociological conditions. If in many instances the doctor was no better than the midwife it was not primarily the doctor's fault, unless he was guilty of criminal negligence. It was a singular fact that so much time was devoted in our medical schools and hospitals to general surgery and so little to practical obstetrics, when the latter would be needed in a far greater degree. It was also strange that so few of our fine general hospitals were willing to receive confinement cases. They seemed to regard obstetrical cases as more or less of a nuisance, and did not appreciate the importance to the community of the proper care of these patients. Every woman should find it possible to obtain regular, systematic, prenatal care during the greater part of her pregnancy and should be urged to seek this guidance and to seek it early in pregnancy. The best solution of the question of the care of maternity cases in their homes might prove to be some form of industrial insurance, such as was being carried out, for example, at the present time by the Metropolitan Life Insurance Company.

Accidents and Diseases of the Early Weeks.—Dr. L. E. LaFétra read this paper in which he said that injury of the infant was the result of prolonged labor, especially dry labor, difficult forceps extraction, abnormal presentations, and difficult extraction of the aftercoming head. Injury also resulted from compression of the umbilical cord, particularly when the cord was tight around the neck. Forceps were less a cause of injury than failure to use them early in case of difficult labor. The essayist then discussed injuries under three groups, those affecting the head, the neck, and the extremities. In discussing injuries of the head, he pointed out that cephalhematoma might be distinguished from fracture by its limitation to the separate cranial bones and by the fact that the floor of the swelling was on the same level with the rest of the skull. Fracture of the cranial bones was not frequent, was practically always depressed, and was frequently accompanied by signs of intracranial hemorrhage. The elevation of the depressed bone could be accomplished most successfully by the strong hook devised by Dr. Kosmak. The serious injuries to the head were those which resulted in intracranial hemorrhage either meningeal or cerebral. The loss of the sucking reflex was the most important sign of serious brain lesion. Absence of pulsation in the fontanelle was commonly present. Localization of the site of the hemorrhage was often not possible, but when it could be localized immediate operation was indicated. The commonest result after recovery from brain hemorrhage was spastic paralysis of one side of the body or of both extremities. When more than two extremities were involved there was always mental impairment. In discussing injuries to the neck, Dr. La Fétra said that ruptures of the cords of the brachial plexus occurred when pressure or traction was put upon the neck with the head rotated. This resulted in brachial paralysis with flaccid shoulder and inverted hand hanging limp at the side. Dr. Alfred Taylor had secured good results from operating on some of these bad cases. The essayist then called attention to the congenital defects to which the newborn infant was subject, such as congenital heart disease, congenital hypertrophic stenosis of the pylorus, spina bifida, cleft palate and hare lip, club foot, chondrodystrophy and Mongolism. Constitutional disease was shown specially by syphilis, but also by sclerema and general debility. Among the acquired diseases the most important in the early days of life were the acute infections, including gonococcus, opthalmia, and vaginitis, the former of which would be entirely prevented if physicians were as careful about instilling nitrate of silver as all midwifes were required by law to be on penalty of losing their licenses. Erysipelas was not frequent, but was peculiarly fatal in young babies. Tetanus was formidable, but less so since the antitoxin was used intraspinously. Sepsis in infants might be caused by a great variety of germs; the infant might be born septic or might become infected through aspiration of infected liquor amnii. The umbilical cord was the most frequent port of entry for sepsis, and next in frequency was the skin. Sepsis in the newborn occurred in many forms; some cases ran their course without symptoms or with only a little fever; others showed signs of suppurative pylophlebitis, acute gastrointestinal disease, or of pneumonia, especially bronchopneumonia. Other patients showed the symptoms of meningitis, and still others were cases of hemorrhagic disease with or without a combination of the meningeal, pulmonary, or intestinal symptoms. Occasionally sepsis affected the joints, bones, or the tissues near the joints. In the treatment of sepsis prophylactic measures were the best. The most promising treatment was either transfusion or the injection of normal blood or serum. In order to better emphasize the clinical significance of some of the injuries and diseases already mentioned, Dr. LaFétra discussed more fully certain symptoms, namely, cyanosis, convulsions, hemorrhage, and vomiting. He stated that convulsions and cyanosis occurred in many of the same conditions. They might arise from intracranial hemorrhage, due to birth injuries or to sepsis, it being difficult to separate the two causes, but in the cases due to sepsis the symptoms came on several days or weeks after birth instead of at once. Both hemorrhagic disease and hemophilia were now treated by the injection of human blood or blood serum, obtained from some member of the patient's family, or if this was not available, diphtheria antitoxin had been very satisfactorily used in many cases. The use of the whole blood was more convenient and could be employed with less loss of time, according to the suggestion of Dr. Oscar M. Schloss, who used from 10 to 30 c.c. every four to eight hours as long as the hemorrhage continued. He had not had any bad results. Dr. LaFétra said he had had excellent results in several cases at Bellevue Hospital, not only of hemorrhagic disease but of general debility and sepsis, with the use of blood or blood serum. The modern treatment of hemorrhages when due to syphilis was the injection of salvarsan or neosalvarsan intravenously together with the use of inunctions of mercury combined with the injection of blood or blood serum. Many a life was now saved by these procedures which formerly would surely have been lost. In considering the significance of vomiting, the writer said that occasional vomiting was met with in all infants whether they were nursed or bottle fed, but there was a type of vomiting which was persistent and not controlled by any simple measure. He then described the projectile vomiting characteristic of pyloric stenosis, and stated that the important signs in the diagnosis of this condition were projectile vomiting without evidences of indigestion, visible peristalsis, and palpable pylorus. In addition to these symptoms, obstinate constipation and the finding of food remains in the stomach several hours after feeding were important. The *x*-ray after the bismuth meal might show the stenosis beautifully. Since at the onset it was impossible to distinguish between hypertrophy combined with spasm of the pylorus and spasm alone, the aim of conservative treatment must be to prevent all irritation of the pyloric end of the stomach by food remains or acid products of gastric digestion. In addition to dietetic measures, treatment should be directed to removing acid mucus, to rendering the pylorus less sensitive, and to relaxing whatever spasm was present. Dr. La Fétra said his personal experience with pyloric stenosis comprised eighteen cases. These could be divided into two groups: First, those in which the spasm was the prominent feature, and, second, those that had spasm and hypertrophy in which the hypertrophy either was or became the most prominent feature. Of the cases with spasm alone, or spasm with some hypertrophy, there were ten; all of these except one recovered without operation. In two of these cases operation was advised by other consultants because of the marked peristaltic waves, and the hard spool representing the pylorus. Five years had elapsed with one of these patients and four with the other, and the children were in perfect health. The patient that died had severe spasm with marked peristaltic waves, but no tumor and necropsy showed a normal pylorus. Of the cases in which the hypertrophy was the prominent feature, seven were operated upon and six died; the other patient died while the surgeon was deciding whether the case needed operation. In the writer's opinion operation was absolutely indicated as offering the only hope of recovery in all cases in which hypertrophy was the prominent feature. The most important indications for operation were progressive loss in weight together with the absence of food residue in the stools. The after care of operated cases was extremely important, careful feeding, extreme quiet and the employment of the Murphy Drip being of extreme importance.

Observations on Conditions in the Newborn, with Special Reference to the Comparative Value in Methods of Treating the Umbilical Stump.—Dr. John O. Polak of Brooklyn read this paper. He said that to be ac-

cepted as satisfactory any method of treating the navel cord must show improved morbidity records on the following points: (1) The temperature of the child during the desiccation period; (2) the degree of icterus and the time of its disappearance; (3) the day on which the slough separates; (4) the condition of the stump after separation; (5) the frequency with which hernia followed, and, finally, the influence which the particular method had upon the body weight of the fetus. At the Long Island College Hospital, during the past five years he and his associates, Dr. Beck and Dr. Hefter, had given four methods a trial and had kept careful records of their results. In their first series they cut the cord at a distance of seven or eight centimeters from the umbilicus, tied it near its distal end and then turned the cord over and tied it a second time, proximal to the first ligature, with the ends of the one placed at the distal end. The loop of the cord thus made, after being wrapped in gauze soaked in alcohol, was laid over the left side of the infant's abdomen, and a bellyband sewed on. Later they had employed the single ligature of the cord. After stripping the cord of Wharton's jelly, a ligature of narrow tape was applied at a distance of two and one-half centimeters from the navel. The sterile dressing was applied as in the first series. Later they had employed a method suggested by Dr. Dickinson which consisted in clamping the cord at birth and wrapping it in sterile gauze until the obstetrician had cared for the mother. Then donning fresh gloves the operator made an incision through the amniotic covering at the skin margin. The vessels were then isolated and ligated with iodized catgut. The cord was then cut away distal to the ligature, the vessels allowed to retract, and the skin margin closed with sutures. A sterile dressing completed the operation, after which the binder was sewn on. This method was ideal as a surgical procedure, but opened up too many possibilities to trust to an interne for its performance. Since last June Dr. Polak said they had modified this method in the following way: The cord was clamped at birth, and with forceps attached and wrapped in sterile gauze, the child was put aside while the mother was cared for. Then with sterile gloved hands the cord was stripped of its jelly, and a fine nosed Kelly clamp was placed on the cord at the amniotic junction, after first being assured of the absence of any navel cord hernia. This clamp compressed the cord, expressed the Wharton's jelly from the area to be ligated and gently crushed the vessels. When the forceps were removed an iodized catgut ligature was firmly tied in the crease thus made and the cord cut away with a knife just distal to the ligated vessels. The sterile dressing and binder were applied as in the previous methods. This dressing was not disturbed until it became soiled, when it was replaced by a similar one. Dr. Polak said the comparative table presented comprised data with reference to 176 cases treated by this new method and 125 treated by the old one. These data showed that the latter method gave as good results as that of Dr. Dickinson. In 176 cases the cord dropped off between the third and fifth day, there was no sloughing mass, or excessive granulations; as compared with 21 cases in the series of 125 by the old method, infection had been absent, icterus markedly diminished, and the regain of the birth weight had been uniformly more rapid than when a large mass of navel string had been allowed to slough. Theoretically there should be fewer hernia as the umbilical opening was not kept patent by a mass of granulating tissue. Since the mouth was another avenue of infection and the epithelium the infant's sole protection against infection we should guard against its injury by the over-diligent nurse who attempted to cleanse the mouth of mucus with a gauze covered finger. The primary inspired mucus might be gotten rid of by inversion of the child, and stroking of the thorax and neck from the abdomen toward the head, or by aspiration with a catheter. For nearly two years they had discarded the practice of washing the baby's mouth before and after nursing, depending wholly upon a sterile nipple to safeguard both mother and child from infection. As a result of this there had been a marked diminution in the occurrence of thrush. In speaking of hemophilia, Dr. Polak said that they had found that the daily examination of the infant's stools by their resident had enabled them to find the first signs of blood, and they felt that not a few babies' lives had been saved by this daily inspection. With the first appearance of blood whole blood from the mother was given subcutaneously into the child, preferably in the region of the back. In severe cases of hemorrhage they had found that a combination of mother's blood, subcutaneously, in 10 c.c. doses, three or four times daily, with transfusion of the infant, injecting the blood through the anterior fontanel into the longitudinal sinus had been life-saving.

Care and Feeding During the First Month.—Dr. GODFREY R. PISEK presented this paper. He said that it would be conceded that the first month in the infant's life was the most important from the standpoint of care and feeding. It was shown by the latest available statistics for the first month of life in Greater New York, that for the first eleven weeks of 1916 the deaths under one month numbered 1,199, against deaths under one year of 2,787; in other words almost 50 per cent. of the deaths occurred in the first month of life. This high mortality could only be lowered by active measures of correction and prevention. Although the attitude of pediatricians had changed considerable during the past five years in the artificial feeding of infants, there was a unanimity of opinion that breast milk was the infant's birthright which it should not be denied. Infants were still removed from the breast by physician or nurse for insufficient reasons, despite the fact that 85 per cent. of all infantile deaths were those artificially fed. The modern mother was usually not ignorant of the advantages of breast feeding and was usually eager to cooperate in preserving the supply. By the addition of one or at most two bottles a day the supply could be kept up and at the the same time allow a period of freedom for the mother. Dr. Pisek said his private case book showed that 30 per cent. of the babies received their mother's milk only; 48.8 per cent. were on the bottle and breast, and 22.5 per cent. were receiving the bottle exclusively. While these figures might vary somewhat in different localities, they showed that breast feeding was on the increase among those who had been accused of shirking their responsibilities. It was a mistake to remove the baby from the breast because milk had not appeared in forty-eight or seventy-two hours after birth, or because there was some vomiting after birth, or because of one hasty or inaccurate examination of the milk, or because the mother or attendants "*think* the breast milk does not agree." Every effort should be made to enable the infant to have the breast alone or at least part breast feeding during the first month of life, for, while the infant might appear to do well for a week or ten days on a formula, its resistance then broke down and its digestion became sadly disturbed and was difficult to correct. Complete emptying of the breasts was the best way of securing a good supply of milk. If artificial milk must be supplied it should not be in the form of rich top milk mixtures, but rather a weak formula, low in fats and proteins, although high in sugar. Only after it was certain that the infant had adapted itself to cow's milk should the strength be increased in the other elements. The healthy new-born infant could be trained to take the breast at four-hour intervals, but this was not the natural interval, the three-hour interval being preferable. In order to determine in questionable cases just how much milk the infant was receiving, it should be weighed before and after nursing throughout one whole day at least. The *x*-ray had shown conclusively that babies could take an amount of milk far in excess of their rated gastric capacity because the milk tended to pass at once into the duodenum. Mixed feeding should not be introduced during the first month if it could be avoided since greater resistance was obtained after a month or two on the breast alone. More than one or two bottles a day were likely to diminish rather than to increase the milk supply, because the breasts would not be thoroughly emptied. If it had been satisfactorily determined that the secretion was constantly deficient, then a bottle feeding should follow each nursing period. If circumstances demanded artificial feeding during the first month of life the physician must recognize the importance of the problem, since one mistake at this precarious period might endanger the life of the infant. The new born infant should not be given such an amount of food as would produce a gain in weight; the caloric requirements were not to be fulfilled until the end of the second week. Boiling the milk during these first weeks was often necessary in order to prevent the formation of tough curds. All were agreed that the cleanest and most wholesome milk obtainable was *the* suitable milk for infant feeding. The treatment of such milk would depend upon the necessity of preserving it, or its modification by a degree of heat which would so alter its properties as to meet the demands of the individual infant. The amount of food allowed would depend on the period selected and should be calculated on a twenty-four hour basis. A baby during its first week would

take ten to twelve ounces daily; in its second and third week from twelve to sixteen ounces; and when a month old twenty ounces. Proprietary foods were often seemingly successful, particularly when of the carbohydrate variety, because of the large amount of dextrimaltose which they contained, or because of their colloidal action on milk, but it should be remembered that giving an infant some sort of food that would be retained and cause a gain in weight was not necessarily good infant feeding. The food must contain enough protein and mineral matter to repair waste and produce new tissue, and enough fats and carbohydrates to supply energy. At no time was it as necessary to inculcate regularity of habits and to abide by the laws of hygiene as in the first month of the baby's life. The obstetrician and the pediatrician must join hands, for on them devolved in a large measure the responsibility of reducing the mortality of the new born.

Remarks on the Occurrence of Syphilis in the Mother.—Dr. J. R. Losee read this paper in which he referred to the many theories on the transmission of syphilis from the parents to the offspring, but said that for the present it was necessary to reason from the history and the clinical findings. There was no definite means by which a parent subject to latent syphilis could be assured that all his children would be born free from any manifestations of the disease. The theory that the spermatic fluid affected the ovum which went on to the development of a fetus, which in turn affected the mother seemed hardly possible. The maternal theory according to which the mother was infected primarily and the fetus secondarily was quite probable and very easy to explain. As most of the still-births from syphilis took place in the latter months of pregnancy, it was fair to assume that the fetus was infected from the mother through the placenta, but whether the placenta could transmit spirochetes without showing pathological evidence of it was an unanswered question. A consideration of the effect of syphilis on the offspring included both the transmission of the infection in its active form, or the transmission of the latent form of the disease. Comparatively few infants born of syphilitic parents went through life without at some time presenting symptoms of the disease. Maternal syphilis had always been considered to play a considerable part in the etiology of abortions, macerated fetuses, premature births, and still births, but it was fair to assume that the same etiological factors were present which had been said to cause abortions in nonspecific women. Intrauterine death of the fetus from the sixth month to term had long been known to be due in most instances to syphilis, and 35 to 40 per cent. of still-born children were due to syphilis. In the past year, of twenty-seven women who were delivered of macerated fetuses at the Lying-In Hospital, nine gave a positive Wassermann reaction. Syphilis had been held responsible many times for the intrapartum death of the infant, but the mechanical conditions which sometimes occurred during delivery and which caused asphyxia would have to be excluded before syphilis could be regarded as the sole etiological factor. Boardman said that two-thirds of all syphilitic children were born about the eighth month; at the Lying-In Hospital in a series of 106 mothers with positive Wassermann reactions, there were thirty-one living babies delivered at term; this might appear a rather large proportion of syphilitic children to reach term, but some of the mothers had received antiluetic treatment during the last three months of gestation. Only about 28 per cent, of the children born syphilitic survived the first year. The Wassermann reaction was valuable in making a diagnosis in doubtful cases, and a four plus reaction meant but one thing. There had been many negative reactions in infants whose syphilitic mothers had received considerable treatment. The spirochetes might be sufficient in number and virulence to produce symptoms in the infant and at the same time not produce enough anti-bodies in the blood serum of the mother to give a positive Wassermann reaction. Judging from the Wassermann reaction, syphilis had little or no part in the etiology of fetal anomalies. At the Lying-In Hospital, during the past two years the sera of 2,049 patients were examined, and sixty-four, or 3.05 per cent. gave a positive Wassermann reaction. This gave one a fair conception of the extent of the disease among women at the child-bearing age in the lower east side of the city. The result of the antiluetic treatment of pregnant women, estimated by the number of children born with or without symptoms, depended on the amount of treatment the patient received during pregnancy. It was believed that salvarsan could be given in moderate doses at intervals of a few days, without danger to the fetus and without inciting premature labor, but large doses were dangerous. There was considerable difference of opinion as to whether salvarsan given intravenously to the mother was transmitted to the fetus. Of ten cases treated during pregnancy, five received arsenic and mercury from the second month to term; three gave birth to living babies without symptoms and with a negative Wassermann reaction; one who was in the active secondary stage throughout her pregnancy was delivered of a living baby without symptoms, but with a positive Wassermann, and one was delivered of a macerated fetus at seven months. Of the five cases which received treatment from the seventh month to term, five living babies were delivered and three gave positive Wassermann reactions.

Dr. Henry Koplik said that in a large metropolitan city like New York it was astonishing how little was done for the new-born infant in the maternity hospitals, especially in view of the vast sums of money that had been put into these institutions and the fact that no facility had been omitted that would contribute to the care of the mother; yet very secondary care was given the infant. He had seen a considerable number of infants in one small room tucked against the side of the wall in structures something like waste baskets. He had also seen ten or twelve babies cared for by a single nurse who was expected to care for all the wants of all these infants. Fully 30 per cent. of the infants below three months of age died during the first month of life, so that it was highly important to give attention to the infants in these hospitals. There was little excuse for sepsis in a modern hospital, yet Dr. Koplik said he would blush to tell how many cases of sepis he had seen in these institutions. Again there was little excuse for artificial feeding in a modern hospital. It was painful to see the large number of babies on the bottle. It seemed that if the mother was unable to nurse her baby mother's milk could be obtained from other sources. In many hospitals they still relied upon primitive methods in dealing with hemorrhage and melena. On finding the first traces of blood the first thing to do was not merely to stop the bleeding but to place the child in such a condition of resistance that he might be able to combat other troubles. In addition to more room and better facilities for the care of the new-born in our hospitals, the staffs of maternity hospitals should have special physicians to take charge of the new born and to give these babies the benefits of modern progress in pediatrics. A great deal had been said with reference to prenatal care, but Dr. Koplik said that, in his opinion, not much could be done in this direction unless they could obtain the cooperation of the fathers as well as that of the mothers. The father must appreciate the necessity of these things and more could be done by getting the cooperation of the whole family than by simply trying to care for the mother and the unborn infant alone.

Dr. Edwin B. Cragin said that as obstetrician he would acknowledge that they were under great obligations to the pediatrist, but he would also like to call attention to the fact that if it were not for the skill of the obstetrician the pediatrist would not have so many babies to care for, so that it seemed to him that the pediatrist was also under great obligations to the obstetrician. To judge from the first paper it would seem that the obstetrician was unfit to care for the baby during the first month, but if the obstetrician had eyes and ears and was a keen observer, if he watched the woman carefully through her pregnancy, if he had the opportunity of studying from fifteen to eighteen hundred babies a year, and was any sort of a man, he must learn quite a little about the care and feeding of the new-born infant. If Dr. Koplik had made the rounds of these maternity hospitals he would have found that the babies were given due consideration and he would have found that even the "waste baskets" on the walls had their advantages, since they could be taken off the walls when the beds were to be made or could be separated to avoid infection of one baby from another. The properly trained obstetrician should not be regarded as an incompetent care-taker of a baby during the first month. Many women, much to their regret, could not nurse their babies. At the Sloane Maternity they could not get breast milk enough. Whether because of the nervous strain and high tension of modern life, or whatever the cause, the fact remained that fewer mothers were able to nurse their babies than ten years ago. Breast milk was difficult to buy and what could be bought was usually taken for private patients.

Dr. POLAK spoke of having dispensed with the habit of swabbing babies' mouths. For a number of years they had not allowed the nurses to swab the babies' mouths either in the delivery room or before or after nursing. Less than a month ago the head nurse complained that they were having more cases of thrush than they ought to have and they were now allowing the nurse to cleanse the mouths of the babies with sterile cotton and boric solution once a day at the time of the bath. This was simply an instance of one of the practices which we discard and then go back to later on. The duty of the obstetrical hospital today was to get the mothers early and surround them with every possible care. A Wassermann test should be made in the case of every patient early in the course of pregnancy both for the welfare of the mother and for that of the baby. Moreover it was of great interest to the hospital because a baby apparently healthy at birth might be sent out of the hospital and then given to a foster mother and give that foster mother syphilis; hence the making of a Wassermann test was extremely important. Having followed the woman during her pregnancy, and having seen her safely through the puerperium, it was then their duty to put the mother and baby in touch with the proper welfare agency or pediatrician, so that proper care might be insured after the baby left the institution.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

OBSTETRICS, NORMAL AND OPERATIVE. By GEORGE PEASLEE SHEARS, B.S., M.D. Published by J. B. Lippincott Company, Philadelphia and London. Illustrated. Price, $6.00.

BURDETT'S HOSPITALS AND CHARITIES, 1916. The year book of philanthropy and hospital annual. By SIR HENRY BURDETT, K.C.B., K.C.V.O., twenty-seventh year. Published by the Scientific Press, Ltd., 28 and 29 Southampton St., Strand, W. C. Price $2.00.

TEXT-BOOK OF PHYSICS AND CHEMISTRY FOR NURSES. By A. R. BLISS, JR., Ph.G., Ph.C., A.M., Phm.D., M.D., and A. H. OLIVE, A.B., A.M., PhC., Phm.D. Published by J. B. Lippincott Co., Philadelphia and London 49 illustrations. 239 pages. Price, $1.50 net.

SURGICAL AND GYNAECOLOGICAL NURSING. By EDWARD MASON PARKER, M.D., F.A.C.S., and SCOTT DUDLEY BRECKINRIDGE, M.D., F.A.C.S. Published by J. B. Lippincott Co., Philadelphia and London, with 134 illustrations in text. 425 pages. Price, $2.50 net.

METROPOLITAN WATER AND SEWERAGE BOARD. Fifteenth annual report for the year 1915. Published by Wright & Potter Printing Co., State Printers, 32 Derne St., Boston, 1916. Public Document No. 57. 224 pages.

HOSPITAL LABORATORY METHODS FOR STUDENTS, TECHNICIANS AND CLINICIANS. By FRANK A. MCJUNKIN, A.M., M.D. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. One colored plate and ninety-three illustrations in text. 139 pages. Price, $1.25 net.

CATARRHAL AND SUPPURATIVE DISEASES OF THE ACCESSORY SINUSES OF THE NOSE. By ROSS HALL SKILLERN, M.D. Published by J. B. Lippincott Co., Philadelphia and London. Second edition, thoroughly revised, with 287 illustrations. 417 pages.

THE CLINICS OF JOHN B. MURPHY, M.D., AT MERCY HOSPITAL, CHICAGO. Edited by J. G. SKILLERN, JR., M.D., of Philadelphia. Published bi-monthly by W. B. Saunders Co., Philadelphia and London. June, 1916. Vol. 5, No. 3. Illustrated. 549 pages. Price, $8.00 per year; foreign, 35 shillings.

STUDIES FROM ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints Vol. XXIII. Published by the Rockefeller Institute for Medical Research. New York, 1916. Illustrated. 506 pages.

SKIN CANCER. By HENRY H. HAZEN, A.B., M.D. Published by C. V. Mosby Co., St. Louis, 1916. Ninety-seven text illustrations and one colored frontispiece. 251 pages. Price, $4.00

THE DREAM PROBLEM. By Dr. A. MAEDER, Zurich. Published by Nervous and Mental Disease Publishing Company, New York. Price, 80 cents.

Miscellany.

The New York State Hospital Commission, in conjunction with the State Charities Aid Association, has recently established a mental clinic in the out-patient department of the Williamsburg Hospital, Brooklyn, under the charge of Dr. E. M. Somers, superintendent of the Long Island State Hospital, and Dr. W. A. Macy, superintendent of the Kings Park State Hospital. There are now three mental clinics in Brooklyn, the others being at the Long Island College Hospital and the Long Island State Hospital, and at all of these free advice and treatment with respect to incipient mental conditions are given with the hope of preventing complete mental breakdown in the patients coming to the clinic. After care among the insane is also a feature at these clinics and social workers are employed.

Infantile Scurvy and Pasteurized Milk.—In the discussion of a paper by Dr. Funk on "Vitamines, a New Factor in Nutrition," at the Academy of Medicine, Dr. L. Emmett Holt expressed the opinion that infantile scurvy was undoubtedly on the increase in this city and that the increase was due to the exclusive use of pasteurized milk in the artificial feeding of infants. That this conclusion is probably correct is indicated by the interesting clinical observation reported by Dr. Alfred Hess at the same meeting. Hess found that a mild grade of scurvy developed in a group of infants artificially fed on pasteurized milk and barley water, while a control group, to whose diet orange juice was added, but who otherwise received the same milk modifications as the first group, remained entirely free from scurvy.

Among the infants in the first group the scorbutic symptoms promptly disappeared on the administration of orange juice.

Most of the cases of infantile scurvy now being encountered are of a milk type; so mild, in fact, that many of them escape recognition even at the hands of experienced physicians. On the other hand, the dangers of milk-borne disease are real, and constantly carry with them a grave menace to life through tuberculosis, typhoid fever, septic sore throat and other infectious diseases. In contrast to this we have a mild grade of scurvy which can readily be prevented or cured by the addition of a little orange juice to the diet. Furthermore, a safe raw milk (guaranteed or certified) is available for those cases in which pasteurized milk even with the addition of ample antiscorbutics does not meet the requirements. Such cases must be extremely rare.

Instructions have been given by the Department of Health to the physicians and nurses in charge of its milk stations and of the baby welfare work in the homes to be on the alert for any of the early signs of scurvy and to insist upon the use of orange juice or other suitable antiscorbutics when babies are exclusively bottle-fed on pasteurized milk. While the Department of Health has no intention, therefore, of altering its policy with regard to pasteurization, physicians may rest assured that it likewise does not contemplate or look with favor upon any administration of milk control in any community which eliminates the privilege of securing a safe high-grade raw milk for those whose lives may depend upon its use.—*Weekly Bulletin of the New York City Department of Health.*

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Original Articles.

SEBORRHOIC DERMATITIS.

By WILLIAM P. CUNNINGHAM, A.M., M.D.,

NEW YORK.

ATTENDING DERMATOLOGIST TO THE MISERICORDIA HOSPITAL.

In my student days we had a ridiculous bit of doggerel which ran about like this: "All I know is Syphilis and Eczema; and I can't tell which from which; except by the fact that Eczema itches and Syphilis does not itch." In our boastful contempt for the science of dermatology we would chant this shameful confession of puerile immaturity and stupid self-sufficiency. We didn't give a straw for dermatology and we gloried in our ignorance. What enthusiast for humanity would waste any of his valuable time in pursuit of such an ignoble object as the relief of itching? There were many loftier ambitions in medicine than that! There were the grave diseases that threatened life to be mastered; there was the magnificent art of surgery beckoning to our mounting souls! Fudge for pimples and pruritus! With a steadfastness worthy of our high ideals we clung to our haughty aloofness and graduated in disdainful darkness on the whole distasteful topic. This most of us retained in our day of early dreaming of the dazzling of the world; and in that later day of disillusionment when during the grind of an active practice we discovered the need but lacked the time to repair our blunder. We soon found that the big things were in the hands of a few men, that the common run of human ills were ours to alleviate. We many times found acne staring us in the face. We were many times embarrassed by our inability to relieve the itch of a patient whose esteem meant much to us. We realized too late that there is an imposing number of complaints disturbing the pride and comfort of the patient that must be attended to as zealously as the graver abnormalities that jeopardize existence. Where itch "hath murdered sleep" the application is obvious. But even the demands of vanity have frequently a substantial basis of economic importance. Socially girls with acne are badly handicapped. They may be overlooked in the matrimonial quest. They are not sought after in business. They often lose excellent opportunities for material and professional advancement. Men, too, with their reputed contempt for the lighter conceits of life are sometimes seriously hampered by the presence of disfiguring eruptions. Aside from their unsightliness, they are needlessly mistaken for contagious conditions and their victims are cruelly avoided. It is superfluous to state that itching dermatoses do not enhance the winning ways of business or social intimates. The person who is given to scratching is looked upon with disapproval and distrust. Such a person will soon face the alternative of quitting the practice or quitting his job. Driven by the double incentive of seeking relief and saving his occupation he will demand instant results at the hands of the doctor. And if the doctor is one of those high-minded scientists with a contemptuous disregard for the little things of life he will find himself facing the alternative of losing a profitable patient or condescending to investigate what he had heretofore despised. In short, he is jolted into his senses by the discovery that, to the patient, this persistent irritation is one of the big things of life: that it is just as essential to his health and happiness to cure him as it is to operate for appendicitis on an enlarged thyroid. The present ill is the biggest ill to the exasperated sufferer and he will not hesitate to assert that he would sooner have a serious condition and be done with it than be an object of suspicion and dislike. Opportunities are seldom vouchsafed the busy practitioner to retrieve his deficiences, and it is almost certain that unless he happens to hit upon the proper treatment by a lucky chance, he will be chagrined by the defection of his patient into other and probably no worthier hands.

The blame for this costly lack of practical knowledge rests squarely upon the shoulders of the faculties of our medical colleges. Students on graduating have some acquaintance with the eye, ear, throat, nose, rectum and generative apparatus, and are capable of delivering at least a glancing blow at the diseases appertaining thereto. But in the matter of the skin their ignorance is proportionate to the apathy of their instructors. Both are the victims of an error of mental refraction whereby the perception of relative values is badly obscured. And yet this defectively equipped practitioner, unless all his time is taken with the demands of his business (when it is obvious he will not feel his lack), may with a little attention learn many useful lessons as it were on the wing, which will serve him profitably on occasion. Familiarity with certain common forms of skin disease is readily acquired and cannot fail to prove a valuable asset. For example, the subject of this paper if properly grasped, will furnish the means of deciphering many otherwise inexplicable conditions.

Seborrhoic dermatitis is frequent. It occurs at all ages. It has well-marked characteristics which are usually in evidence. It has no mysterious internal causation. Its origin is local. It begins upon the scalp. Thence it descends by the scattering of the scales to contiguous and even remote localities. The chief distinguishing feature of a typical case is a greasy scaliness. There is a dermatitis accompanied by an increased flow of the natural cutaneous lubricant—the sebum. This partly dries and thus forms scales or crusts that are unctuous

to the touch. At times the dermatitis predominates and the drying is more complete and the scales are finer and crisper. Beginning as it always does upon the scalp it first produces an annoying oiliness which resists stubbornly all our efforts at control. Soon the hair begins to fall. Later there is an alteration in the exudation and it loses its pronounced greasy character and forms a fine bran-like scale popularly known as dandruff. And still the hair continues to fall. This is the threatening condition for which assistance is oftenest sought. The grease may be combated finally by persistent washings, and the dandruff may be zealously brushed away, but the thinning of the hair excites the gravest apprehension among men as well as women, and they frantically demand its inhibition. This is not prompted solely by vanity but by the dread of the effect of the signs of age upon business opportunities. It is usually maintained that with the advent of maturity depart the vim and push of youth. It is a curious commentary upon the sinuosity of human intellection that the very men who entertain that opinion would be shocked at its application to themselves. In passing it may not be amiss to reflect that the weakness that we contemn under the name of vanity may be in reality only another phase of that struggle for existence, and for the supremacy of the fittest that is so relentless among us. The woman paints her face to extort observation and admiration. She seeks the glances of the male. Behind this is more than the childish desire for approval. She is following the world-old impulse of her sex to attract a mate and protector. We concede that she is mistaken in her method, but there is no gainsaying the motive.

The cause of the falling hair is the situation of the disease in the sebaceous glands and the hair follicles. The sebaceous glands open in the neck of the follicles and the hair is destroyed by the inflammatory action and by the alteration in the quantity and consistency of the sebum. It is swamped or choked accordingly as the exudate is profuse and oily or scanty and dry. The follicle is wrecked by the disturbance within it. The struggle is to a finish and the follicle does not "come back." The thinning of the hair is most pronounced upon the vertex, but may be pretty even all over the scalp, especially in women. Some itching is usually associated with the disease; occasionally a great deal. This is the reason for the evocation of that ridiculous hybrid known as "seborrhoic eczema." It may be as well to lay the monster here as elsewhere. There is no such entity as "seborrhoic eczema." Admitting or denying the oneness of eczema with dermatitis there is no question that the disease we are considering is a plain unequivocal dermatitis with a hypersecretion of sebum. It lacks vesiculation and this distinguishes it from that other variety of dermatitis that we designate "eczema." From the scalp the process may extend upon the forehead, behind the ears into the eyebrows and over the face. In these various situations its appearance may be typical, namely, that of reddened patches covered with greasy scales or an intertriginous character may be acquired behind the ears or a dry scaly character upon the cheeks. The skin about the angles of the nose and mouth may present a patchy look with a yellowish tinge and a slight furfuraceous scaling. There is no vesicular oozing. There is very little infiltration. Itching may be moderate. It is rarely troublesome. Circles and loops of various sizes are sometimes noted. Again, in an acute exacerbation the whole countenance may be involved in one red and scaling mask. But there is always the element of greasiness and the absence of vesiculation and thickening. Corroboration may be found in the scalp. Extension may take place to the neck either in patches or by continuity.

On the body the disease is set up by the scales that drop from the scalp, or are carried down by the hands or the drawing of the undershirt over the head. It has a predilection for the sternum axillæ, umbilicus, groins, and interscapular region. In extensive cases it may be almost universal except for the palms and soles. These two localities are never affected. The disease upon the body may be exactly like that upon the head, or owing to the friction of the clothing and opposing surfaces and the retained heat of the covered skin it may present decided variations. Usually the patches are a yellowish red. Often the yellow is only suggested, not actually discernible; a distinction that the French express by the word "nuance." The patches are round, oval, or irregular, but always with a well-defined margin. Scaliness is usual and variable. On the parts exposed to pressure, such as the axilla, the scales may be removed by maceration, on other parts they may be removed by the friction of the clothing; and then we have only the reddened patches clearly outlined, slightly thickened if at all, but free from evidences of vesiculation. Some of the aberrant cases assume fantastic forms, circinate, gyrate, and geographical. If upon examining a patient you find reddish or yellowish lesions in the indicated situations, whether scaly or bare, large or small, and you also find a pityriasis capitis, with or without a thinning thatch, it is reasonably certain that you have to do with seborrhoic dermatitis. "Reasonably certain" is an etymological incoherence because certainty is certainty and there are no degrees thereof. But this mode of expression will be condoned when it is explained that it is employed to convey the idea that convincing as clinical appearances may be there is yet an element of uncertainty in the diagnosis. Unfortunately some phenomena of seborrhoic dermatitis so closely simulate some phenomena of psoriasis that the distinction is often a matter of opinion. These are called border line cases both by the men who believe in their identity and by those who do not. There are authorities who maintain that psoriasis is a dry form of seborrhoic dermatitis and that seborrhoic dermatitis is a greasy form of psoriasis. Others assert that a true psoriasis develops upon the lesions of the simulating malady. A real pathological transmutation has occurred. There are still others and probably the large majority who stoutly insist that the two are entirely distinct even when apparently identical. There have been cases where the doubt has been resolved only by the recurrence of psoriasis in an utterly unmistakable form. The prognosis is entirely different in the two diseases and it is imperative, aside from the academic interest, to get the diagnosis right. You can assure the victim of seborrhoic dermatitis that his disease is curable. To the psoriatic, you can hold out no such hope. Psoriasis will recur with certainty at the change of the seasons, and at periods of mental depression and physical unfitness. The best that can be looked for is the repulse of the attack within a reasonable time after its appearance and the restriction of it to regions that can be con-

cealed. This may be accomplished by arsenic chrysarobin and ammoniated mercury, aided and abetted by a proper modification of diet. Not only in the interest of the patient but in the interest of the physician the distinction between these two conflicting conditions should be clearly drawn because it would be humiliating in the extreme to make a prediction quickly proven to be erroneous. The obstinacy of psoriasis, its persistent recurrences, and its selection of sites avoided by seborrhoic dermatitis will definitely establish the distinction. Psoriasis favors the extensor surfaces of the limbs. The elbows and knees are rarely exempt. The eruption may be scanty and the individual lesions no larger than pin heads, yet these four locations are nearly always involved. It is a diagnostic point of the greatest significance and should be steadily borne in mind. With a sealing eruption so situated psoriasis may be proclaimed and defended with the utmost confidence. On the trunk it is apparently distributed without much choice of locality. It is somewhat rarer in the areas favored by seborrhoic dermatitis, namely, the groins axillæ and umbilicus. It is very rare upon the face. But we should not overlook its occasional appearance in these unusual situations, especially when it involves a great deal of the cutaneous surface. As a general proposition it may be avouched that seborrhoic dermatitis is thicker in the middle line of the chest and back and thins out towards the flanks. Psoriasis reverses this order of progression. It is thicker on the flanks and thins out towards the middle line. This peculiar distribution of seborrhoic dermatitis is accounted for by the method of its communication from the head to the trunk. The scales naturally fall more in the middle line. The contrary course on the part of psoriasis admits of no explanation whatsoever. The character of the scale is offered as a differential point between the two diseases. That of psoriasis is dry and pearly. That of seborrhoic dermatitis is greasy. Even in the so-called seborrhea sicca the scale on being rubbed between the fingers reveals its oily composition. In the border line cases recently mentioned the drying of the scale may have been so complete as to defeat this means of comparison. Another method of demonstrating the significance of the scale is to scratch it with the finger nail. If it peels off without revealing a bleeding point it is not psoriasis. If it does reveal a bleeding point it is psoriasis. The one element of uncertainty in this proceeding is the circumstance that any scaly lesion will bleed if you scratch it hard enough. And unconsciously in our effort to sustain our preconception, we will cheat by a little extra pressure. So this means of differentiation is not to be too confidently relied upon. On the scalp the two conditions are especially liable to be confounded because unless the seborrhoic feature is strongly emphasized, the findings are remarkably alike. The hair if thick conceals the conformation of the psoriasis patches, so that nothing but a more or less dense scaliness is discernible. In seborrhoic dermatitis, however, there will sooner or later be noticeable thinning of the hair. This does not occur in psoriasis. Itching is present in seborrhoic dermatitis and is rather unusual in psoriasis. Considering that the eruption of psoriasis upon the scalp is frequently the thicker and denser of the two, it is curious that itching is absent and that the hair does not fall. The explanation of the hair loss in seborrhoic dermatitis lies undoubtedly in the relation between the seborrhoic gland and the neck of the hair follicle. The gland opens into the neck of the follicle. Involved in the inflammatory process at its very root the hair is choked to death. The pressure of the denser psoriasis patch should, in the very nature of things, be heavier and if that factor alone were sufficient to destroy the hair, baldness would be a constant consequence. A simile might be found in the heavy mantle of snow that does no damage to the underlying vegetation and the cloudless frost that penetrates to the heart of the struggling root and nips its life out. It is true that seborrhoic dermatitis is observable at every period of life, but it is naturally commoner after the fuller development of the sebaceous glands at puberty. Many cases occur in children. It has been seen in a most aggravated form in a child three weeks old; its head entirely bald and a well-defined crusted eruption at the nape of the neck, under the nose, on the chin, behind the ears, in the axillæ, in the groins on the scrotum, and covering the buttocks and back of the legs clear down to the heels. Another case was observed in a child of seven, where the scalp was covered with a heavy crust of the color of sulphur. The eyebrows and ears were slightly affected. A diagnosis of "regular eczema" was sought to be established because owing to the activity of the dermatitis there was a little oozing. An inspection of the body, however, revealed a typical seborrhoic dermatitis. It has been shown that much of the infantile eczema is of this character, especially when it involves the umbilical and genital regions.

The differentiation has sometimes to be made between this condition and orbicular eczema. Orbicular eczema is a circular or oval patch, arising abruptly from the surrounding skin, presenting when frequent many of the features of vesicular eczema, but clearly of so distinct an individuality that its proper classification has yet to be determined. When chronic these patches become scaly and then the resemblance to seborrhoic dermatitis is quite marked. The distinction rests upon the minor degree of infiltration and itching and the contemporaneous involvement of the scalp, in the seborrhoic manifestation. Sometimes it rests upon the reputation of the eminent man who makes it.

Ringworm of the face or body has been confused with the circinate eruption of seborrhoic dermatitis. Ringworm shows more pronounced central clearing with a decidedly elevated edge, studded with vesicles and pustules. It would be rare indeed for seborrhoic dermatitis to be limited to a single lesion whereas that is the rule in ringworm. Where multiple ringworm invades the face or body of an adult the confusion may be troublesome for a time. Close scrutiny will relieve it. Ringworm of the crotch, absurdly designated "eczema marginatum," is occasionally a source of perplexity because it occupies one of the classical situations of seborrhoic dermatitis. A sharply defined and distinctly elevated border, with central clearing or at any rate central paling, indicates the disassociation. A scraping examined under the microscope will be conclusive.

Pityriasis rosea has been paradiagnosed seborrhoic dermatitis and *vice versa*. Parenthetically it may be explained that a "paradiagnosis" is a nearly correct incorrect diagnosis. Etymologically constructed on the order of "paraphrase," "parallel," "paraclete," and "paratyphoid," it suggests something resembling something else. It is a diagnosis that just misses its aim. It is a "para" or "near"

diagnosis. It bids fair to be a handy word saving the frequent employment of a phrase.

To come back to pityriasis rosea; if its peculiarities are distinctly recalled, a correct opinion can always be pronounced. The outline of typical pityriasis rosea would roughly conform to that of a bay leaf. Its tint is pinkish or pale red with a hint of yellow. The surface is slightly scaly. It has been compared to cigarette paper because of the delicate crinkling it displays. A peculiarity often noticed is the curling up of the epidermis into a little cuff between the pinkish periphery and the fawn-colored central portion. You may support your diagnosis against any amount of adverse argument if you discover that sufficing sign. Even in cases that have been badly treated and in which the original color and outline have become obscured, you may by diligent search be able to find the little cuff and establish the diagnosis. Frankly, pityriasis rosea is a trivial affection, noteworthy only because of its euphonious title, its persistence under misdirected treatment and the doubt it creates in the mind of the apprehensive patient. The treatment for seborrhoic dermatitis will not touch it so it is important to make the differentiation.

Intertrigo is a dermatosis that appears in localities favored by seborrhoic dermatitis; the axillæ, the groins, the mammary folds, and the retroauricular cleft. Circumscribed, inflammation thus confined is immediately attributed to the friction of the parts and the case is regarded as etiologically disposed of. Aside from the fact that in undoubted intertrigo something more is involved than mere heat and friction (else intertrigo would be universal); it is curious that it is frequently counterfeited by seborrhoic dermatitis. Much of the accepted infantile eczema about the genitals is seborrhoic. In tissues folded on themselves maceration is certain to complicate any eruption. Hence the two conditions bear a strong likeness to each other. But in the seborrhoic condition will be found outlying spots where there is no overlapping adjustment, and these establish the correct diagnosis.

The ordinary, commonplace "eczemas" offer evidence of present or preceding vesiculation and infiltration, and pruritus is obtrusive as a rule. "By these signs ye shall know them." But one variety of "eczema"—the erythematous—wherein vesiculation is so slight that it is entirely hypodermic, and discernible only to the marvelous vision of the expert dermatologist, may be and in point of fact frequently is mistaken for seborrhoic dermatitis, or *vice versa*. This confusion is commoner on the face than on the trunk and limbs, for on the face the scales of seborrhoic dermatitis are apt to be drier and less unctuous owing to the action of the air and frequent ablutions. It is also disposed in patches unless it happens to be very extensive.

It favors the eyebrows, the angles of the nose and mouth, and the retroauricular space. It is always associated with pityriasis capitis. Lupus erythematosus is frequently overlooked under the impression that we have to do with seborrhoic dermatitis. At a certain stage of the graver condition the resemblance is striking. One of the older titles of lupus erythematosus based on its alleged etiology, was seborrhea congestiva. If the older pathologists believed that one led to the other the distinction must oftentimes be extremely difficult. The lupus give the evidence of deeper invasion, its scales are scanty and very adherent, and—a sign that settles the question beyond all peradventure—there is atrophy demonstrable here and there throughout the lesion. Lupus erythematosus is regarded to-day by many acute observers as a tuberculide. *That* is a disease produced by the toxins of the bacilli and not by the bacilli themselves. Its prognosis is vastly different from that of seborrhoic dermatitis. Be especially circumspect in expressing an opinion about lesions on the scalp and on the helix and in the concha of the ear. Both diseases affect these regions. Make a careful search for atrophic areas before coming to a conclusion.

The causation of seborrhoic dermatitis is sub judice. There are those who believe they know and those who admit they do not. Sabouraud offers his microbacillus. Unna offers his morococcus. Others postulate a nervous origin. Stelwagon lays stress upon constitutional causes as predisposing, but declares that the essential pathogenic factor must be considered parasitic. In point of fact, nothing is settled upon the question of etiology. The parasitic origin is supported by the fact that the eruption is scaly, begins on the scalp, has a tendency to take the circinate form and is controlled by parasiticides.

Transmission by autoinoculation lends additional plausibility to this view. But even the most earnest advocates thereof qualify their opinion by urging attention to systemic conditions on the ground that vulnerability to the parasite is increased by lowered vitality from any cause whatsoever.

Before leaving this topic it may not be unfruitful to repeat the declaration of Sebouraud that acne and acne rosacea are consequences of seborrhea and that they will never be cured until the latter is controlled. This is introduced for what it is worth.

Seborrhoic dermatitis is quite amenable to treatment except upon the scalp, where it is difficult to make effective applications on account of the hair. On the body ointments of sulphur, resorcin or ammoniated mercury, singly or in combination, are usually successful. Our results upon the body are in sharp contrast to those upon the scalp. This is the more regrettable because it is the ravages in the later situation that are costly and disfiguring. On the non-hairy surface the lesions may be hidden unless the face is involved. And even in the latter contingency prompt response to treatment may be anticipated. But upon the scalp the disease presents two exasperating features. It destroys the hair and stubbornly resists the efforts made to cure it. The destruction of the hair is disconcerting to both man and woman, for reasons that are perfectly obvious. The woman foresees the loss of her attractiveness; the man foresees the aspersion of waning efficiency. The former has methods of concealing the depletion; the latter rears his glistening pate in impotent despair. He is the subject of stupid raillery upon the traditional but undoubtedly apochryphal fondness of baldheaded men for advanced positions at spectacular theatrical performances. What association there can possibly be between waning hair and waxing sensuality has never been explained. It is probably nothing but a wicked invention of the professional humorist. These considerations are weighty enough to stimulate the doctor to earnest cooperation with the apprenhensive patient for the preservation of his locks. What are the best means of accomplishing this laudable purpose? As the mill will never grind again with the water that has passed, so the scalp will never bloom again with the hair that has departed. Once it has fallen out, under the blight of seborrhea, we may

bid it a fond farewell. Much may be done, however, to stay the devastation and tenderly nurture that which is left. On the scalp lotions are preferable to salves, because of the aversion to greasy heads in most civilized assemblages. It is fair to admit that the results leave much to be desired. Factors responsible for this are the complicity of accumulating years in the attenuating process; and the disinclination of the average patient to make an uphill fight in the face of trivial encouragement. But persistence will win here as in any other field of human endeavor, if it is intelligently guided. Lotions should be applied with a medicine dropper directly to the scalp and rubbed in gently but steadily for about fifteen minutes. Energetic action will precipitate the falling of those hairs already loosened by the disease. Washing the head should be restricted to the demands of decency. It should not be undertaken under the delusion of assisting the cure, for water is decidedly objectionable, unless properly medicated. On these rare occasions a good brand of tar soap should be used. The lotion most in vogue is composed of resorcin 10 per cent. in alcohol and water. Glycerin may be added if the hair is dry. The proportions of alcohol and water may be varied to suit individual requirements. If the resorcin proves unsatisfactory bichloride of mercury may be substituted in the same menstruum. One grain to the ounce will be a fair average strength. If another essay is demanded a 1 per cent. solution of lysol is helpful. It has the disadvantage of being malodorous. This may be mitigated by oil of bergamot. If lysol prove offensive or inefficacious betanaphthol 2 per cent. in alcohol and water is worth a reasonable trial. Some cases will not yield to lotions and in order to stay the falling hair recourse must be had to the ointment of ammoniated mercury 5 per cent. It will not be prudent to exceed that proportion. It is to be applied only at night, and the hair may be wiped off with a towel in the morning.

The changes may be rung on the remedies, and sulphur may be cautiously combined. But this sums up the profitable procedures in any case of seborrhea. In these days of bold experimentation the *x*-ray was certain to be turned upon the scalp for the relief of this alarming denudation. It may be affirmed in all fairness that it offers no better prospects than the chemical applications; if it is used with discretion and restraint. If pushed beyond the bounds of prudence it will cause a complete alopecia, which may or may not be permanent, and which may be followed perhaps after a lapse of several years by all the disfigurement and hazard of an *x*-ray burn. It is "better to bear those ills we have than fly to others that we know not of."

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Preeclamptic Toxemia.—J. O. Arnold states that this condition should be treated as promptly and actively as eclampsia itself; that morphine in sufficient quantity is the safest and most effective agent for temporarily controlling convulsions; that vivisection, early and freely, is the quickest and best means for securing elimination and reducing blood pressure; that the high degree of acidosis in eclampsia calls for alkali-salt solution to replace the toxic blood withdrawn; that in practically all cases, after controlling the convulsions, the second step in treatment is to empty the uterus. By prëeclampsia the author means impending eclampsia, the case seen at the time of the first convulsion.—*Therapeutic Gazette.*

IS INFANT MORTALITY AN INDEX TO SOCIAL WELFARE? SCANDINAVIA'S REPLY.

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Sir Arthur Newsholme, the eminent English statistician, says that infant mortality is the most sensitive index we possess of social welfare. And then he adds: "If babies were well born and well cared for, their mortality would be negligible. The infant death-rate measures the intelligence, health, and right living of fathers and mothers, the standards of morality and sanitation of communities and governments, the efficiency of physicians, nurses, health officers, and educators."—Bulletin of the Chicago School of Sanitary Instruction.

This quotation, though of recent date, applies not only to the unenlightened families of the twentieth century, but to the most highly educated classes of past ages. Being well-born and well-cared-for are relative terms, and if we to-day who are well-born can use our brains and our funds in caring for the ignorant the time may come when all babies will have as good a chance to live as seems to fall to the lot of the babies of the educated classes at present.[1] Two hundred years ago the babies even of the nobility in Europe were seldom well-born or well-cared for. Queen Anne of England who died in 1714 at the age of sixty-nine, bore fourteen children, only one of whom lived more than a few hours or weeks, and the one survivor, upon whom the fate of the nation seemed to hang, died before he was eleven years old. That the early deaths of these royal infants was an index of the lack of general intelligence of that age is shown in the general debased state of morals and religion. The recorded conversation at social functions ran upon preserving the English Constitution, but not at all on saving the constitution of babies, although one-sixth of all English infants died of sepsis, and half of the rest died of what we now class as preventable diseases. This high mortality was common to all enlightened countries even fifty years ago, but gradually it has been lowered until now, in the United States, only 15 per cent. of the babies die in their first year, a decrease which seems commendable when we find that, though we are eighteenth in a list of the infant mortality of different countries, Italy has a rate of 16 per cent., Germany 19, Austria 22 and Russia 26. But why should we be content before we have reduced our death rate to that of Sweden in the first rank, with its infant mortality of only 7½ per cent.?

This question leads us to look into our municipal housekeeping, where, as Sherman H. Kingsley has shown, the weakest spot is continually marked by the presence of the little white hearse, the most sensitive index to the enlightenment of any community being its infant mortality. Or, as Holt has pointed out, it is not the unfit, but the unfortunate; baby that dies, and this baby who was born in the midst of poverty or unenlightenment dies or grows up sickly in its home, or perishes sooner in a foundling asylum. These early deaths in any case, then, are the index to our poor economies in municipal housekeeping.

That the death rate of infants in foundling asylums is enormous may be seen from statistics quoted by Dr. Philip Van Ingen, who finds that the rate in New York State's foundling homes is 422 to the thousand, while the death rate of the babies in the

slums of New York City is hardly more than one-fifth of that number. That the deaths in these foundling homes are mostly unnecessary is seen by comparison with the death rate of foundlings in Sweden, which is only 4 per cent., but we shall see that there are good reasons for this difference. Sweden has not only hospitals for sick babies, but small boarding homes for well babies, and large asylums for mothers with their babies. By such methods New York City has cut down its infant deaths 17 per cent. in the past five years, that is, by boarding 44 per cent. of its foundling babies in small homes where each individual may have a mother's attention, under the supervision of doctors and nurses. For caring for marasmic babies the foster mothers receive $15 a month, and for healthy babies $10. In this way, Dr. Josephine Baker tells me, the infant mortality was cut in half, at an expense to the public treasury of 69 cents a day; whereas the foundling asylums were formerly allowed from $1 to $2.29 cents a day for each infant, graft not eliminated, and funerals to be paid for.[2] In Stockholm, however, the cost of running the homes for mothers and babies is very much less than in New York, the amount spent for food for each mother, per diem, being only 14 cents, and, as the mothers nurse their own babies and help do the work of the home while learning the principles of infant hygiene, there is little need for doctors and nurses.

That sick children may have to be cared for in large institutions rather than in boarding homes, no one will deny. Therefore hospitals for tubercular babies and for syphilitics must be maintained in every country until these diseases are wiped out. We have perhaps not realized the necessity for the isolation of syphilitics as well as the tubercular, but recent statistics as to the number of syphilitic women in our institutions are startling. It is stated that of the pregnant women awaiting confinement at Bellevue, 25 per cent. gave positive Wassermann reactions. Dr. Jessie Fisher finds 22 per cent. positive reactions among the patients, men and women, at the Connecticut Hospital for the Insane. Dr. Edith R. Spalding finds 44 per cent. of the women syphilitic at the Massachusetts Reformatory for Women. Dr. Louise McIlroy of Glasgow finds 49 per cent. of positive Wassermanns in her out-patient clinic. But notwithstanding these figures, and the fact that every civilized country has realized that patients with tuberculosis and syphilis should be segregated, there must have been carelessness in the matter even in Germany and America to account for a part, at least, of their excessive infant mortality. In Sweden and Norway, on the other hand, where the May Flower Society has been active for many years in segregating only the tubercular children, under the care of deaconnesses and doctors, the infant mortality has been reduced 50 per cent. at one-half the cost of such institutions in our country.

Not only has New York City discovered that Scandinavia has chosen the better way, both financial and sociological, to conserve the babies, but other American cities are trying the same plans. Boston, for instance, has recently proved that visiting nurses and milk stations afford a very inexpensive means of lowering the death rate of babies, which was 134 to 1,000 births in 1910, as compared with 99.5 in 1914, a decrease of 25 per cent., with an average of 1,132 babies saved every year. In Boston, moreover, where 20,000 babies are born in a year, fully one-half need assistance, and nearly 2,000 die.

If, as Prof. Irving Fisher has shown, a baby's life is valued at $1,700, this saving to Boston in dollars and cents pays an enormous interest on the salary of its nurses and the up-keep of its milk stations, but the money, however, is as nothing in comparison with the unlimited value to the public of the educational teachings of these nurses in the homes of the badly-born and unenlightened. Boston now has third place in the list of first-class cities in the United States in respect to its infant mortality, while Philadelphia is sixth, and in the summer of 1914 Boston lost only 99.5 babies in the 1,000, while New York lost 117.

If, then, Boston's infant mortality has been reduced so much by visiting nurses, there is reason to suppose that it can be further reduced by a radical change in the institutional care of infants, as well as by new methods of caring for the poor in the maternity hospitals, and by a better control of midwives. If this is true of Boston, it is as true of all our cities. One of our best obstetricians has said that there are only a few good lying-in hospitals in the United States. Another teaches his students that every pregnant woman is in a pathological condition, and should be treated in a surgical hospital. There is evident truth in each of these statements, but without new hospitals, and even with midwives, Scandinavia has far excelled us in the saving of infants.

It is probable that the average intelligence of Scandinavian midwives is far superior to that of most of our midwives, who come mainly from the countries of eastern and southern Europe, where their training has been far inferior to the hospital training of the Scandinavians. It is said that 40 per cent. of the children among our foreign population are born under the care of midwives, whose only qualifications are that they can read and write in their own language, and that they have seen six confinement cases. In England, and France, and Germany, where for military reasons a failing birth rate and increasing infant mortality mean national disaster,[3] midwives are being carefully trained and supervised, for in these countries women have for centuries been considered the natural obstetricians. By this method alone they have lowered their mortality one-third, and if we in the United States should thus deal with our midwife problem, and by so doing lower our infant mortality one-third, we should take third rank instead of fifteenth, and if, in addition, we should give premiums to mothers who nursed their babies for two months before returning to work, as Germany has done, we might further reduce our infant mortality by one-half, and thus take our place beside Sweden in the first rank of baby-savers for, naturally, proper homing of little children would be a part of these other reforms.[4]

While paying attention to reducing our infant mortality, we should also inquire into the causes of the premature births and of the deaths of the babies who die before they have more than gasped a few times. It has been found at the Sloane Maternity Hospital that 58 per cent. of the deaths at term are from congenital weakness and atelectasis, 3 per cent. die from injuries during labor, and 4 per cent. are caused by congenital syphilis, besides another 4½ per cent. born dead probably because of syphilis. This last disease claims its toll in Scandinavia as well as in America, but with the exception of tuber-

culosis, alcoholism, and syphilis, there is nothing in Scandinavia to cause cell deterioration in both parents and offspring, or to lessen their homogeneity as a nation and their hardiness as a race. In America we have to combat ignorance, neglect, and concealed poverty. Koplik has found that 60 per cent. of our deaths in earliest infancy are due to these three causes, which do not exist to any extent in Scandinavia, where, by means of governmental supervision of the people and intelligent methods of preventing extreme poverty and neglect, there is less congenital debility, and owing to almost universal breast-feeding fewer cases of digestive disturbances and a much higher average of intelligence. This fact is brought out clearly in the death lists of Scandinavian infants in a Connecticut town where only one baby dies in a year from a population of nearly a thousand Swedes. The Scandinavian infant, therefore, starts with fewer handicaps, and even if its mother gives it away or deserts it later, its digestion has not been impaired by early artificial feeding. When the Swedish government takes care of infants in large or small homes, it continues to feed them on a diet containing at least a little breast milk, and houses them with other perfectly healthy babies, among whom there is little danger of mixed infections. Hence Sweden's 4 per cent. institutional mortality puts to shame our institutional mortality of 40 to 75 per cent.

Moreover, if our unintelligent mothers were not allowed to return to their homes from the maternity hospitals until they had lived for at least two months with their babies in convalescent homes where they could learn how to care for themselves and their babies properly, as is done in a great number of cases in Scandinavia, we should not only lower our infant mortality markedly, but also improve the health of the mothers, and prevent many subsequent gynecological operations. In Stockholm alone, for instance, a city of 350,000 inhabitants, there are between fifteen and twenty coördinated institutions for the care of mothers with their babies under government inspection. In Connecticut, on the other hand, with its population of 1,500,000, there are in all eight county homes for orphans or degenerate children over four years old, small orphanages in the three or four largest cities, two or three small homes for unmarried mothers, a Children's Aid Society, which cares for comparatively few babies in boarding homes, and an inadequate institution for feeble-minded children, none of these institutions being coördinated with the lying-in hospitals. Doubtless one State is like another in these respects, homes and asylums being under government inspectors, who make perennial visits, and report everything as in "a satisfactory condition." Recent graft disclosures in New York, however, throw some light on the high cost of maintaining such institutions. Where it is possible for a physician, not a specialist, to obtain from a New England legislature a grant of money for removing the tonsils and adenoids from every child in an institution for orphans, it would seem possible for many other abuses to be found. Humanitarian motives, doubtless, were the reasons for founding our institutions "for poor, decayed, and impotent persons," but such institutions should be sufficiently modern, and under so enlightened a board of managers that the inmates, young or old, should be fitted in them for life and not for death. In one of our most progressive States, for example, the infant mortality under one year of age was 37 per cent., until the largest cities of that State took the matter in hand. Then, by more careful housing and inspection of homes, together with the coöperation of visiting nurses and milk stations, they cut this rate down to 10 per cent. in their most crowded districts.

But even now the infant mortality in New England is not as low as the average low figure of Norway and Sweden. Perhaps to understand the reasons why this is so we might go more into detail as to the baby-saving methods employed in Scandinavia, beginning with the personal work of Professor Medin, in Stockholm, who revolutionized the teaching of pediatrics in the University Medical School. His foundation was laid upon the precept that no milk was like mother's milk, and as his Swedish mothers were strong they were able to nurse their babies provided they had good food and were not overworked. Then he believed in isolating all sick babies with their mothers, and allowing no children to visit any foundling asylum, because of the danger of infection. He does not believe that tuberculosis of the bovine type is ever the cause of human tuberculosis in babies[5], and he says that he has never seen a case of tubercular infection not of human origin. Before Professor Medin retired from his University work, at the age of sixty-five, he was instrumental in building the Sachs Hospital for Sick Babies. Here his theories for the nourishment and treatment of sick infants from all parts of Sweden are put into practice. The hospital has room for fifty-four babies, four wet-nurses, a resident physician, and the other personnel of such an institution. It is built on a bluff above the fjord, in a most beautiful location, isolated from all other buildings. A mother may live in the hospital with her baby if necessary, or she may visit it during the day to nurse it, according to its needs. The milk of the wet-nurses is squeezed into bowls and kept on ice until needed for some formula. No goat's milk, albumin milk, nor pasteurized milk is used in the formulæ, but cow's milk may be modified with buttermilk, flour, sugar, and human milk, these formulæ being represented graphically, in blocks of color, on a chart at the foot of each bed. There are four wards, each containing eight cribs; there are also eight single rooms provided with double doors and double windows, in order to assure freedom from noise and a constant temperature for premature babies. There is one head-nurse who prepares all the formulæ with the aid of servants, two ward nurses, and fourteen pupil nurses who spend three months at this hospital as part of their general training.

When we consider that in a hospital for infants too ill to remain in any other institution there can be maintained a mortality of only 4 per cent., we are not surprised that in the foundling hospitals the mortality is only 3 per cent. among 300 well infants under two years of age. This is perhaps the more remarkable to us from the fact that these hospitals are not built on a new model, the wards being dormitories where twenty-four babies sleep, or sixteen babies and eight mothers; and yet there is no "congenital debility," and there are no epidemics of measles or other contagious disease, to disturb the routine of the institution. The entire expense of running these homes is 70 cents per capita a day, including the cost of food, at 14 cents, and attendance. Much of the work of the institution is done, naturally, by the mothers who nurse their own babies; whatever extra milk they may have being bottled for other babies, provided the mother is free

from syphilis. After these babies are weaned the mother of any child may relinquish it to the institution by making a cash payment of $200. If a child is adopted into a family the institution has the supervision of it until it is seventeen years old. If it is not adopted it is sent to one of the many boarding homes throughout the country, where from twenty-five to fifty live under healthy conditions, learning, as they grow up, all kinds of housework and market-gardening. In these homes each child costs the institution 50 cents a day. If they live with foster-parents the institution, or the government, pays $30 a year for their keep. It would seem that the Scandinavians had reached the lowest possible figure for the welfare of the foundlings as well as the lowest possible mortality, the death rate in the country "homes" averaging 2.8 per cent., while the death rate in the cities is 7.46 per cent.

If one visits these homes for children one finds them plump and happy. They are satisfied with a simple diet of, for example, cereal and milk for breakfast, fish soup or meat stew with bread and butter, fruit or a simple dessert for dinner, and rice cooked with prunes for supper. They sleep in one dormitory without an open window, but with doors open into the matron's or deaconness' room. In Norway many of the children in these institutions are from homes where one or both of the parents have tuberculosis. In a home of this type in Bergen, on a hillside above the fjord, there were thirty-five boys and girls between eight months and eleven years of age, six being from one family, the mother of whom was dying of phthisis. The mortality of such children is 8 per cent, but they are sent to hospitals or sanitariums as soon as they begin to show signs of any disease.

It might be asked if these statistics of the infant mortality in Scandinavia were carefully computed, or if the deaths at birth, or the still-births had been registered. This question has been answered by Professor Johannessen[6] of Christiania who has shown that while it cannot be proved that every illegitimate birth is recorded, it is probable that very few escape the vigilance of the authorities, so that while the deaths among the illegitimate are twice as high as among the legitimate, even this figure is less than half the corresponding rate in Berlin. In Norway, as everywhere, the death rate among the well-to-do is much lower than among the poor, rising to 9 per cent. among the poor, 12 per cent. among the very poor, and 19 per cent. among the illegitimate. That there are a great many unmarried mothers in Scandinavia can not be doubted, for they are found in every country where there is a standing army of underpaid and underworked men. The condition is so ordinary that in one of the largest art-museums in Norway there is an enormous painting entitled, "A young mother kills her illegitimate baby in a cow shed." The museum paid a large price for the picture, critics hung it in a prominent place, and crowds of visitors gaze at it as a work of art, without apparent horror or sympathy.[7]

Most of the illegitimate babies are born in the maternity hospitals, many of which are modern and thoroughly practical. The patients enter the hospital in labor, are bathed in shower baths, examined, put to bed in the delivery room, and delivered by midwives or by obstetricians. After a few hours' rest they are taken into a ward, and the following day the baby is baptized in the presence of its father, if possible; it receives its father's name, and frequently a wedding follows this simple ceremony, the mother going to his home after two weeks. If, however, the father can not be induced to marry the mother of his child it is baptized with his name, and the mother takes it to one of the many convalescent homes for a few months, where she partly supports herself by working as laundress, or by sewing. The government allows only about $10 a year for the support of the woman, the rest she must earn.

In a country like that where mothers nurse their babies, milk stations are not so necessary as diet kitchens and school dinners, such as are provided in all the cities of Scandinavia; for it is recognized that if a mother is to nurse her baby she must have nourishing food, and if a child is to grow strong and robust it must have a well-proportioned diet. In the villages, on the other hand, the problems are more serious. The government, while receiving little revenue from many of its isolated communities, is obliged to provide doctors and midwives for the inhabitants, as well as schools and churches, and employment for women whereby they may earn money during the long winters. In northern Sweden there is one State-paid midwife to every 6,046 persons. Her salary is 300 kronor a year (about $84), plus two kronor for each new baby. In the more populated places in the south of Sweden there is one midwife to every 3,274 persons, at twice the salary. In Norway the doctors and midwives in the country undergo great hardships during the long winters, for the distances between farms or settlements are great, and travel by water or around the mountains is slow and cold. Were it not for the hardiness of the inhabitants of the seashore and dark valleys the mortality would be very great, for it is difficult to obtain medical help in emergencies. But where human beings are aggregated together for warmth, like sheep, in closely shut cottages, tuberculosis thrives. Hence the need for the philanthropic May Flower Society, and its intelligent care of the pretubercular cases, as well as of those who have the disease.

In speaking of Scandinavia one is apt to overlook the little country of Denmark, once the most powerful nation of the group. Until recently this country has treated its problems after the manner of Germany, and its infant mortality from cholera infantum has been high. Professor Hirschsprung of the University in Copenhagen, was however famous as a teacher and writer on pediatrics. He reduced the infant mortality 50 per cent. during his working years, but he could not obtain the low figures of Sweden because his government was not awake to its responsibility in the matter, and the farmers preferred to export all of their dairy products, while the mothers were obliged to work hard on the farm and eat poor rations. Where mother's milk and cow's milk were lacking, and where cholera infantum was endemic, the difficulties in saving the babies were great. A tea made from blueberries, and a soup made by boiling bread in beer, could not remedy an original loss of digestive function in a child. Hence the wonder is that Denmark's infant mortality was as low as 15 per cent. when that of Germany was 19 per cent. Now, however, Copenhagen has a great new hospital with an up-to-date pavilion for children, as well as pavilions for all the other departments of a university hospital and medical school. Under Professor Bloch the students are obliged to take a course in pediatrics, and to work out percentage and caloric formulæ. The city has

its milk-stations, and its cottage homes for foundlings, so that one easily understands why its infant mortality has now dropped to 10 per cent.

There are several inferences to be drawn from the preceding brief accounts of the factors concerned in lowering the infant mortality in Scandinavia, one being the evident superiority of the institutions in those northern countries over many of the American institutions. When one visits the hospitals or clinics in the large cities one is impressed with the greatness of their surgeons and doctors, and with the team work of the faculties as a whole. Many of these men have international reputations, among whom we might mention Rovsing and Hirschsprung, of Denmark, Johannessen and Strumm, of Christiania, John Berg and Oskar Medin, of Stockholm, each of whom gives, or has given, his best hours to the university or hospital, and to the public what remained of strength and enthusiasm. Evidently, then, a paternal government and a high rate of taxation, by means of which the rich are compelled to care for the poor, have been succesful in improving the health of the Scandinavian people. It is, moreover, evident that neither the size of the hospital nor the number of beds in a ward, nor midwives, nor maternity hospitals, nor pasteurized milk, have been the cause of the low infant mortality; but the lessons for Americans are essentially the following. We must have intelligent, healthy mothers with breast milk for their babies. We must train our midwives to care for the poor in their homes. We need better teaching in pediatrics and obstetrics in our medical schools. And we should build more sanitary small homes for our foundling infants, or see that those who are boarded in families are cared for properly. When we shall have achieved these reforms we shall find our economic conditions improved, and with lessened expense we shall have a much lower infant mortality.

Besides these lessons for the saving of infants, Scandinavia teaches one the necessity of more rational methods of administering charity as well as laws. Where a government supervises the building of homes for workmen it prescribes the rate of interest which may be taken from the rent of such homes, and keeps the prices of dwellings within the reach of the laborers. The parks and the waterfronts of the Scandinavian cities are kept clean and attractive for the good of the people as a whole. Doctors and hospitals are provided for the poor, as well as school teachers and priests. Women of the higher classes are appointed inspectors of the poorer districts, and these inspectors are in reality friendly visitors who give advice and alms when they find it necessary. Deaconesses, many of whom are trained nurses, go about among the poor, caring for the sick and infirm as they do in this country, but their charges for nursing are within the means of all but the poorest, for there are State pensions waiting for them in their old age, and comfortable homes provided by the government. Their nursing is more of a mission than a means of livelihood. Moreover, the public schools are possibly the greatest part of this entire system, for there not only is the mind of each child developed to its particular capacity, but from its teeth to its feet the child is cared for; its physical needs are satisfied by food which it learns how to prepare, and its body trained by gymnastics. Children study harder, play better, obey more promptly, and eat much more simple food than American children. For these reasons the health of school children is more uniform than it is here, and their death rate is half that in the United States.

It must be admitted that there is a great deal of insanity in Scandinavia, and a deplorable amount of tuberculosis, but, apparently, neither the infant birth-rate nor the mortality is influenced by these diseases, for the men and women in general are healthy, and their out-of-door life keeps them strong. And yet, ten years ago the infant mortality was double what it now is, although the adults were seemingly as robust then as now. The net result, therefore, of this survey of the causes of a low infant mortality in Scandinavia points once again to the quotation with which this article was begun, and which, in two words, means "health education."

REFERENCES.

1. Dr. Rowland G. Freeman says he believes that the mortality of well-cared-for babies is scarcely more than one-half of one per cent. Not one baby in one hundred and twenty consecutive cases in his private practice died during the first year. Moreover, he finds that a group of children from intelligent parents grow heavier and taller than similar groups of institutional children who are well cared for but not well born. (*Am. Jour. of Diseases of Children*, November, 1914.)

2. This fact is brought out by Prof. K. Stolte, of Berlin, who believes that the treatment of a baby must be individualized and that someone must act as its mother, playing with it and sometimes even nursing it before its time if it seems hungry. This is surely a scientific heresy, although emanating from a German. (*Jahrbuch für Kinderheilkunde*, Berlin, 1914.)

3. In 1914, in England and Wales the number of births was 23,000 less than the average of the five preceding years. In Berlin there were 3,500 fewer births in 1914 than in 1913, and 1,600 more infant deaths. In fact, in 1914 Germany's infant death rate was higher than that of any other country of Europe except Russia. These facts are given by Dr. Alice Hamilton in the *Survey*, January, 1916.

4. It has been found in Germany, that during August only forty-two breast-fed babies die, as against 260 bottle-fed babies. Miss Lathrop of the Children's Bureau recently verified these figures by an investigation at Johnstown, Pa., and found that among the poorer working people who did not nurse their babies the infant mortality was five times greater than among the well-to-do who nursed their babies.

5. Other excellent authorities estimate that 25 per cent. of all tuberculous children under five years old suffer from infection of bovine origin; and that bovine tuberculosis causes from 6 to 10 per cent. of the deaths from tuberculosis in children of this age. (McCleve, T. C., *Cal. State Medical Journal*, January, 1914.)

6. See articles by Prof. Dr. Alex. Johannessen, Christiania, 1902 and 1908: Dϕdeligheden i Norge af Bϕrn under 1 Aar. Also, De Forskjellige Dϕdsaarsagers Indflydelse paa Spaedbarnsdϕdeligheden i Norge.

7. In Norway, Johannessen states, the greatest death rate is at birth; 223 in 10,000 dying from congenital debility. Of the remaining deaths digestive diseases head the list, causing three times as many deaths among city babies as among those in the country. If convulsions and teething, as causes of death on the certificates, are counted among digestive disorders, the rate of deaths is raised to 3.4 per cent. in Christiania, as against 2.4 per cent. in the country. The number of cases of digestive diseases drops one-half after the first year, while contagious diseases double. Pneumonia is third on the list of causes of deaths, infectious diseases fourth, and tuberculosis fifth.

Carcinoma of the Colon; Its Early Recognition and Removal.—Rowlands states that in complete obstruction one of the following steps should be adopted: 1. Colostomy above the obstruction and well away from it. 2. Short-circuiting, such as ileocolostomy. 3. Resection with drainage after Paul's method. If the obstruction is incomplete the bowel must be emptied and the patient carefully dieted for a week before the operation of resection is attempted.—*Guy's Hospital Gazette.*

THE PHYSICIAN AND PSYCHOTHERAPY

By SMITH ELY JELLIFFE, M.D., Ph.D.,

NEW YORK.

Dr. X———:

Dear Sir—The fact that you are one of the translators of ——— has led me to address this letter to you.

My husband suffered a complete nervous collapse in July, 1909. He was pronounced a victim of neurasthenia by local physicians, which opinion was confirmed later by Dr. Y——— of B——— Hospital for the Insane. The patient took medicine under direction of Dr. Y——— for two years. Rest and change of scene have greatly improved but have failed to cure. He is possessed by worry, indecision, nervousness, etc. I desire to find a physician who uses psychoanalysis in the treatment of nerves. Our local physicians seem either afraid or ignorant of that method, and I have failed utterly in gaining any help in looking up the proper person to consult. My means are limited, but nevertheless I am prepared to make great sacrifices for sake of treatment.

Will you recommend someone that uses this treatment? Our need is very great, and that is my only excuse for asking this favor from a stranger.

Thanking you in advance for the courtesy of a reply, I am,

Yours truly,

Mrs. A.

"Is there no balm in Gilead? Why, then, is not the health of the daughter of my people recovered?"

The culture wrested from the centuries which have intervened since this cry went up from an ancient prophet of mankind has brought us much of advantage. Science has put into our hands countless tools by which we can further comfort and health. We should be masters of the art and practice of complete health. And still the cry is heard. "The wise men are ashamed, they are dismayed and taken. . . . They have healed the hurt of the daughter of my people slightly, saying, Peace, peace; when there is no peace."

It is not the stirring of sentiment to bring back this ancient outcry against the failure of those in high places to minister to the profoundest human needs. Our physicians occupy to-day this exalted station, and still an incessant and increasing call for help falls vainly upon our ears. It is not desire and purpose to help that are wanting. It is, nevertheless, lack of sympathy in the truest sense of the word, sympathy which is understanding. The physician has compassion in that the sufferings are too often likewise his own, but the deeper understanding which could bring relief is somehow not his. Perhaps a little research will reveal some of the causes for this darkening of our understanding, and therefore our failure just where the need is most pressing.

What is the reality of this human cry in its modern form? No prophet stands upon the mountain top to voice the burden of a suffering people. The complaint, however, is no less insistent. Its force is the noiseless current, often, of the soul weighted by its own inner conflict or of the helpless witness of such an unspoken conflict in a cherished relative or friend. To one of the many who have tried to understand this fundamental situation as the cause of the most grievous and widespread ills of modern life there come repeatedly such letters as that which stimulated this short paper.

A wife writes for advice in choosing medical assistance for her husband. He has been a nervous wreck for a number of years. He has seen twenty doctors and more. Medicine was prescribed for him for two years, the result of which the letter does not mention. It however goes on to say that "rest, change of scene have greatly improved but have failed to cure. He is possessed by the worry, indecision, etc., of nervousness." The same familiar story. The profound burden of these words falls only upon those who have borne it themselves, or upon those whose vision has been directed by psychoanalysis and clarified by the courage of self-analysis to penetrate beneath the surface of the conscious life into the immeasurable territory of the unconscious, where the deeper life of man is hidden, and where the mighty racial forces which have made civilization, and those that would hinder it for the sake of primary individual freedom, strive in titanic conflict. The stifled cry, checked by the impulses we call pride, humility, self-distrust, regard for our fellow men, reveals only in partial glimpses the existing struggle.

The letter here referred to represents the condition of many. The world about us is full of this sort of resigned, hopeless struggle, or of determined but futile efforts to rid oneself of such unsocial, unproductive forms of behavior, or again of those who have found a false refuge even more useless and vain and pitiable. The entire strength of science, of new thought, and of the thousand and one cults, lies in the fact that the regular profession is too busy with things material to interest itself in the mental or spiritual life of the multitudes.

Is it not high time that we awaken to the meaning of such phenomena? That we look about us to see if there is any way by which we can understand their intrinsic, their actual meaning, in order to find and utilize the remedy? Physicians have not been wholly idle nor indifferent. Yet ignorance and lack of understanding have led to an apparent indifference, to a condition of mental slothfulness and moral cowardice which was expressed very recently by one physician, who said, half humorously, wholly seriously: "Oh, I never have anything to do with neurotics. I send them out at once." Others have manifested the helplessness that paralyzes even sincere effort to relieve suffering, and have prescribed rest, travel, amusement, aimless occupation, all the accessories of therapy which fail because they ignorantly condemn a patient to palliative measures which only perhaps condemn the sufferer to a little further attempt to repress an irrepressible conflict, while in reality the secret struggle accompanies him on his journeys, thrusts itself upon all this occupation, stalks like an unwelcome, ghostly guest at every festive scene, making a mockery of the measures prescribed by the physician or urged by solicitous friends. Too often, also, enormous expense is incurred, and prolonged in the fruitless efforts of escape, and the very hopelessness of cure is even notoriously capitalized. The intense reality of the individual struggle recognizes all too clearly the ineffectualness of such means. They palliate the "hurt" and cover it "slightly," but such measures have too long cried "Peace, peace, when there is no peace."

There is one, and only one, way to remedy this state of affairs. That way is to set to work to understand why men and women and children are suffering from nervous and mental disturbances and the tremendous significance of these maladies in regard to their cause and as to what must be done about it.

This, it will be said, is what physicians have tried to do. But they have not succeeded in the unraveling of the psychoneurosis of which all hu-

manity has a trace. Freud, however, through careful experimental work, and with a sublime courage, discovered a method of penetrating the deeper and vaster portion of a man's life than that with which we are accustomed to reckon, a territory hardly suspected, and surely not understood. There lie all the forces of the past which have made the race and the individual, and these forces are still active, still striving for mastery the one over the other. The recognition of this is more revolutionary than appears at first thought. The comprehension of the fact demands further profound consideration of the widely diverse character of these forces and their antagonism and incompatibility. This necessitates a knowledge and understanding of biological evolution and of anthropology in order to know the instinctive forces in their intrinsic nature and the gradually advancing modes of expression through spiritualization or sublimation of the same. Only thus can we realize why they are factors to-day in the normal outflow of energy, or for the blocking of that energy which causes maladaptation to social requirements and the concealed internal struggle, which breaks forth to consciousness in the disguise of all sorts of painful or unproductive symbolic symptoms.

The courageous investigations of Freud and his followers into this darkened portion of man's nature disclosed this immeasurable stream of energy or libido, a force that cannot be abated, only diverted, dammed, and introverted through the inertia which is a psychological feature of infantile and primitive feeling, which produces and fosters the overwhelming desire to return to infantile and primitive conditions and modes of reaction which reality sternly forbids. Hence the strong repression of this antisocial attitude and those lawless individual tendencies which mark it; hence, also, the failure of repression, the yielding to the infantile pull which occasions the conflict, or the complete yielding which shuts the individual away into a thoroughly unsocial world of his own.

Is it the self-knowledge which this theory of psychoanalysis involves which makes it so difficult of acceptance? For, of course, it precludes a distinction in kind between the mental life of the sick and the well. Only a difference of degree of adjustment to reality and of freedom from infantile dominion exists. Therefore, our acceptance of the theory demands an acknowledgment of inacceptable impulses existing within each one of us in all their primitive and infantile egotistic force. It demands, also, that we search out and understand these impulses, and see whether they master us or are our servants. They court disguise, so that this involves a thoughtful psychological attitude and unwearied searching into all the history of mankind in order to discover his modes of expression and the means of disguise universally employed; to discover, also, the mistakes into which the infantile mode of thought and action have led man away from the pathway of achievement and advance, as well as his victory over the inertia and self-seeking which has brought the race onward.

All this is necessary equipment with which to approach the problem of individual mental and nervous disease. For the individual repeats the history of the race. A knowledge of one acquaints us with the real nature of the other, and gives the only means of intelligently and effectively handling the complex entanglements into which the fundamental struggle of impulses, rendered keener and more insistent by the increasing demands for repression which follow advancing culture, has plunged vast numbers of our population.

It may be said that other means than psychoanalysis are just as good. Let us grant this, and use those means, if they exist. If there are other methods of thought and of therapy which have the courage and the indefatigable industry to penetrate the unconscious realm, the harboring place of all the mysteries and terrors of mankind, and to recognize this unconsciousness as the heritage of every one, the physician, as well as the patient before him, by all means let us use them.

These possibilities determine the opportunity and the responsibility of the physician toward psychoanalysis. It is the most effective tool yet fashioned with which to discover the psychic needs of mankind and to meet them. Therefore, we cannot pass it by in indifference or fear. It is in its use that it may be rightly valued, as well as perfected where it is incomplete. It grants much to those who employ it carefully and conscientiously in knowledge, understanding, genuine sympathy, and one's own increasing self-control and effectiveness. Its demands are even greater. It lays upon the physician the responsibility of reaching the distraught mind in its suffering and incapacity for life, of restoring such a mind by patient, unremitting effort, a slow process when dealing with the delicate intricacies of the human psyche, to a new confidence in itself in independence and freedom from infantile forces. It makes him the conductor of the new-born soul into a freedom which is racially productive and creative. He must bear in mind that he works hand in hand with the patient, who learns the first principles of independence by sharing in the labor of the analysis. Together they have discovered the undiminished energy, the immortal libido, and learned to free it from its bonds. Their last and greatest task is then to direct this libido into progressive, constructive paths, to set it flowing free, satisfied, and in harmony with any demands reality may make upon it, because pouring outward. Introversion brought no satisfaction. The libido finds at last what it sought there in vain. It expresses now its true nature, in which alone it can really live, for to it belongs "the glory to go on and to be."

Psychoanalysis, however far it may in itself need completion and perfection, opens up limitless possibilities and opportunities, because it deals with human life as it sweeps back into the past, as it extends in breadth and intensity into the future, and because it considers it not merely as a whole, but in relation to individual complexities and individual relationships and adjustments to the whole, and to individual share in the racial task. Beware, then, lest we pass by on the other side. Let not our "wise men be ashamed, dismayed and taken," and cry "Peace, peace, when there is no peace."

64 West Fifty-sixth Street.

Obstetrical Anesthesia and Analgesia.—Frisbie concludes that in scopolamine, morphine, or narcotics we have a valuable method of relieving a very painful stage of labor if used with necessary care; that the dosage advocated by most authorities is higher than is needed to secure a sufficient degree of analgesia (most mothers do not demand complete relief from pain); that its safety and value may be greatly increased by combinations with other anesthetics such as nitrous oxide during the secondary stage or chloroform and ether in the perineal stage.—*New Mexico Medical Journal.*

MEDICINE AS PRACTISED BY THE CHINESE

By WILLIAM W. CADBURY, M.D.,

CANTON, CHINA.

PHYSICIAN TO THE CANTON CHRISTIAN COLLEGE.

SINCE the opening of the Canton Hospital in 1838, the advance of Western medicine in China has been gradual but continuous. Of recent years the medical profession of the United States has shown considerable interest in the hospitals and medical schools established by missionaries, and this interest has been greatly intensified by the recent announcements of the China Medical Board of the Rockefeller Foundation that it is their intention to assist and carry on the institutions already established at Peking and Shanghai. It is the purpose of the Board to make the schools equal to or even better than any now existing in the United States.

In view of this greater interest of the medical profession of our country, there is doubtless more or less speculation as to what is the status of Chinese Medicine as it has existed and still exists among the people of this vast Empire. The notes here submitted are partly the result of personal observation in the city of Canton, and partly of conversations with a Chinese doctor of the old style. I have also referred largely to the articles noted below under references.

Medicine in China may be considered under two divisions—the purely superstitious, which depends on charms and magic and is largely fostered by the Taoist priests, and the art of medicine as practised by the Chinese doctor. These two phases of treatment of the sick are closely interwoven with one another so that it is sometimes impossible to draw the line between them.

Let us first consider the superstitious practices and beliefs. In the city of Canton may be found temples dedicated to the "Spirit of Medicine," or healing. The ignorant people, especially women, believe that the deity presiding in these temples can restore health upon the payment of small sums of money to the priest and the performance of certain rites.

Chinese medicine like philosophy rests on a dualistic basis. At the bottom of all the laws of the universe are two principles, the "yang" and the "yin." They are generally represented by a circle divided into two parts, each of which is a comma shaped object resembling a serpent. One is white and the other black, or one is green and the other red. The circle represents the great absolute and the two divisions within it the "yang" and the "yin." Again the "yang" or male element or force is represented by straight lines, and the "yin" or female element by broken lines. Thus the pantagram was devised by a Chinese Emperor about the year 2900 B. C. This is made up of combinations of straight and broken lines surrounding the circle and its two divisions, making a perfect emblem of the balancing of the forces of the universe. Over many a doorway in China this sign is displayed to warn off evil spirits. The principle of duality typified by the "yang" and "yin" is more comprehensive than "male" and "female." They stand for positive and negative, the sun and the moon, light and dark, acid and base, heaven and earth, and they correspond to Ohrmuzd and Ahriman of the Zoroastrians, Osiris and Isis of the Egyptians, the even and the odd of Pythagoras.

The universe with its dual forces is a Macrocosm. Man is the Microcosm. Thus we read that as heaven has its orders of stars, and earth its currents of water, so man has his pulse. As earth has its water courses, called lakes, springs, etc., so man has his courses in the pulse—the three "yang" and the three "yin."

The priests explain these forces of the universe by personifications in the form of evil spirits or devils, and the people are kept in constant fear of these demons of the air which they believe are constantly bent on bringing disease or death. Hence the many superstitious practices resorted to for deceiving or warding off the evil spirits. The priests recite incantations, paper money is burned, and the pantagram is hung over the doorway. The demons are especially fond of marring beautiful children, hence the parents invent disgusting names for their offspring in the hope of misleading these tormentors. Boys are especially liable to injury at the devils' hands. Hence a guest never inquires into the sex of a new-born child, and a boy is often dressed as a girl and called by a female name.

The Chinese physician is quite a different individual from the Taoist priest, although magic and astrology are inextricably bound in with his theories of the human organism.

The first authority on medicine in China was the Emperor Chen Long, who lived about 2737 B. C., and made a classification of some hundred medicinal plants. A later emperor wrote up medical science so far as it had progressed in 2637 B. C. In the earlier ages there was some progress in anatomy, but for the last one thousand years at least, there has been practically no advance. The profound respect for the dead has interfered with dissecting and the performing of autopsies. Again there is no cooperation between doctors and no medical organization. The so-called Imperial Academy of Medicine at Peking has no jurisdiction over physicians in other parts of the country. It is composed of the physicians to the Emperor. They give instruction to the younger members in the medical classics. Generally speaking the practice of medicine is unlicensed. Most doctors receive their library from a father or relative who also imparts the secret remedies on which his reputation was established. During his apprenticeship the young doctor diligently studies the classical books and practices palpation of the pulse. The doctor is called upon only for more serious maladies. For the simpler complaints home remedies and the formulas of old women are used. In times of war the Chinese soldiers attend to their own wounds. Advertisement is quite ethical and the office of a doctor may be recognized by the tablets displayed about the entrance, on which the skill of the physician is testified to in high sounding phrases. These testimonials are usually signed and presented to the doctor by grateful patients. The name of the doctor is of great importance, thus one hears of Dr. "Root-of-Strength," Dr. "Rhubarb" and Dr. "Salts of Hartshorne."

As one would suspect from the absence of dissection and the experimental methods, the Chinese conception of physiology and anatomy is fanciful to the extreme. The body is said to be divided into three parts: (1) the upper or head; (2) the middle or chest; and (3) the lower part or abdomen, and lower extremities. Life depends on the equilibrium of the "yang" and the "yin." It is but one manifestation of the universal life. The

body is the microcosm, the universe the macrocosm. The "yang" is the warm principle, actively flowing. The "yin" is the moist principle passively flowing. As the whole order of the universe results from the perfect equilibrium of these two forces, so the health of man depends upon their equilibrium in the body. If the "yang" or active principle predominates there is excitation; if the "yin" or passive principle predominates, there is depression of the organism. The action of these two forces manifests itself through eleven organs: the heart, liver, lungs, spleen, left kidney, large and small intestines, stomach, gall-bladder, urinary bladder, and right kidney. The lungs are divided into four large and two small lobes. The larynx passes directly into the heart, which is the organ of thought, together with the spleen. The liver has seven distinct divisions. The gall-bladder is the seat of courage. The urine passes directly from the small intestines into the urinary bladder through the ileo-cecal valve. The brain and spinal marrow produce the semen which passes directly into the testicles. There are said to be three hundred and sixty-five bones in the body.

Functionally the viscera are divided into two groups known as the six viscera in which the "yang" resides, and the five viscera in which the "yin" resides. The first group is composed of the gall-bladder, stomach, small intestine, large intestine, bladder, and left kidney, with its three heat centers the three lumbar sympathetic ganglia. The five viscera are the heart, liver, lungs, spleen, and right kidney. The diaphragm is placed beneath the heart and lungs, and covers over the intestines, spine, and stomach. It is an impervious membrane and covers over the foul gases, not allowing them to rise into the heart and lungs. The stomach, spleen and small intestines are the digestive organs. They prepare the blood which is received by the heart and set in motion by the lungs. The liver and gall bladder filter out the various humours. The lungs expel the foul gases. The kidneys filter the blood, while coarser material is evacuated by the large intestines. The "yang" which is of subtle nature has a constant tendency to rise. The "yin" which occupies the brain and vertebral column as well as the five viscera tends to descend.

Each of the organs has a canal whereby it communicates with other organs. Thus the liver, kidney, and spleen are connected with the heart by special vessels and the vas deferens arises from the kidney. Some of these communicating channels end in the hands and some in the feet. One of the vessels in the little finger is used to determine the nature of infantile diseases. Six of these vessels carry the "yang" and six carry the "yin." These two forces are disseminated through the whole organism by means of the gases and the blood. The former act upon the latter as the wind upon the sea. The interaction of these two as they circulate in the vessels produces the pulse. The blood makes a complete circulation of the body about fifty times in twenty-four hours. In these fifty revolutions the blood passes twenty-five times through the male channels or those of the active principle and twenty-five times through the female channels or those of the negative principle. The blood is said to return to its starting place once in every half hour, instead of once in twenty-five seconds, according to modern physiologists, having traversed a course of some fifty-four meters.

Each organ is related to an element: fire rules the heart, metal the lungs, etc. There is likewise a close relationship to the planets, to season, color, and taste. This interrelationship is well illustrated by the following table:—

Organ	Planet	Element	Color	Taste
Stomach	Saturn	Earth	Yellow	Sweet
Liver	Jupiter	Wood	Green	Sour
Heart	Mars	Fire	Red	Bitter
Lungs	Venus	Metal	White	Sharp
Kidney	Mercury	Water	Black	Salt

Auscultation and percussion are wholly unknown as diagnostic aids to the Chinese physician. Entire reliance is placed on palpation of the pulse and the general facies of the patient in making the diagnosis. The taking of the pulse is almost like a solemn rite.

The pulse may be palpated at eleven different points, as follows:—Radial, cubital, temporal, posterior auricular, pedal, posterior tibial, external plantar, precordial, and in three places over the aorta. Usually, however, the physician is satisfied with the palpation of the pulse of the right and left wrist. With the right hand he feels the left pulse and with the left hand the right pulse. He applies three fingers,—the ring, middle, and index finger over the pulse and the thumb underneath the wrist. Then he palpates the pulse with each finger successively. Under the ring finger the pulses of the right hand reveals the condition of the lung, middle of chest, and large intestines, while in the left hand the ring finger determines the state of the heart and the small intestines. The pulse under the middle finger corresponds on the right to the condition of the stomach and spleen, on the left to the state of the liver and the gall-bladder. The index-finger placed over the pulse of the right radial shows the condition of the bladder and the lower portion of the body, over the left radial it reveals the state of the kidneys and ureters. For each of these six pulses the physician must practise weak, moderate, and strong pressure, to determine whether the pulse be superficial, moderate, or deep. This must be done during nine complete inspirations. If the pulse be rapid the "yang" principle is predominant, if slow, the "yin" is predominant. There are twenty-four main varieties of pulse. The Chinese physician must be trained to palpate the pulse so skilfully that by this single means the nature of diseases and even the months of gestation in a pregnant woman may be determined. Ten or more minutes must be spent in the palpation of the pulses.

Sometimes a Chinese physician will consider other factors. For example, it is said that by examination of the tongue thirty-six symptoms may be diagnosed according as the tongue is white, yellow, blue, red, or black, and depending on the extent of the coating. From the general appearance of the face and nose the state of the lungs may be discovered. Examination of the eyes, orbits, and eyebrows shows the condition of the liver. The cheeks and tongue vary with the state of the heart, the end of the nose with the stomach. The ears suggest the conditions of the kidneys; the mouth and lips the state of the spleen and stomach. The color and figure of the patient also count in a diagnosis.

Diseases are spoken of as internal and external. External cases are those apparent on the surface, such as all skin affectations, tumors growing on the surface and of late all surgery has been classified as the practice of external diseases. Internal diseases include all fevers and diseases of the heart,

lungs, and abdominal organs. More specifically diseases are classified under nine heads as follows: (1) Affections of the great blood-vessels, including smallpox; (2) diseases of the lesser blood-vessels; (3) fevers; (4) female complaints; (5) cutaneous diseases; (6) conditions requiring acupuncture; (7) diseases of the throat, mouth, and teeth; (8) disease of the bones; (9) affections of the eye.

Diseases are said to be produced by internal and external agents. Among the external diseases are (1) wind, which causes headache or apoplexy, dizziness, chapping of face, diseases of the eye, ear nose, tongue, teeth, etc.; (2) Cold may cause cough, cholera, heart pains, rheumatism, and abdominal pains; (3) heat causes chills and diarrhea; from dampness comes constipation, distention of abdomen, watery diarrhea, gonorrhea, nausea, pain in kidneys, jaundice, anasarca, pain in small intestines, and pain in the feet: (5) from dryness come thirst and constipation; (6) Fire causes pain in the sides, diabetes, etc. The diseases of internal origin are classified as disorders of the gases, blood, sputum, and depressed spirits.

The treatment of disease by the Chinese doctor consists chiefly in the administration of drugs. Surgery has been an unknown art. Recently two charitable institutions have been established in Canton for the treatment of the sick according to native methods of practice. At one of these so-called hospitals I was informed that bullets were removed by placing a kind of plaster at the wound of entrance. The ingredients of the plaster have a remarkable magnetic power over the imbedded bullet and gradually draw it out through the same opening by which it entered. My informant had never seen this line of treatment actually carried out, however.

Perhaps in no line does the native practitioner show his ignorance more than in the treatment of fractures. No attempt is made to reduce the parts. A special clay is placed in a wooden bowl. The heads of several chickens are cut off, while incantations are repeated and the blood is allowed to flow on the clay in the bowl. Blood and clay are now mixed together and applied to the fractured extremity. Bandages are used to bind on thin strips of bamboo. When the last turn of the bandage is being wound on, the blood of another chicken is poured on.

The only real operation performed by the Chinese is the castration of eunuch, and castration as a penalty for adultery. With one sweep of a sharp knife the genital organs are completely removed on a level with the skin of the pubis. A metal plug is inserted in the urethral opening and a cloth rung out of cold water is applied to the bleeding surface and firmly bound on. The patient is allowed to drink no water for three days when the dressing is removed, the plug withdrawn and the patient allowed to urinate.

Coming now to the real field of the Chinese doctor we find that the number and variety of remedies recommended in the Chinese Materia Medica can only be compared to our own National Pharmacopeia. The great Materia Medica compiled in the 16th century is composed of 52 books and contains 1892 remedies. Kipling's verse applies to the Chinese as to the British people for whom he wrote it:—

"Alexanders and Marigold,
Eyebright, Orris, and Elecampane,
Basil, Rocket, Valerian, Rue,
(Almost singing themselves they run)
Vervain, Dittany, Call-me-to-you,
Cowslip, Melilot, Rose of the Sun,
Anything green that grew out of the mould,
Was an excellent herb to our fathers of old."

The drugs and other medicaments are weighed out according to a decimal system as follows:—

1 tael or leung	equals	40.00	gm.
1 tsin	"	4.00	gm.
1 fan	"	.4	gm.
1 lei	"	.04	gm.
1 ho	"	.004	gm.

Often a prescription is given because of the resemblance of the drug to the organ affected. Thus for renal diseases, haricot or kidney beans are given. Minerals are administered as salts. Plants are used in the form of roots, stems, leaves, flowers, and dried fruits. The bones of a tiger are frequently ground up and given to a debilitated person. The grasshopper is dried and used as a medicine and the shells of the cicada are collected from the bark of trees and mixed with other ingredients. Tinctures and extracts are prepared from rice wine. Pills are often made with a thick shell of parafine which is broken off and the contents chewed up. Various forms of plasters and blisters may be applied to the skin. The actual cautery is often used as a revulsive.

Among the pills the best are the "Wai Shaang Uen" or life preserving pills costing about a dollar apiece. They are composed of Manchurian ginseng, deer's horns, and other drugs. Among other common remedies may be named dried, powdered rattlesnake skins, the bile of the ox and dog for jaundice, dried shrimps, etc. Quicksilver is often poured into gun-shot wounds in order to dissolve the bullet. In some drug shops two signs are hung at the entrance; on one are written the names of venereal diseases, on the other such diseases as hemorrhoids, wounds, ulcers, etc. The patient explains in which class his disease belongs and is promptly given the appropriate remedy. Among the most used drugs are some that are found in the western pharmacopias, viz., ginseng, rhubarb, sulphur, pomegranate root, aconite, opium, arsenic, and mercury.

Diseases of the liver and eyes, which are sympathetic organs, are cured by giving pork's liver. In Kwangtung Province human blood is considered an excellent remedy and at executions people may be seen collecting the blood in little vials. It is then cooked and eaten. A genuine prescription written by a physician to be used as a laxative was composed of Rumex hydrolepathium, Quercus glauca, Sodium sulphate, and Magnolia hypoleuca. The parts from these plants are boiled with the sodium sulphate and the "tea" is drunk by the patient.

A remedy which I have not infrequently seen applied to a patient *in extremis* is as follows:— A rooster is killed and the body is cut in half, longitudinally, and the bleeding half is quickly applied to the skin of the patient's abdomen. If there is any possibility of cure this is supposed to be infallable.

The use of the acupuncture needle seems to be seldom resorted to in the neighborhood of Canton. The theory on which it is based is that if one punctures the blood-vessels connecting different organs the disease will be aborted. Three hundred and eighty-eight points suitable for acupuncture are described. There is a mannikin at Peking pierced with holes at all the points suitable for

acupuncture. Paper is pasted over it and students learn to find the proper holes through the paper. The needles vary from 1½ to 28 cm. in length and are made of gold, silver, or steel. During the operation the patient coughs and the errant humours are directed back into their normal courses.

Such in brief is medicine as it is practised by the Chinese doctor of to-day. One is reminded of the old humoural theory of Europe in the Middle Ages. But modern education in China has brought a new light to the people and in all the large cities and many of the small ones, Western medicine is slowly but surely winning its way.

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THE TREATMENT OF PARALYSIS AGITANS AND ARTHRITIS DEFORMANS BY THE CONTINUOUS BATH.

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The treatment of the chronic diseases, arthritis deformans and paralysis agitans, extends over a long period of time and is very unsatisfactory if one wishes to treat the complaints of these patients. Since arthritis deformans occurs not infrequently in young and middle aged people, the need of improving them and relieving their symptoms, if it is not possible to cure them, becomes very apparent. It is with this purpose in view that we began to work up this problem under the direction of Prof. Simon Baruch, who advised the use of the continuous bath (which is really a hammock bath in a tub of continuously running water) for these cases.

We began with a temperature of 95 deg. Fahr., which, because of its proximity to the temperature of the body surface, might exert a sedative effect.

The next question that arose was the duration of these baths. In order to get positive information on this matter, we had to subject patients to these baths for varying lengths of time. The minimum exposure was 25 minutes and the maximum was 17 hours, so that patients treated for the longer period ate and slept in the baths. The longer baths seemed preferable from the theoretical standpoint, because if any effect was to be produced on these patients, the dosage of the baths would have to be generous.

From the practical viewpoint, however, we came to different conclusions. First, because patients tried to avoid urination and defecation in the tubs (although they knew the running water would carry off the excreta). Secondly, because of the strain resulting from the maintenance of the body in the one position, which produced fatigue and gave them generalized pains and aches. It can easily be seen that both of these were bad for our patients.

We found by experience that the ideal method was frequent treatments of shorter duration. Because of the large number of cases that had to be treated at the hospital, we fixed the duration at two hours, to be given daily. After the baths the patients would receive light general massage and alcohol rubs for their systemic tonic effect.

We then had to find out for how long a period bath treatment should extend. Accordingly we gave them every day for three to four weeks and watched for results. We thus noticed that the patients would feel very comfortable during this time. If they were given for longer time (as five or six weeks) they would feel tired and weak after the baths and would not improve much, and might even complain of pains, insomnia, etc. Thus we realized that we had reached the limit, so we decided to leave the patients out of the baths on each seventh day of the week and limit the total number to thirty, which series might again be renewed after an interval of one month. By this régime we obtained very favorable results.

Upon further experience we learned that cases of arthritis deformans and paralysis agitans could not very well be treated in the same room at the same time; for while the nervous cases complained of the high temperature of the room and wanted the windows opened, the arthritics preferred the windows closed because they felt cold. Likewise, the Parkinsonian patient said that he preferred water colder than 95 deg. and the patient with the joint affection wanted the temperature raised.

Accordingly we grouped the nervous cases together and treated them at one time with the room well ventilated and the water at 92 deg. Fahr.; the joint cases were treated together in a warmer room and the bath was given at 98 deg. Thus we obtained marked improvement in both types of cases.

Results of Treatment—General Condition.—In order to observe these cases carefully, temperature, pulse, respiration, and blood pressure (systolic and diastolic) were taken a half hour before the baths and every half hour while in the baths, also a half hour after the patient came out of the bath. In general, we found that during the first half hour in the bath there was a slight fall in blood pressure, a slight increase in pulse rate and in the frequency of respiration, which soon dropped to normal. Urine examination and blood counts were taken with no remarkable results.

A fact worth mentioning is that when the patient was left in the tub too long (past the physiological dose) the pulse, respiration, and blood pressure rose, and in cases of paralysis agitans the muscular rigidity increased. Fatigue and discomfort rather than any direct effect of the bath itself may account for these symptoms.

Arthritis Deformans: Pain.—It was remarkable to see how quickly patients felt relieved when placed in the tub; even the most advanced cases showed improvement. Out of all of these cases at the Montefiore Home and Hospital, in only one case

can we say definitely that no improvement resulted and this case was one complicated with optic atrophy and blindness in which treatment had to be suspended because of the general irritability. In many, benefit was noticed after the second or third bath.

Patients who for years had to take aspirin or some other form of salicylic acid to quiet their pains and give them rest, could now get along quite comfortably with no medication at all. This was already a gain, because we were dealing with the most advanced and desperate cases of the disease. Some patients were relieved only while in the bath, while in others the improvement was more lasting.

Joint Motion and Muscular Rigidity.—These were also favorably influenced and very early in the treatment we noticed that the patients began to move joints that were comparatively stiff before. This was due both to the relief from pain, as previously described, and also because of the muscular relaxation produced by the warm water. A remarkable case that was seen was in a man suffering from arthritis deformans for about twelve years and who had not walked for the past three years. When I first saw him he was suffering from an acute exacerbation of a chronic nephritis. He was given the routine treatment and after three baths pain was relieved and he began to move some of his joints. After ten baths he walked without the help of a cane, a feat which he had not accomplished within three years. Because of the benefit received this patient asked to have his course of baths prolonged. Accordingly he received them for two weeks more during which time he steadily improved, but because of other patients waiting to receive treatments more baths had to be denied him.

Paralysis Agitans.—In this condition, as is well known, the patients complain of parasthesias (especially burning sensations) along the back, muscular tremor, and rigidity. Parenthetically, I wish to say that our routine medication for these cases was hyoscine, which in some instances had to be given thrice daily in order to obtain relief. When the bath treatment was begun, all forms of medication were stopped and patients who for years would crave for their hyoscine could do without it very well.

The parasthesias were the first to yield. As a rule the greatest relief would be obtained while in the water with a return of some pain afterwards, while in others complete improvement resulted for the time being. Muscular rigidity was also lessened, thereby giving more motion to the joints. The tremor was also diminished while in the water.

In some cases we noticed that after improving for a few days the patients became worse again, namely, their tremors increased and their rigidity returned. Upon further investigation we found that this occurrence was parallel with states of constipation, hence we tried to pay special attention to the bowels at this time and noticed that things cleared up again. Accordingly we began to prescribe light catharties and enemas every night, with very satisfactory results.

Theory of Action of the Baths.—We must now ask ourselves how do these baths act? What is the mechanism of these baths on the disease conditions? In order to answer this we must analyze the symptoms and get at their cause.

Let us consider first arthritis deformans. The pain in this disease may be due to the following: (1) Painful skin areas corresponding to the joints affected with arthritis. Because of this, irritation of the skin would produce reflex muscular spasms, thereby approximating the joint surfaces, which of course aggravated the pain, thus producing a vicious cycle. (2) A neuritic involvement, as in peripheral neuritis, since there is evidence that arthritis deformans is the result of a metabolic or toxic process.

The painful skin surfaces are relieved because of the soothing effect of the tepid water (98°). To understand this thoroughly, I would refer to Professor Baruch's Hydrotherapeutic Law. The effect of any hydriatic procedure is in direct proportion to the difference between temperature of the water and that of the skin. When the water is of a temperature above or below that of the skin, it is stimulating. As the temperature approaches that of the body surface, the effect is a sedative one. Ordinarily the skin temperature is 92° and the skin over an inflamed joint is a little warmer than over the adjacent areas; hence temperature slightly higher than 92° (95°—98°) are most sedative in arthritis deformans.

As pain and hyperirritability of the skin are lessened, the reflex muscular rigidity and resulting joint pain are diminished. The pain due to the coexisting peripheral neuritis is relieved because of the eliminative effect of the warm bath on the skin. Also because of the soothing effect as just described.

In Parkinson's disease the pain and reflex muscular spasms and tremors are in a great measure the result of an influx of stimuli coming in through the nerve fibrils of the skin. Evidence of this fact is given by the increase of all these symptoms when a cold stream of air passes over these patients or when the atmosphere of the room is too warm. Another form of peripheral irritation tending to exaggerate all these symptoms is constipation. So marked was this that one could actually use muscular rigidity as an index to the condition of the patient's bowels. Now, if the skin forms the portal of entry for the irritated influences and since water at the temperature given soothes, we can readily see how the continuous bath acts on the diseases in question.

Conclusion.—The continuous bath does not cure paralysis agitans or arthritis deformans, nor does it change the pathological process in the least. It does, however, offer great relief to these patients and improves their symptoms subjectively and objectively. It is far superior to the salicylates for arthritis deformans or hyoscine for paralysis agitans, and certainly has none of the objectionable features belonging to the prolonged use of these drugs.

As a palliative measure the continuous bath in our opinion is to be highly recommended.

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Herpes of the Cornea in Influenza.—C. W. Walker reports this case: Physician, aged thirty-four, after having treated many patients with influenza, fell a victim to the disease and developed a herpes on the right side of the face. About two weeks later a foreign body lodged in his right eye, and despite its extraction the traumatic conjunctivitis became much worse, and a few days afterward the cornea was seen to be hazy. From the very first the eye had been refractory to treatment and the effected cornea soon showed ulceration; the ulcers, however, now responded quickly to the proper treatment, leaving excentric opacities with vision intact. —*The Ophthalmic Record.*

PROCTITIS.

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Proctitis or inflammation of the rectum is quite commonly met with in general practice, and requires careful diagnosis and prompt treatment. Several different varieties are distinguished, although the symptoms in general are much the same in all and the case frequently terminates in fistula.

Proctitis is divided into acute and chronic varieties, each of which has several forms, according to etiology or development. Thus the acute consists of the catarrhal, dysenteric, diphtheritic, and gonorrheal; the chronic, of the catarrhal, syphilitic, tuberculous, papillomatous, and stenosing.

The catarrhal acute form of proctitis is due to intestinal disturbances and occurs chiefly in children, although occasionally it is found in adults. Usually the mucous membrane alone is involved, being congested, even tumified at times, and the epithelial layer may be shed off during the engorgement. In dysenteric proctitis the whole colon is frequently involved, especially in the tropical variety. The rectum, like any other mucous membrane, is liable to the invasion of diphtheria, but infection is rare. Gonorrheal proctitis is commonly found in women on account of the close proximity of the vulva and rectum, and is usually the result of uncleanliness, sodomy, or abscess of Bartholin's gland that has ruptured into the rectum.

Chronic catarrhal proctitis may result from repeated attacks of the acute form or may begin as a deeper and a chronic inflammation. Constant reinfection and irritation, together with a sluggish venous flow, tend to prolong any inflammation in the rectum. In aggravated cases, the surface is granular with multiple ulcerating points. Hypertrophy of the glands occurs, causing papillomatous growths which project into the lumen of the rectum (papillomatous proctitis). When the inflammation extends deeper than the mucous membrane and involves the areolar and muscular tissues around the rectum, a constriction results later, from the contraction, and we have a stenosing proctitis.

In adults, proctitis may result from fecal impaction in the rectal pouch, exposure to colds as sitting on a cold or wet seat, foreign bodies in the rectum, hard substances in the fecal mass, as fish bones, pins, hulls of cereals; injury from the tip of the syringe, strong purgatives, or arsenic, bichloride of mercury, irritating suppositories, the extension of inflammation or colitis, or the irritating discharges from the bowel above. Esmarch reports a case of proctitis as a symptom of gout, the rectal inflammation alternating with other symptoms. Proctitis may also result as an extension of inflammation from hemorrhoids, prolapse, or eczema about the anus. Both acute and chronic proctitis may result from inflammation of neighboring organs, as the bladder, prostate, vagina, or uterus.

The symptoms vary with the severity of the attack and the duration of the trouble. The chronic forms are less painful and tender than the acute. A sensation of weight, heat, or fullness appears in the rectum and may amount to actual pain, which in severe cases may involve the uterus, bladder, and sacral region, and even radiate down the thighs. With this tenesmus, a constant and ineffectual desire to empty the bowel occurs, and this continual straining frequently produces a prolapse of the mucous membrane, especially in children. Irritation of the trigonum vesicæ causes frequent micturition or sometimes retention. By this time the engorged membrane is bleeding, perhaps with a mere streaking of the passage or occasionally considerable discharge of clear blood. Kelsey reports a case in which this loss of blood was the first symptom that attracted the patient's attention. A case of proctitis with hemorrhage without any of the antecedent symptoms is rare. Later mucous and pus are voided. Examination at this stage reveals ulceration to some extent. It may be very superficial and limited to one or two small points or have many foci, some of which may be quite deep and involve the whole thickness of the mucous membrane or even perforate the bowel. When ulceration occurs above the peritoneal fold it results in peritonitis, and when below that line in abscess and fistula. A chronic proctitis may in this way cause a stricture.

In all forms of proctitis the anus is red and painful, the sphincter and levator ani muscles are irritable and spasmodic, and associated with the local symptoms there is always more or less constitutional disturbance. In chronic proctitis, the symptoms are less marked, diarrhea alternates with constipation, and the discharge occurs only with defecation. The inflammation may be limited to only a small part of the rectum or may be more diffuse and involve all of the organ.

The symptoms of dysenteric proctitis are similar to those of the chronic catarrhal form except that more of the bowel is involved and the systemic influence is more marked. When the diphtheritic variety is found other members of the patient's family should be cautioned about using the same closet. The gonorrheal form has its characteristic free, creamy white discharge issuing from the anus, the rectum becomes hot and swollen, and the pain is burning and intermittent. The anus chafes and the sphincter is spasmodic in its action. This form of proctitis is usually of short duration and can easily be differentiated on account of the disease in the vulva or urethra and by finding the gonococci in the pus. It may, however, if untreated, degenerate into a chronic proctitis. The discharge is freer and contains more pus than any other form of proctitis. It must be remembered, though, that gonorrheal proctitis is rare; Gosselin saw only one case in three years.

The following case in my own practice some time ago gives a vivid picture of this form of trouble:

Patient referred to me by Dr. Watts and first seen by him, suffered from gonorrheal infection of the whole genital tract. Abscesses had developed in Bartholin's glands and rupturing into the rectum had produced labiorectal fistula on either side of the vagina, from which there was considerable discharge. The examination revealed sinuses into the rectum above the external sphincter. Rectal examination showed on inspection a free discharge from the vagina and also from the rectum when the patient was requested to bear down, although the sphincter which was spasmodically contracted, would ordinarily retain the discharge. The anus was quite inflamed. Digital examination showed the rectum was tender and disclosed an abrupt stricture about two and one-half inches above the anus. This stricture was at nearly the lower level of the internal sphincter muscle and was annular in shape and diaphragm in form, that is, a thin, membranous septum. No marked induration was felt at any point, but as the finger was withdrawn it was covered with blood and pus and a few shreds of mucous membrane. The specular examination was especially instructive. The active inflammation began immediately above the external sphincter and appeared localized below the stricture. The whole mucous membrane had a honeycombed ap-

pearance and was covered with white fibrous shreds resembling the "tripper-faden" of urethritis, only much larger. They were easily removed, but left the mucous membrane inflamed and bleeding. As the rectum was dilated the stricture could be seen to stretch and tear. The trouble appeared to be localized within the lower two inches of the rectum.

Proctitis is not very serious, as a rule, unless the cause cannot be found and removed. When the cause is removed the case heals kindly unless complicated by ulceration, abscess, or fistula. Sometimes a perirectal lymphangitis or phlebitis may protract the case or cause a fatal termination. Acute proctitis will pass off in ten days or so, leaving no appreciable permanent alteration in the bowel, except in those cases in which ulceration or gangrene has occurred. Chronic proctitis is liable to continue indefinitely unless the cause can be removed. The mucous membrane is thickened and indurated and loses its sensibility more or less, so that a large bolus of feces may collect without stimulating the rectum to expulsion. Stricture of the rectum generally has some chronic proctitis associated with it; below the stricture the mucous membrane is congested and covered with pus or mucous, while above the stricture ulceration occurs.

A thorough examination of a case of proctitis is important and a digital examination should be made in every patient presenting a chronic diarrhea, because many of the causes given above as predisposing to or exciting proctitis may be promptly determined. When the patient is placed in the knee-chest position, the proctoscope is well oiled and introduced, and as the obturator is withdrawn the air rushes in and dilates the bowel; then by turning the proctoscope from side to side and gradually withdrawing it the whole surface of the rectum may be carefully and thoroughly explored.

The treatment of proctitis varies considerably with the exciting cause and, therefore, before instituting any treatment a thorough examination must be made. The parts being irritated and inflamed, the examination is very painful unless an anesthetic, general or local, is administered. In many instances where for various reasons chloroform should not be given at the time of the examination, the patient may be relieved of most, if not all, of the pain by the application of a 2 per cent. solution of cocaine. A general anesthetic has much in its favor, because when the patient is asleep the sphincter may be thoroughly dilated, thus relieving the tenesmus and greatly facilitating subsequent examination or treatment. At the same time, any local trouble or cause of the proctitis may be removed, thereby accomplishing two things at one sitting.

Acute cases require absolute rest in bed, because when the patient is up and about his duties the dependent position of the vessels, together with the thinness of their walls and the associated congestion and inflammation, produce a venous stasis which seriously impedes or prevents regenerative changes.

The diet should be plain and of such a variety as will insure soft or semisolid evacuations. It is also advisable to maintain a largely absorbable dietary that the bowels may move infrequently, thus sparing local movements of the parts. Twice each day the bowel should be douched with two quarts of cleansing solution as hot as can be borne. To begin with, a temperature of 105° F. may be used and the temperature raised each day. Plain boiled water with the addition of a handful of salt has given me the best results. I have devised a douche tip of my own to be used in these cases, because I have found it impossible to obtain a free return flow with any I have found, and unless the exit is large the fluid will pass up into the colon and carry the infection up with it, instead of washing it out. By practical experience I find that douching in this manner washes out a large amount of infectious material, such as secretions, fecal accumulations, and hordes of microorganisms; dissolves mucous and pus, flushing them out as shreds; contracts the vascular structures, thereby stimulating circulation, relieving the local congestion, and depleting the tissues.

Following the douche, about two drams of astringent antiseptics or other medicinal mixtures is injected and the patient is instructed to retain it. Silver nitrate, hydrastis, glycerole of tannin, or acetate of lead in various combinations and strengths, according to the case, are the most reliable drugs. If the pain and tenesmus are not reduced, laudanum and starch water may be injected every two or three hours until the patient is relieved; from twenty to sixty minims may be needed in this way.

Hot fomentations applied over the hypogastrium give much relief when the inflammation extends over a large area and when there is general, diffuse pain and tenderness. In mild cases limited to the lower end of the rectum, the applications of cold to the anus and perineum or the injection of cold water into the rectum relieves the congestion promptly.

When the proctitis is due to thread worms injections of lime water or salt water and the administration of santonin internally will be enough. Gonorrheal proctitis, like its counterpart in the urethra, is especially intractable. Silver nitrate solutions 1-3,000 should be used to douche the rectum, but the same conditions must be observed as are mentioned above. The strength is to be gradually increased as a tolerance is established until a 3-1,000 solution is used. Following the douche the whole mucous membrane is swabbed with balsam of copaiba or a suppository containing balsam of copaiba and iodoform, each 5 grains, may be inserted.

The chronic forms of proctitis are somewhat different. The douching should be instituted in these just the same as in the acute cases because of its alterative effect. The excessive secretion is controlled with applications of alum, zinc, or silver, or any of these combined in a suppository with iodoform, or one minim of oil of turpentine.

When ulceration, periproctitis, or any other complication exists it requires its own treatment, which for obvious reasons cannot be entered into in this paper. Syphilitic cases are associated usually with strictures which may require surgical treatment, although I have seen astonishing changes occur under general internal medication. Tuberculous proctitis is usually secondary to disease higher up and is accompanied with so much ulceration, together with the general systemic infection, that treatment is unsatisfactory. The treatment of proctitis due to cancer is surgical, of course, and cannot be considered here.

Proctitis in either the acute or chronic form is always a serious matter, deserving of the physician's most careful attention because the inflammation itself may debilitate, and especially because

complications which may invalid the patient are prone to occur. Each case is a law unto itself, and this article cannot go into the details that may perplex the attendant, but simply tries to give the reader a clear clinical picture in general and to lay down the main lines of treatment.

438 East Forty-sixth Street.

A CASE OF LACERATION OF THE LIVER.

By C. A. WAYLAND, M.D.,

AND

R. T. WAYLAND, M.D.,

SAN JOSE, CAL.

The liver, in consequence of its anatomical situation, size, and firm attachment, becomes subject to injury when direct violence occurs against the upper right abdominal quadrant and the lower part of the thorax. Its lack of elasticity and its consistency further predispose to the tearing of this organ at the time of injury. As compared with injuries of other abdominal viscera, we find that one observer collected 365 cases, of which 189 concerned the liver and 176 represented the combined injuries of the pancreas, kidneys, and spleen. Out of the 189 cases involving the liver, 120 were located in the right lobe. Most cases are due to direct violence caused by a blow, fall, or the end of a rib penetrating its structure. A few cases, however, are predisposed by certain diseases, *e.g.* syphilis, tuberculosis, amyloid degeneration, hypertrophic cirrhosis, tumors, and malarial fever. Males are injured more frequently than females, and painters, carpenters, and railroad employees are the usual victims.

According to another writer, out of 543 cases collected 80 per cent. died if not operated upon, while the mortality following operation was from 40 to 50 per cent. A number of factors may enter into the ultimate outcome of the case. For example, a small tear through the peritoneal coat of the liver may result only in the formation of a hematoma, while on the other hand a deep laceration severing bile ducts and large vessels will cause a severe hemorrhage which will rapidly prove fatal. The admixture of bile and blood at the time of the injury probably prevents rapid coagulation. The severity of associated injuries to other organs will, of course, alter the ultimate outcome of the case. An interesting fact noted is the rapid recovery from gun shot wounds of this organ produced by the modern bullet, while stab wounds are more apt to prove fatal.

The following represents a very striking and instructive case that came under our care

Mrs. M. V., age 34, married. In good health previous to accident. On the afternoon of February 18, at 4 P.M., patient was thrown from a wagon on which was a large barrel of oil. She struck on hard ground and the edge of the barrel fell on the upper part of her abdomen. In some way she received a severe blow to the head, which was evident from the symptoms she had of concussion. Immediately following the accident she walked to an automobile and rode about half a mile. Owing to the gradual development of unfavorable symptoms we were not summoned until 6 P.M., and by this time she was in shock and the abdomen revealed signs of some intraabdominal calamity, producing hemorrhage which called for immediate operation. She was hurriedly taken to a hospital.

Rallying slowly to a state of semi-consciousness, the patient became restless and thirsty. She vomited (vomitus containing dark blood), yawned, and had air hunger. Her mind was not clear. She complained of severe pain located in the left upper abdominal quadrant, which was continuous, sharp, and cutting in character. It did not radiate. Marked dyspnea was present.

Examination showed a fairly well developed female adult. Showed evidence of collapse. Skin was a peculiar greenish white color and very cold and clammy. Both pupils dilated. The left reacted sluggishly to stimuli. There was ptosis of the left eyelid. Mucous membranes were blanched and anemic. The tongue cold, dry, and white in color. On protruding it deviated to the left side. Lips drawn to the same side. The lungs were clear and resonant throughout. Respiration labored, rapid, jerky, and limited on the left side. Heart action rapid. Sounds weak. No murmurs heard. The abdomen was distended. Board-like rigidity of the upper left quadrant; marked tenderness in the epigastrium. No masses were felt. Slight dullness present in both flanks; more marked in the left. Liver dullness not noticeably increased. Neither kidneys nor spleen palpable. The left arm and hand were completely paralyzed, but sensation was maintained. Her pulse rapidly became weaker until it could no longer be felt.

Operation.—Preparation consisted of a dry shave of the entire abdomen and the application of the tincture of iodine. Only a small amount of ether was needed, owing to the collapsed condition of the patient. An intravenous of normal salt solution and adrenalin chloride was started. A left rectus incision was made through the abdominal wall, extending from the costal angle to the supra public region. The abdominal cavity was found full of blood, and a hurried examination revealed a laceration of the left lobe of the liver. It was about five inches in length, situate at the lower anterior margin and extending up between the right and left lobes. Associated with the laceration was a gapping of the fissure between the two portions of the liver. Blood was rapidly oozing from the tear. Gauze was packed into the rent while the blood was evacuated from the peritoneal cavity and the other abdominal viscera examined, but no other serious injury was found present. The edges of the gapping wound were approximated with No. 2 catgut mattress sutures. Due to the close proximity of the suspensory ligament, a few sutures passed through it and thus not only aided in holding up the liver but also lessened the danger of the sutures to cut the hepatic tissue. Owing to the fact that the sutures at the upper angle of the laceration would not hold, an iodoform gauze pack was put in this area. A small drain of iodoform gauze was inserted down to the line of sutures, and both drains were brought out at the upper angle of the wound. The peritoneum was sewed with catgut, and through and through silk-worm gut sutures were used in order to rapidly close the abdomen. Dressings applied.

The intravenous of salt solution and adrenalin chloride was continued throughout the operation, a total of one quart of salt solution and one drahm of adrenalin chloride being given. Her pulse gradually became palpable under this stimulation. The patient was returned to bed in a very critical condition.

Following the operation the foot of the bed was elevated; the extremities were bandaged, external heat was applied, and enteroclysis of salt solution started. Camphorated oil, strychnine sulphate, and morphine sulphate were used as indicated. Her pulse remained irregular, weak, and at times could not be palpated. Twelve hours following the operation six ounces of blood taken from her brother was given intravenously. (The indirect method with sodium citrate as an anticoagulant was used.) No ill effects were noted by its use, while on the other hand she gradually regained strength. Immediately her pulse became regular and of fair volume. In twenty-four hours bile-stained drainage appeared upon the dressings and this necessitated frequent changing. This bile-stained drainage continued for about three weeks, and then gradually disappeared as the wound healed. The gauze drains were slowly pulled out until the seventh day, when they were removed entirely. On the second day after the operation she manifested evidence of a low grade peritonitis by vomiting, slight rise in temperature, and tympanites. This subsided two days later. Jaundice did not appear throughout convalescence. On the twenty-third day following the operation the patient had a convulsion, which started on the left side of the body and then became general. This was followed by a period of unconsciousness which lasted for about twenty minutes, and then she became apparently the same as before the convulsion, except that she had a complete motor palsy of the left side. This remained for two days and then gradually began to improve, until at the present time she has complete power of her left leg and

nearly the entire use of the left arm and hand. Convalescence was slow but uninterrupted, except for the one convulsion mentioned. The wound healed by first intention except at the point where the drains came out, and here granulations gradually filled in the opening. Six weeks following the accident the patient was able to leave the hospital in very good condition. At the present writing she has resumed her usual household duties.

The following points suggest themselves upon a study of this case

1. The necessity of seeing a case early and recognizing an internal hemorrhage.
2. Early laparatomy if hemorrhage is present, even though the patient is in shock.
3. Make a free median abdominal incision, using plenty of room to work.
4. Control bleeding by sutures, packing, or cauterizing.
5. Drain the site of the laceration in the liver.
6. Drain the peritoneal cavity.
7. Treat the hemorrhagic shock by replacing the lost fluid into the circulation and stimulating.

140 North Third Street.

UNIVERSAL IMMUNIZATION.

By HERMAN B. BARUCH, M.D.,

NEW YORK.

For several years I have given much thought to the subject of immunization. On June 10, 1910, I proposed to Dr. Simon Flexner, of the Rockefeller Institute, to make some experiments at my own expense on injections of a serum from the blood of an equine case having a temperature of 106° Fahr., into another case with the intention of producing a premature crisis. Dr. Flexner kindly replied, October 20, 1910: "I do not doubt that there is a certain amount of toxin present in the blood of patients suffering from pneumonia. . . . It is impossible, however, for me to take up any special work in this connection since we are engaged in other problems."

On the same subject, I wrote to Dr. Henry Smith Williams on December 30, 1914, the following: "Lobar pneumonia stands as a monumental rebuke to the medical profession. Nature so plainly points the way to its cure, and yet we poor blunderers stand impotently by and it claims thousands of victims annually."

Accordingly, I engaged with the consent of the Health Department, the services of Dr. A. Silkman, Veterinarian of the Department, to elaborate such a serum from a horse suffering from acute lobar pneumonia. This work has progressed most satisfactorily to date and will be made the subject of a later communication.

Under date of August 10, 1916, I wrote Health Commissioner Dr. Haven Emerson, to furnish me with fluid drawn from the spinal cavity of a poliomyelitis patient for similar experiments at my own expense on the same horse. This I have not yet been able to undertake.

It has long been known that an attack of certain infectious febrile diseases protects the individual against a subsequent attack. More recently the theory of persistent antibodies has been accepted as the cause of such immunity. The nature of such antibodies is not at all well established, but probably they exist in the blood as hormone secretins, which have been determined to be in the nature of enzymes. As, for instance, in a patient having once been attacked by scarlet fever; if the disease is successfully combated by the system, it is because the system has reacted to the toxins of the disease and produced an antitoxin or antibody which has been generated under the influence of the hormone secretins which occur in the blood at the time of the attack and are probably produced by the red blood cells and in turn react on the blood cells themselves and cause an increase in the secretion of the antibodies or antitoxins, and when these become great enough in number or strength, the patient is enabled to overcome the toxin or poison produced by the specific organism causing the infection, and the patient recovers.

In the case of scarlatina, this immunity is permanent or practically so, and there is theoretically always circulating in the blood of a patient recovering from scarlatina, an unknown quantity of hormone secretins which are probably in the nature of a ferment. Whenever the toxins of scarlet fever or the streptococcus gain access to the system of such a patient, this toxin immediately reacts on the hormone secretins which, acting as ferments, cause an immediate increase in the antibodies which protect against scarlet fever and cause the toxins of scarlatina to be overcome and the patient is not attacked by the disease a second time.

Believing that the theory will hold good for all diseases one attack of which protects against subsequent attacks, under date of December 16, 1915, I wrote in instructions to Dr. Silkman, who was then engaged in elaboration of the pneumonia serum under my direction, as follows: "As soon as the above work on the pneumonia serum is completed, it is proposed immediately to conduct experiments with a view to obtain a vaccine or immunization against scarlet fever, measles and other diseases in which one attack prevents against future attacks. The patient having once suffered from scarlet fever, is seldom, if ever, subject to a second attack. Therefore, a permanent antitoxin is circulating in the blood of such patient and produces immunity. It is my theory that even small doses of the serum of such a patient injected into an infant or child, would produce permanent immunity. If not, monkeys of the larger type could be exposed to scarlatina or measles, or injected with the proper streptococci, or other infectious material, and a vaccine or serum worked out in this way."

So far, I have not been able to complete the latter work, but working along these lines we have obtained a serum which has been successful in a moderate number of cases in equine pneumonia. In this case, the hormone secretins are fugitive, being rapidly eliminated from the patient's system, and for this reason an attack of pneumonia does not confer immunity. This idea occurs to me as being especially interesting at this time with the unfortunate prevalence of anterior poliomyelitis in New York City and adjacent territory.

As a matter of practical moment, I believe that, if the blood of an adult be drawn under proper aseptic precautions and the serum isolated, an injection of from one to six ounces of such serum according to the age of the patient will produce an immunity in a child if the subject from whom the blood is drawn has suffered from this disease. I believe it will be possible largely to prevent the occurrence of scarlet fever, measles, typhoid fever, smallpox, typhus fever, and all diseases an attack of which produces an immunity of greater or lesser extent for the future.

The above theory may serve to explain in a way

the results which Dr. Abraham Zingher of the Willard Parker Hospital has had in the use of serum obtained from normal adults in combating poliomyelitis in its early stages.

There is reason to believe that, if children are injected with the serum drawn and prepared from the blood of their parents or other individuals at an early age if the donors have suffered from scarlet fever, measles, or any of the immunizing diseases, such offspring will be rendered immune to these diseases and that eventually it will be possible to breed a race of humans who will be progressively immune to all of the acute infectious diseases. The longevity of the race will then be vastly increased because of the large number of permanent disabilities that are produced by the so-called "diseases of childhood," and the above thought contains a suggestion which, carried out, will produce results of great permanent service to future generations as well as to the present.

It may be that experiments will prove that the hormone secretins are found in the red blood cells or in the coagulum rather than in the serum, but a carefully conducted series of animal experimentations would readily prove whether the serum alone or a combination of a saline extract of the coagulum would be necessary to produce the desired result.

The terrible results of the present epidemic and the large number of cripples which it will undoubtedly leave in its wake, in addition to the death toll of 20 per cent, should make it well worth while to attack this problem when the present excitement has subsided, so that the future may not see the anguish and suffering which the present affliction has brought to all of us who are parents and have the responsibility of such cases upon us.

71 East Fifty-second Street.

A FATAL CASE OF POLIOMYELITIS IN AN ADULT.

By J. GARDNER SMITH, M.D.,

NEW YORK.

THE following account of a fatal case of poliomyelitis in an adult may be of interest. An apparently healthy young man of twenty, whose home was in the best environment in upper Manhattan, worked in a large, airy architect's office in Brooklyn. Saturday noon, July 29, he ate lunch downtown, carried his dress suit case and a small tent to a New Jersey town; pitched some hay in the afternoon, ate a hearty dinner, pitched his tent and slept on the ground that night. He was awakened by the great explosion, walked a mile and back to the tent, where he slept the balance of the night. On Sunday he complained of headache and sore muscles, but returned to New York that night, ate heartily, took a bath, retired, and slept fairly well. Monday morning he vomited and complained of severe headache. He was seen in the evening by Dr. Clyde K. Miller. The patient at that time complained of headache and stiffness of neck and muscles, but had no fever; he was given a laxative. Tuesday morning the patient could not wind his watch and paralysis of the arms progressed. Wednesday morning he could not raise his arms from the bed; could rotate arms and forearms slightly; chest muscles paralyzed. Reflexes of lower extremities exaggerated; Koenig and Babinski tests positive. After consultation with the Health Department and Research Laboratory I made a personal call upon Dr. S. J. Meltzer. We followed Dr. Meltzer's suggestions. At 5 P. M., 10 c.c. of clear spinal fluid withdrawn and 2 c.c. of adrenalin injected; 10 P. M., 20 c.c. of fluid withdrawn and 3 c.c. of adrenalin injected. Thursday, 1 A. M., 5 c.c. withdrawn and 2 c.c. of adrenalin injected; 5 A. M., 10 c.c. withdrawn and 3 c.c. adrenalin injected; 10 A. M., 4 c.c. withdrawn and 2 c.c. adrenalin injected. The last injection was given at 2 P. M., 4 c.c. withdrawn and 2 c.c. adrenalin injected.

The patient also received urotropin 5 grains every four hours and oxygen under pressure was administered with Dr. Meltzer's apparatus (obtained from Tiemann & Co.).

Thursday, 10 A. M., there was a distinct improvement; the patient could flex his arms across the body and could use his thoracic muscles; but he had difficulty with the muscles of the neck, throat, and tongue, and some ocular palsy was present. About 1 P. M. paralysis above the waist increased. He became irrational, and at intervals was deeply cyanotic. He died at 7.40 P. M.

This very bad case seemed to be fatal from the start; it presented a mixture of the encephalitic and bulbospinal types. The paralysis spread rapidly. Death occurred probably from paralysis of the respiratory and vasomotor centers. The adrenalin treatment was begun very late and very little hope could be entertained regarding its effect. Nevertheless, after the fourth injection an unmistakable improvement in the spinal paralysis took place. Regarding the question whether adrenalin could accomplish a cure, Meltzer says (MEDICAL RECORD, July 22, p. 160) that on account of the comparatively low mortality of infantile paralysis it could not be answered for some time to come. "However," he says, "there is one form of evidence which is of actual value and that is when an improvement is observed which has to be ascribed to the treatment." It seems to me that the present case offers such evidence.

The questions unsolved are, where and when did the man contract the disease? What was its incubation? Where is the danger? Two nurses and mother and father were in close attendance. Dr. Miller attended the patient ten or twelve times and I visited him five times. We are all well at this date, August 21. The problems to solve are: First, what is the germ causing this disease? Second, how, by whom or in what way is the germ carried? Every suggestion by layman or physician should be reported and recorded. Every one who has had the disease should come forward and offer a little blood to help some one else.

Until the germ is isolated an exact serum cannot be made. Every facility for study with animals ought to be encouraged. Until the exact cause and method of contagion has been discovered we must resort to all known methods of quarantine and prevention and do many things which may later prove superfluous.

21 West 122d Street.

The Value of Deep Percussion in the Diagnosis of Subacute Intraabdominal Disease. — Neuhof refers to this procedure for the elicitation of localized tenderness, and states that it has been of great value in the diagnosis of subacute and subsiding intraabdominal affections, especially in the examination of obese individuals and of those who do not sufficiently relax their abdominal wall for satisfactory palpation. The method is free from danger and should therefore be made part of the routine physical examination in subacute and subsiding intraabdominal affections.—*Archives of Diagnosis.*

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FUNCTIONAL PSYCHIC DISTURBANCES IN THE LIGHT OF WAR.

PSYCHIATRICAL problems receive their share of enlightenment from the vast laboratory the war has thrown open to medical science. Neuropathology and psychopathology are the subjects of much attention and discussion. Thus it comes to pass that modern theories in regard to the relation of psychic trauma and psychopathic predisposition are being distinctly advanced.

The observations made by Dr. Lewellys F. Barker in his presidential address delivered before the American Neurological Association in May, 1916, printed in full in the *Journal of Nervous and Mental Disease* for July, and in abstract in the MEDICAL RECORD of July 29, are confirmed by reports from the front, a number of which are published in abstract in the *Review of Neurology and Psychiatry* for May, 1916. There is an agreement of opinion that a distinction can assuredly be made between the psychotic or the psychoneurotic disturbance arising as the result of battle shock and that which is complicated by a psychopathic tendency, which only awaits, in order to become active, such extreme conditions and such excessive and untoward demands for adaptation as the exigencies of war present. Sudden and violent abnormalities in reaction are inevitable. Their occurrence, however, in no way denies the importance to be attached to the unconscious mental life in the production of mental disturbances. It does not argue for the current inflexible conception of pathological causes which attributes such phenomena always to the immediate traumatic agent.

It is noteworthy that these disturbances of mental equilibrium, inevitably induced and violent though they may be in character, are easily amenable to a wise therapy. The factor of chief significance in the consideration of the genetic theory of the functional neuroses and psychoses is the appearance and perhaps persistence of accompanying mental phenomena which seem to be aroused by the immediate traumatic outbreak and to follow in its train. Testimony points generally in this direction, that it is with the man who furnishes the fruitful soil, neuropathic or psychopathic, in whom these sequelæ are observed. The precipitating cause applies the spark to the unconscious material. The actual emotional importance of the immediate trauma manifests itself in the terrifying nature of the dreams of actual war experience. These, however, are transient phenomena. There are blended with these dreams, Dr. Bruce reports, quoting from the *Lancet*, "episodes utterly alien to the war" and events "in the patient's past history, the revivified emotions associated with which the war incidents have served to awaken, by stirring up similar emotions." One might expect some experience of horror to usurp consciousness and even to build up a permanent delusional system, which does happen at times unless an interpretative therapy comes to the rescue. Nevertheless, the deep-laid emotional experiences and sentiments which make up the personality, chiefly through the unconscious, by their self-assertion in the face of such crises, witness to the measure of their importance and reality.

The psychotherapy of the battlefields and hospitals is permeated with the modern comprehensive viewpoint and conditions there are met in the spirit which takes into account the whole psychical history, recognizes the remote contributing causes and believes in the value of the interpretative attitude toward the patient himself and in his psychic reeducation. It is striking to note in passing how frequently hypnosis is condemned as inadequate or actually deleterious. It is also of interest to observe how the demands of reality operate under war conditions to bring the patient back to his normal state, particularly in the acute transient conditions without the psychopathic background. This serves as an intensified illustration of the fundamental principle of psychoanalytic therapy. It is a radical application of the "reality principle" as the royal road to psychic health, a reality specially urgent and particularly effective amid the necessities of war.

Much of interest and much of value is thus afforded in the knowledge of mental disturbances, in the borderland cases as in the distinctively neurotic or pronounced psychotic conditions, and much is being added to the effectiveness of psychotherapy along these lines.

ERYSIPELAS TREATED WITH DIPHTHERIA SERUM

ABOUT two years ago Pollak recommended ordinary diphtheria antitoxin in the treatment of erysipelas and one year later Koller, a Swiss, briefly reported a case of his own in which he followed successfully the plan of Pollak. In the *Correspondenz Blatt für Schweizer Aertze* for July 8, Koller reports his second case. The patient was an old woman who was subject to attacks of facial erysipelas which had hitherto yielded to ichthyol applications. In the present attack ichthyol had been of no avail. After nearly all of the face and scalp had become involved, and the patient presented a high morning temperature, 3000 units of diphtheria antitoxin were injected. A remarkable decrease in swelling was very soon apparent and subjectively the patient was much better. By the end of twenty-four hours the swelling seemed to have disappeared, but as areas of tenderness remained in the scalp, 1000 more units of antitoxin were given. She was now objectively well, although probably by reason

of her age her general condition was somewhat grave, she being extremely weak, with insomnia and night sweats. At the end of five days she was discharged cured.

In comparing his two cases Koller finds several points of parallelism which show that the serum acts directly upon the cause of the disease. These refer to the sudden arrest and regression of the local process and a critical defervescence accompanied by profuse sweating. The second patient seemed doomed. Taken by themselves these two cases prove nothing, but taken in conjunction with Pollak's results they tend to corroborate the latter. The author apparently uses colloidal silver in the routine treatment of erysipelas and used it perfunctorily in the reported cases, but had never seen any constant improvement follow its use when given alone. It is possible, however, that the combination of serum and silver is superior to serum alone, and he would use both in severe cases or in the presence of special indications. He has seen cases in which a surprising improvement followed at once upon an intravenous injection of silver.

Koller's contribution is of great interest at the present time because ichthyol has practically disappeared from the market as a result of the war. The price of the very small reserve is prohibitive for the treatment of a malady like erysipelas, the importer's price being quoted at $16 a pound, and with the profit of the distributor and dispenser added the consumer might have to pay as much as 2 or 3 cents a grain. In hospital practice the normally high price of the drug has made it necessary to use cheaper applications when practicable, and in consequence it has never been possible to determine to what extent ichthyol is really a life-saving remedy. But deprived of it altogether public and private patients alike should be expected to suffer somewhat, and the serum treatment might to a certain extent offset the loss.

ARTIFICIAL PURIFICATION OF OYSTERS.

AN interesting series of experiments carried out by the Public Health Service (Public Health Reports, July 14, 1916) point to the economic possibilities of rendering oysters safe for human consumption. When it is considered that because of the abundant sources of food supply shell fish thrive very well in bays and estuaries polluted by sewage, it can be seen what prolific sources of infection they can be. Urban typhoid epidemics have often been traced to this source. And while the artificial purification of the oyster does not do away with the esthetic objections to eating an animal fattened in sewage it does eliminate the disease factor. The Rhode Island Fish Commission has placed the conditional limit of colon bacillus infection at 10 colon bacilli to the cubic centimeter. The usual infection with colon bacilli is many hundred per cubic centimeter.

It has long been known that there is a tendency to the self-purification of oysters when transferred to pure water. The self-purification is complete within from a few hours to two days. The modus operandi is evident when one realizes that the passage of water through the oyster is very large and very rapid. As much as 20 to 50 gallons of water pass through in a day. The passage of food particles through the intestinal tract is quite as rapid. In France basins of filtered water have long been used to effect this purification, but the cost of this process compared with the sale price of the oyster renders the method quite impracticable. And indeed, if it is fairly clean, unfiltered sea water is better for purification purposes because the food particles in unfiltered water stimulate passage through the intestinal tract and help to carry through and to discharge the contained colon bacilli.

Instead of filtered water, therefore, the usual methods of the chemical purification of water were utilized in these experiments to render the oysters free from colon infection. In carrying out these experiments oysters were inoculated with both free cultures of colon bacilli and attached colon bacilli; *i.e.* with the bacilli in finely divided agar suspension. The water was then disinfected with 10 per cent. calcium hypochlorite solution. A considerable purification of the oysters contained therein occurred within six hours, and a remarkable purification within twenty-four hours. The results were below the conditional amount permitted by the Rhode Island Fish commission, although the amount of the artificial infection was much greater than it would be in natural infections in polluted oyster beds. Usually two doses of hypochlorite were given, the second after six hours in order to reach such infection still within the oyster and not discharged because of the possible closure of the shell during the first period, and because of the rapid decomposition of the hypochlorite. This treatment was found not to have a bad effect upon the flavor of the oyster or upon its well-being. In the case of an element of food so widely used any method that will insure the safety of the consumer while preserving the flavor of the oyster is deserving of consideration.

THE FUNCTION OF THE THYROID.

OPINIONS with regard to the chief function of the thyroid differ considerably. Some believe that it governs metabolism, others that it is a vital antiseptic, and yet others that it is concerned with growth alone. In the *Medical Press* for June 7, 1916, Dr. Jos. Geike Cobb endeavors to answer these questions and gives a few facts and some theories dealing with the function of this gland. Firstly, then, the thyroid gland possesses the peculiar property—peculiar in the sense that it is not shared, so far as is known, by the other endocrine glands—of being able to store its secretion. This is proven by the fact that in cases where the gland has atrophied or been removed, its secretion can be replaced by artificial ingestion. As Dale says, we quite naturally turn to the colloid as being the stored up secretion, and, indeed, are justified in doing so, as there is evidence to show that this substance arises in droplets in the epithelial cells lining the vesicles. Again, this secretion contains a relatively large percentage of iodine, and on this fact, or partly on this fact, has arisen the theory that the thyroid has a phagocytic or antitoxic action. In fact, there are a tangle of theories concerning the action of the thyroid, some of which seem to give grounds for belief that its action is in a certain direction.

However, it is definitely known concerning the thyroid that a train of symptoms follows its deficiency or absence, whether produced experimentally on arising spontaneously, and that these symptoms will yield to thyroid feeding. Thyroid is, therefore, concerned with the growth of bone, with the development of the body, and with a normal circulation. Further, in the adult, there is now no doubt that absence or diminution of the secretion produces, or helps to produce, a condition of secondary anemia. Whether this argues any direct connection with the hematopoietic system it is at present impossible to say. That the thyroid is a direct circulatory stimulant there is no doubt; for the slow pulse, cold extremities, sluggish circulation, and deficient action of the sweat glands in submyxedema are very well recognized. The interaction of the thyroid with the other ductless glands will probably show that the relation between the thyroid and some of the other endocrine glands, notably the spleen, is a close one.

Volhynia Fever.

At a session of the Berlin Medical Society last February (*Berliner klinische Wochenschrift*, March 20) a new fever was described by His, Jungmann, and others. It has been studied in the German armies on the Eastern front, and bears considerable resemblance to malaria. The febrile crisis comes on suddenly and lasts one day, but from four to six days elapse before a second crisis. The pains are severe, especially in the lower limbs, and the shins may be very tender to pressure. The patient feels most wretched. The Polish physicians have looked on the ailment as a form of malaria or of relapsing fever, according to circumstances, but the Germans regard it as a third disease to be known as febris volhynica. The cyclical course suggests a protozoan cause, probably carried by an insect, and its incidence—mass infection in hospital patients—suggests that the latter is the louse. A study of the blood by Töpfer with dark illumination has shown the presence of a motile spirochete, but a short bacillus with clumping tendencies may have to be excluded as a cause. Jungmann has recognized the presence of organisms which resemble diplobacilli, and are constant in the blood of fever cases. These are in a high degree motile, and show considerable variety in form. No attempts at cultures were made, but by injecting the warm fresh blood into the tissues of guinea pigs febrile paroxysms were set up. The suffering caused by the disease is intense, and apparently the pains in the legs and back are as bad as those of any other infection. No mortality or permanent disability has been noted. The disease appears to vanish spontaneously in time. Tenderness of the shins persists longer than any other symptom. Russian prisoners knew of the disease but had no name for it. Their physicians prescribed quinine with benefit, but the Germans found the remedy inert.

A General Indication for the Use of Thiosinamine.

Patience and persistence in the use of a remedy along the line of a definite general indication often yields striking clinical results. Thus Dr. Gonzáles Castro reports in *El Siglo Medico* for June 24 that for four years he has been steadily employing thiosinamine and believes that it is especially indicated in imperfect or defective resolution in wound healing and inflammation. In one case an old man with some prostatic hypertrophy had developed gonorrhea five months previously and had eventually sought relief for complete retention. The stenosis was evidently due in part to abuse of injections of nitrate of silver, which had produced several wide strictures. While it was possible to empty and treat the bladder and secure some improvement by progressive dilatation, the author nevertheless made use of thiosinamine by subcutaneous injection. The rapidity in improvement could not have been accounted for by dilatation only, for within a brief interval the author passed gradually from a No. 8 to No. 24 and the patient's recovery was apparently complete after treatment for thirteen days only. Another case was one of traumatism of an eye which resulted in a large corneal ulcer and hypopyon. The cornea was opened and the pus evacuated. The development of a large leucoma was almost certain, but the author instilled into the conjunctiva a mixture of cocaine and thiosinamine and the result was a perfect recovery, not a trace of corneal opacity having developed. These successes are not isolated, but represent only a small part of a series of favorable results from this remedy in the author's experience.

News of the Week.

Poliomyelitis Situation.—The hoped-for decrease in the new cases of poliomyelitis in New York has not yet been apparent, 7,446 cases in all having been reported up to August 23, with 1,731 deaths. In Brooklyn and Richmond the epidemic appears to be "burning itself out," however, and in Manhattan there was a slight drop in the number of new cases for a few days. In the city as a whole 912 new cases were reported in the week ending July 29, 1,117 in that ending August 5, 1,151 in that ending August 12, and 912 again in that ending August 19. It is feared that with the close of vacations numbers of susceptible children not before exposed may return to the city, and that the epidemic may have a temporary flare-up. The date of reopening the schools in the city has not been definitely determined, but is probable that they will open as usual on September 11. At Princeton University, however, it has been decided to defer the opening to October 10.

In the State outside of New York City 1,239 cases were reported up to August 20, with 150 deaths.

For the purpose of securing an additional supply of immune serum a citizens' committee has been formed; this committee will endeavor to get in touch with the 700 or more persons here known to have recovered from poliomyelitis and will ask that they give blood. A fund of $2,000 has been raised to defray the expenses of the work.

The Committee on After-Care of Infantile Paralysis has selected the visiting nurses of the Henry Street Settlement to follow up all paralyzed patients in Manhattan and the Bronx, each patient being reported to the Settlement as soon as released from quarantine by the Department of Health.

Conference on Poliomyelitis.—The conference of State health officers and representatives of the Public Health Service held in Washington on August 17 and 18, adopted a report containing a

set of rules intended to check the interstate spread of the disease. As a first step, the report states, the situation should be put in the hands of the Public Health Service. The service should then undertake an investigation of the infected area, should make notification of the removal of persons under 16 years of age from an infected area to another State, and should issue permits for travel based on inspection by agents of the service, not on the certificates of private physicians. The report disapproved of quarantine by one State against another, or by one community against another in the same State; it was thought that the Public Health Service could perform all the duties of notification and certification required in interstate relations in case of unusual prevalence of poliomyelitis, and that State Health authorities should perform like services between communities in the same State. The report recommends, further, that all cases of poliomyelitis be reported immediately to the local and the State health authorities, and by the latter to the Public Health Service; that all persons 16 years of age or under moving from an infected area be kept under medical observation for at least two weeks; that the period of isolation of a case of poliomyelitis be not less than six weeks from the date of onset; that persons suffering from the disease and their attendants should be rigidly isolated in a properly screened room, all bodily excretions to be disinfected at the bedside, it being understood that removal of a patient to a hospital is greatly to be preferred to isolation at home; that in case of death from poliomyelitis the funeral should be strictly private; that wherever the disease is unusually prevalent assemblages of children in public places should be prohibited, and that schools should not be open without thorough medical supervision; that because of the existence of unknown carriers of the virus, measures should be taken to prevent contamination by human excretions, to suppress the fly nuisance, and to do away with the common drinking cup; and that a general educational campaign for cleanliness and sanitation, with particular instruction concerning personal hygiene, especially of the mouth and nose, be carried out. The report states that the epidemic prevalence at this time in certain States indicates a likelihood of epidemic prevalence next year in States not now affected, and it is, therefore, believed that the measures recommended should be continued in operation at least until such time as the incidence of the disease has subsided to or below its usual level.

Gift to Dental School.—Columbia University has recently received from Mr. James N. Jarvie a gift of $100,000 for the new dental school to be connected with the university, for which an endowment of $1,000,000 is being sought. It is now expected that the school will open in September in a temporary building near the College of Physicians and Surgeons.

Painless and Shockless Childbirth.—In the article with this title by Dr. Kapp in the MEDICAL RECORD of August 5, in one of the case reports the dose of heroine given was said to have been gr. ½; it should have been, as stated elsewhere in the article, gr. 1/12.

Quinine in Poliomyelitis.—Dr. N. McL. Whittaker of Brooklyn recommends an intramuscular injection of 10 to 20 grains of quinine and urea hydrochloride, followed by 3 or 4 grains of quinine per os every hour or so until the patient has received 40 grains or until evidences of quinine poisoning appear. He also recommends quinine in 2 to 5 grain doses every night as a prophylactic.

American Chemical Society.—At the meeting of the American Chemical Society to be held in New York on September 25 to 30, there will be conducted a symposium on occupational diseases, presided over by Prof. Charles Baskerville of the College of the City of New York. Among the subjects to be considered are the chemical trades, prophylaxis in chemical industry, diseases incidental to work in aniline and other coal-tar products, cedar lumber, mines, and explosives. The discussion will be participated in by a number of the leading authorities of the country.

Public Health Service.—As recently announced, Congress has made an appropriation for thirty-three additional assistant surgeons in the United States Public Health Service, and examinations will shortly be held in various cities for the convenience of candidates. Information as to these examinations may be obtained from the Surgeon General, United States Public Health Service, Washington. The tenure of office in these positions is permanent, and successful candidates will receive commissions immediately. After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon, and in turn to the grade of surgeon. Assistant surgeons receive $2,000; passed assistant surgeons, $2,400; surgeons, $3,000; senior surgeons, $3,500, and assistant surgeon generals, $4,000 a year, and all grades receive longevity pay, 10 per cent. in addition to the regular salary for every five years up to 40 per cent. after twenty years' service.

Red Cross Preparedness.—As a result of its campaign the membership of the American Red Cross increased, during the six months ending July 31, 1916, from about 27,000, which represented the growth of the society for the past ten years, to about 210,000. During the same period the number of Red Cross chapters increased from 110 to 199. While up to six months ago practically nothing had been done towards organizing volunteer aid for the sick and wounded of our army and navy, since that time the necessary staffs for twenty-five base hospitals for 500 beds each for the army have been enrolled; several naval base hospitals of about half the size are under preparation; funds for the purchase of equipment of sixteen of the twenty-five army base hospitals, amounting to $25,000 each, have been subscribed, and the purchase of this equipment has been begun, the material being stored so as to be ready for immediate use in case of need.

Old Hospital Wrecked.—A dispatch from Paris states that the Civil Hospital of Rheims, formerly the Abbey of the Church of St. Remy, which was recently destroyed by German artillery fire, was one of the finest edifices in the city. Although the building was almost entirely reconstructed in the eighteenth century, there remained in one portion a part of a primitive cloister, a perfectly preserved and magnificent specimen of the twelfth century. The linen room had contained a beautiful collection of tapestries, but these were recently removed to the museum in Paris.

Good Health of the Guard.—The report for the week of August 12 of the health of the men on the Texas border shows that the sick rate among the National Guard was only 1.21, while among the regulars it was 2.38.

Opportunity for the Study of Poliomyelitis.—There is at the present time a position open for a graduate physician in the poliomyelitis ward at Bellevue Hospital, New York, where he will receive board and lodging in the hospital during the period of his service, which would be a six months' term, which could be supplemented by a further period of six months if desired. Application should be made to the superintendent of the hospital, Dr. George D. O'Hanlon. Preference would be given to applicants having previous hospital experience, but the latter is not necessary.

Opportunities in Civil Service.—The New York State Civil Service Commission calls attention to the opportunities offered to qualified physicians for appointment to positions in the medical service in State hospitals, prisons, and charitable institutions. Although the salaries offered seem to afford adequate compensation, the number passing the examinations has not been sufficient to meet the needs of the service. For instance, at a recent examination for prison physician, salary $2,000, the number of applicants was small and no one passed the examination successfully; an examination held at the same time for assistant prison physician, salary $1,500, produced only two eligibles. On examination for assistant physician in the State Hospital held on January 22, 1916, produced eighteen eligibles, but the list was practically exhausted by July 1. In the opinion of the commission the State Hospital Service really offers a career, as there is a regular line of promotion for the medical staff from assistant physician to superintendent.

Philadelphia General Hospital.—Dr. Richard C. Norris has resigned as visiting obstetrician to the hospital, and has been appointed consulting obstetrician. Dr. Edward A. Schumann has been made visiting obstetrician.

Red Cross Shipments.—The American Red Cross announces that from April 1 to July 1, 1916, 217 shipments consisting of 32,605 packages and having a total value of $1,002,021.87 were shipped to the Allied Powers, and that during the same period of 48 shipments, consisting of 6,667 packages and having a total value of $310,732.36 were shipped to the Central Powers. In addition, 34 cases of tetanus antitoxin, of a value of $131,986, were sent to Vienna, and 34 cases valued at $229,595.60 to Berlin; for these the American Red Cross was reimbursed by the Austrian and German Red Cross respectively. Smaller shipments, having a total value of $17,949.12, were also made to other countries, so that during this period the total value of the supplies shipped was $1,330,703.35. The total value of the supplies on hand on July 1 was $79,047.63.

Since October last, when the American Red Cross, owing to lack of funds, withdrew the hospital units it had established and maintained for more than a year in Europe, it has been endeavoring to obtain permission from Great Britain to send hospital supplies to the Central Powers. Great Britain now suggests, however, that the Red Cross reestablish the hospital units and promises to permit the passage of hospital supplies to these hospitals, and, in accordance with this suggestion, application has been made to the Central Powers, through the State Department, for permission for the reestablishment by the American Red Cross of one or two hospital units of six doctors and eight nurses each, in each of the countries. Germany, on the other hand, has recently announced that free passage of Red Cross supplies to other countries will no longer be allowed, and that German naval forces will receive orders to take such articles for their own use when they come within their reach.

American Association for Study and Prevention of Infant Mortality.—The seventh annual meeting of this society will be held in Milwaukee on October 19 to 21, 1916. The subjects to be discussed include governmental activities in relation to infant welfare, care available for mothers and babies in rural communities, standards for infant welfare, nursing, morbidity, and mortality in infancy from measles and pertussis, public school education for the prevention of infant mortality, and vital and school statistics. Dr. S. McC. Hamill of Philadelphia is president of the association, and Dr. William C. Woodward of Washington president-elect for 1917. Programs and further information may be obtained from the executive secretary of the association, 1211 Cathedral Street, Baltimore, Md.

Medical Society of the Missouri Valley.—Under the presidency of Dr. John P. Lord, the annual meeting of this society will be held at the Hotel Fontenelle, Omaha, Neb., on September 21 and 22, 1916. Particulars may be obtained from the secretary, Dr. Charles Wood Fassett, St. Joseph, Mo.

Obituary Notes.—Dr. JOHN ALVA MCCORKLE of Brooklyn, N. Y., professor of medicine in the Long Island College Hospital, died at the hospital on August 15, aged 69 years. Dr. McCorkle was graduated from the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1873, and a year later became associated with the chemical department of the Long Island College Hospital. In 1880 he was made professor of materia medica at the school, and in 1886 professor of medicine. For the past twelve years he had served as president of the College Hospital, and was also visiting physician to the hospital, consulting physician to the Kings County Hospital, the Norwegian Deaconess Hospital, the Jewish Hospital, and St. John's Hospital, and physician to the Long Island State Hospital. He was a member of the American Medical Association, the New York State and Kings County Medical societies, the Brooklyn Pathological Society, and the Academy of Medicine.

Dr. ADAM J. BLESSING of Albany, N. Y., a graduate of the Albany Medical College in 1886, and a member of the Medical Society of the State of New York and the Albany County Medical Society, died at his summer home in Sacandaga, N. Y., on August 6, aged 52 years.

Dr. WALDEMAR DORFMAN of New York, a graduate of the University of Berne, Switzerland, in 1882, died recently at his home.

Dr. HENRY COOLEDGE FROST of Buffalo, N. Y., a graduate of the Cleveland University of Medicine and Surgery, Cleveland, Ohio, in 1874, surgeon to the Homeopathic Hospital, and consulting surgeon to the County Hospital, died in Montreal, from heat prostration, on July 22, aged 56 years.

Dr. GEORGE WARREN BROWN of Winsted, Conn., a graduate of the Eclectic Medical of Maine, Lewiston, in 1883, died at his home, after a short illness, on August 2, aged 65 years.

Dr. JAMES H. LACKEY of Nashville, Tenn., a graduate of the Cincinnati College of Medicine and Surgery, Cincinnati, Ohio, in 1874, and a member of the Tennessee State Medical Association and the Nashville Academy of Medicine, died suddenly at his home, from neuralgia of the heart, on July 26, aged 68 years.

Correspondence.

THE TREATMENT OF POLIOMYELITIS.

To the Editor of the Medical Record:

Sir:—From recent observations and study of certain phases and aspects of the present epidemic of poliomyelitis I cannot resist the impulse of again calling the attention of the medical profession to the treatment of acute cases of poliomyelitis with a combination of quinine, phenacetin, antipyrine, and caffeine citrate in medicinal doses (as suggested in my previous communication in the *New York Medical Journal* of July 22 last), being fully confident that with this treatment, especially in the preparalytic stage, we are able to arrest the progress of the disease within twenty-four to forty-eight hours, and thus check or abort the advent of paralysis in perhaps 90 per cent. of cases. I am making this apparently bold statement with full appreciation of the danger of humiliation, in the event of an unprejudiced disproval of my statements, yet I do so fearlessly and without hesitation, being fully convinced of the efficacy and merit of the treatment.

The following prescription may serve to illustrate the dosage, vehicles, and mode of administration:

℞ Quinine sulphate,
Phenacetin,
Antipyrin, of each 20 grains.
Caffeine citrate, 4 grains.
Syr. yerba santa,
Syr. tolu,
Distilled water, of each equal parts to make 4 oz.

M. Sig.: One teaspoonful every two hours for children of about one to two years of age; in severe cases and somewhat older children, every hour till temperature, pain, muscular stiffness, and hyperesthesia disappear, then every two or three hours at the discretion of the physician. In children of from three to five years of age, the same prescription, but in doses about one-third larger. In children above that age, the doses may be modified at the discretion of the physician, but on no occasion will it be necessary to give more than 1¼ grains of each of the first three drugs, and not more than ¼ grain of caffeine per dose.

In case, however, some paralysis or muscular weakness should begin to manifest itself, which may happen, but very rarely, the administration of iodide of potassium with very small doses of Fowler's solution, in addition to the foregoing medicines, will soon effect a complete cure (provided the case is not of long standing). For instance, in the case of a two-year-old child:

℞ Potassium iodide, ½ dram.
Solution of pot. arsenite, 15 drops.
Comp. syrup of sarsaparilla.
Distilled water, of each 2 oz.

M. Sig.: A teaspoonful every three hours, the physician exercising his judgment as to older and younger children as the case may be.

I desire further to make a few remarks, and to submit certain prominent points and features in connection with the etiology and pathology of the present epidemic.

On close analysis of the various reports of the Health Department, as well as from my personal daily investigations and diligent study of everything that may be associated with the epidemic, I find very little, if any, proof or even fair evidence as to the existence of any relationship between the etiology of poliomyelitis and sanitary or hygienic conditions and surroundings. Nor are there any palpable data or strong enough indications as to the communicability or contagiousness of this affection. As a matter of fact, cases of poliomyelitis are found under all conditions and surroundings, irrespective of sanitary or hygienic standards. I have personally inspected houses and families where infantile paralysis had occurred and which I found in almost ideal sanitary and hygienic conditions; while on the other hand, I have visited dozens of houses with the most deplorable sanitary conditions with children actually bathing, as it were, in foul decomposing garbage and refuse in which not a single case of poliomyelitis has made its appearance.

Another noteworthy fact is to be found in the relative rarity of more than one case of the disease occurring in the same family or the same house. Children are developing the disease while apparently far removed from, and in no way in contact, direct or indirect, with any supposed source of infection. On the other hand, children coming in direct contact with patients seldom contract the disease.

A physician friend of mine who is an interne in one of the institutions with a large number of poliomyelitis cases (about 350) told me that they are keeping nonpoliomyelitic and healthy children together, and feeding them together, and have never noticed any evidence of contagion.

While far from depreciating the excellent and highly important precautions as to cleanliness, sanitation, and general hygiene, which are absolutely necessary for the prevention of all infectious and communicable diseases, and which it is the duty of every one of us to enforce to the best of our ability, I fail to see enough reason for extraordinary isolation and quarantine in this particular case.

In the face of the foregoing facts and phenomena it appears that the real factors which may be responsible as etiological agents in the present epidemic, are to be looked for in other directions, and in my opinion are to be found in some special atmospheric conditions, as temperature, humidity, atmospheric pressure, etc., which conditions are well known to be highly influential in predisposing to many pathological changes and organic lesions entirely independently of outside infections. Hence, why is it not possible that some special atmospheric conditions may set up, in susceptible individuals, a certain inflammatory process in the spinal cord?

B. Scheinkman, M.D.

152 Canal Street, New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

DYSENTERY—CASES FROM THE FRONT—NATURE AND DISTRIBUTION—SINGLE AND MULTIPLE INFECTIONS—COMPARISON OF MILITARY HOSPITAL TO POST-OFFICE—LAMBLIA INTESTINALIS.

London, July 29, 1916.

Drs. A. M. Kennedy and D. Rosewarne in the course of investigating cases of dysentery invalided home from Gallipoli found that the condition seemed to be due to infection by *Lamblia intestinalis;* in 12 cases they readily found this parasite. The persistence of the infection is a point illustrated by their cases. Previous observers have recorded a chronic dysenteric condition resisting all ordinary

treatment. Wenyon had three patients who maintained the infection for years. Some had repeated attacks accompanied by mucous diarrhea, but one of them showed no symptoms of intestinal trouble. The pathogenicity of the lamblia is not yet admitted as beyond question, so that a series of cases like these are of interest and may contribute to a decision of this point. The writers record their cases without making any dogmatic statement. They do not attempt to decide whether there had been a primary amebic dysentery on which a secondary infection had been planted. That is a question which may well interest bacteriologists who have the opportunity of investigating it. No positive agglutination was obtained with any of these patients' sera or with known dysenteric bacilli. If the organism be pathogenic, then how to deal with carriers becomes an important question. That they are not uncommon appears from the numbers found in the series under consideration—12 out of 136 consecutive cases of so-called dysentery—approximately 9 per cent.

The nature and distribution of the parasites in 1,305 dysenteric cases has been reported to the *Lancet* by Dr. Fantham, who took an active share in examining some 3,800 stools from soldiers in the hospitals of the western command. Most of the patients were convalescing. The parasites were mostly protozoa and *Blastocystis enterocolia*. Combined infections in 446 positive cases are stated. In single infections there were 325 cases; in double infections 79; in triple 33; quadruple 7; quintuple 2. Besides these, 499 examinations were made by Dr. Fantham of 14 special cases in the military hospital. All were parasitised and examined daily while in hospital. Most of them were specially examined for lamblia then for entameba. Double, triple, and other multiple infections were found in some of the stools: thus one patient showed when first seen *Girardia intestinalis* and *Antameba coli*. Soon spirochetes (eurygryata and blastocystis) appeared in his feces and later *E. histolica*. The periodicity of these cases was different. The lamblia decreased, disappeared for 13 days, then reappeared in sparse numbers; the spirochetes acted similarly in a shorter period. Tetramitus was also seen in this patient. Multiple infection was, however, rather rare. There are not so many parasites in a formed stool as in a diarrheic one. Relapses of lambliasis are met with. Some workers say the organism is harmless and give no treatment for it; and patients infected with it have been discharged from hospital as they had not dysenteric bacilli also, but they may carry the infective cysts of the parasite wherever they go and the danger of their setting up diarrhea is obvious. It is now commonly believed that amebic dysentery may be carried into a healthy district by an infected person who has no symptoms that trouble him, and the manner of preventing this is a problem demanding investigation.

At the Royal Society of Medicine Major Tate McKenzie compared a great military hospital to a general postoffice in which the patients were sorted out as first, second, and third class matter. The first was rapidly distributed to the Red Cross hospitals, but after treatment returned; the second had to stay a time at a convalescent hospital. Many of these found their way back to the front. For the third it was more difficult to provide either in hospital or homes. Early in the war they were sent from one depot to another. But later the director general arranged a series of command-depots to which were sent all cases for which there was a reasonable hope of cure within six months. The object was to return to the front those fit and to sort out and arrange for the others employment for which they were capable.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 10, 1916

1. The Diagnosis and Management of Vasomotor Disturbances of the Upper Air Passages. J. L. Goodale.
2. Asthma in Children, II. Its Relation to Anaphylaxis. Fritz B. Talbot.
3. Preparation of Vegetable Food Proteins for Anaphylactic Tests. R. P. Wodehouse.
4. Normal Reaction of the Skin to Stroking. Edward A. Tracy.
5. Protein Extracts in States of Hypersensitization. Horace M. Baker and Cleaveland Floyd.
6. Hay-Fever: Its Treatment with Autogenous Vaccines and Pollen Extract. Leon S. Medalia.
7. Embolic Pneumonia Following the Mastoid Operation. George L. Richards.

1. The Diagnosis and Management of Vasomotor Disturbances of the Upper Air Passages.—J. L. Goodale calls attention to the fact that in a large proportion of vasomotor diseases of the upper air passages the disturbances are dependent upon the entrance of a foreign proteid into the system. The method of entrance may be through the contact of the proteid in question with mucous membranes of the respiratory or gastrointestinal tract by inhalation or ingestion respectively. Foreign proteids may perhaps also develop in or upon these mucous membranes through autolysis of pathogenic or saprophytic bacteria. The application of the skin test to these conditions is of diagnostic value when employed with a recognition of the phylogenetic relationships of animals and plants, as determined by sero-biology. Proteid material for testing should be prepared both from the keratin and sera of domestic animals, from the pollen of the cheif causes of hay-fever, and from the various articles of food which enter commonly into the diet. Bacterial proteids derived from the various invaders of the respiratory tract should be available either in solution or in soluble form. When the skin reactions to the various classes of pollen proteids have been determined, the management of cases will depend largely upon the relative preponderance of the local reactions in relation to the clinical history. If the case is found to be seasonal, as in hay-fever, immunization treatment by injection of pollen extracts is likely to be of service but will probably have to be repeated annually. If the cause is perennial and is due to inhalation of foreign proteids, it is wiser to avoid the cause than to seek to effect a cure by immunization. If the disturbing proteid enters into the ordinary articles of diet, a tolerance may be gradually established by feeding the substance in progressively increasing doses. These investigations confirm the present methods of treating disturbances of bacterial origin, and emphasize the importance of draining regions which can retain the products of bacterial activity. Vaccine therapy in anaphylactic cases should be more accurately guided than in ordinary individuals. The writer concludes that we possess in the intelligent application of the skin test a very definite aid in the diagnosis and consequent management of cases of vasomotor disturbances of the upper air passages.

2. Asthma in Children. II. Its Relation to Anaphylaxis.—Fritz B. Talbot has followed forty-five cases of asthma in childhood over a period of several years and has studied twenty-three of these cases carefully; of these, eighteen had eczema at some time or other.

This is a higher proportion than was found by Berkhard. A family history of asthma, hay-fever, rose cold, eczema, or idiosyncrasy to some food was present in nineteen out of the twenty-three cases, while in the remaining four cases there were no notes in the family history on these points. In nineteen of the twenty-three cases there was a positive skin test to fresh egg albumen. Of the forty-five cases there were thirteen in which the skin test gave no clue to the etiological cause of the asthma. In one case thirty-eight tests were made before positive information was obtained; this illustrates the difficulty of finding the cause of asthma. It was found that one individual was apt to react to more than one form of protein. The essayist concludes that a definite etiological connection may be established between most cases of asthma and some foreign protein by the skin test. Information given by the skin test is of inestimable value in outlining the treatment of the case, and with the use of this information marked improvement or cure often follows. Experience has shown that when a positive skin test is obtained for a food and the food is then removed from the diet, the general condition of the patient almost invariably improves, and in many instances a cure results. It is still too early to say whether all of the positive reactions are of equal clinical importance, but experience seems to show that the severity of the symptoms is not always indicated by the size and character of the reaction.

4. Normal Reaction of the Skin to Stroking.—Edward A. Tracy describes what he believes is a normal reaction of the skin to a mechanical irritant because of the fact that it was observed in 1,165 out of 1,236 individuals examined. As there were known disease conditions present in the remaining cases, it strengthens the deduction that this reaction is normal. The phenomenon is that when the skin of a normal quiescent subject is stroked by a wooden instrument (a tongue depressor or a match) it reacts by a deepening of the skin tint, generally brief in duration, appearing where the stroke was made or in its immediate vicinity, and then, after a period of about fifteen seconds, by a longer lasting whitish color, showing itself in the location where the stroke was made. The writer gives his reasons for believing that this phenomenon is caused by a double nerve mechanism, one for vasodilation (autonomic) and one for vasoconstriction (sympathetic), together with at least two hormones in the blood stream, the hormone X (Eppinger and Hess' "autonomyn") activating the vasodilator mechanism, the other hormone, adrenalin (or analogue inciters of sympathetic nerve endings), activating the vasoconstriction nerve mechanism. The examination of a patient should include this test for the following reason: If the vasodilatation component alone is present we know that the hormone X, or analogues, is in excess in the blood, or that the hormone adrenalin (or pituitrin with analogous action) is in insufficient amount to activate the sympathetic nerve endings in the blood vessels tested. If the vasoconstriction component alone be present we know that the hormone adrenalin (or analogue) is present in excess in the blood, or the hormone X, or analogues, is present in insufficient quantity to activate the autonomic fibrils in the blood vessels.

5. Protein Extracts in States of Hypersensitization.—Horace M. Baker and Cleaveland Floyd point out the defects in the methods at present in use of preparing protein extracts and find the following method equally applicable to both food and bacterial preparations. The material to be used is secured in large quantities and suspended in normal salt solution and 0.5 per cent. phenol added. A bacterial suspension is autolyzed at a temperature of 48° C. for twenty-four to seventy-two hours, depending upon the organism. The suspension, immediately following the period of autolyzation, is quickly evaporated to dryness by a constant temperature of 40° C., thus favoring the reduction of the protein to a soluble form. To carry out this step the suspension is placed in a flat-bottom glass dish over a water bath, with an air current from an electric fan directed over the suspension. The flame under the water is protected by a shield to prevent variations of temperature. By this simple device the temperature remains constant and the quick evaporation to dryness is obtained. For testing purposes the powdered extract is ground up with glycerine in the proportion of 10 mg. of the powder to 1 c.c. of glycerine. One or two drops of this preparation are used for the test, which is carried out in a way similar to the von Pirquet tuberculin test.

New York Medical Journal.

August 12, 1916.

1. The Story of Dementia Præcox. Francis X. Dercum.
2. Congenital Syphilis. Fred Wise.
3. Our American Voice and Articulation. Charles Prevost Grayson.
4. Vincent's Bacillus in the Cervix. Guthrie McConnell.
5. Health Insurance from the Viewpoint of the Physician. A. C. Burnham.
6. Modern Methods of Transfusion. I. Miller Kahn.
7. Hereditary Chorea. Clarence King.
8. Gonorrhea and Its Complications. A. Hyman.

1. The Story of Dementia Præcox.—Francis X. Dercum says that briefly put the story of dementia præcox begins with an impaired germ plasm. It deals with an organism defective and deviate in its development, a quality which involves the nervous system as well as other structures. In the course of its development the organism becomes toxic through a metabolic breakdown as a result of the mere strain of living. The cortex, already feeble and with diminished resistance, becomes a prey alike to exhaustion and intoxication, and the subsequent course is one of deterioration, the final chapter of which is dementia. Under circumstances like these it is not surprising that the clinical picture should vary greatly. This accounts for the tendency to separate out of the great mass of cases special forms, as is illustrated in the eighth edition of Kraepelin's *Psychiatrie*, in which no less than eight forms are differentiated. The writer ventures the prediction that the original classification into the hebephrenic, catatonic, and paranoid forms as presented in Kraepelin's original generalizations, modified, it may be, by subdivisions, is the one that will survive. He believes also that Kraepelin has gone too far in embracing, under the generalization of dementia præcox, the hallucinatory paranoid states of the adult. Purposes of study and clinical distinction are best served by limiting the conception of dementia præcox to the endogenous deteriorations of adolescence. For the adult form the term hallucinatory paranoia is much preferable. The writer further believes that Kraepelin is wrong in separating so widely the lucid paranoia of the adults, i.e. the paranoia simplex of Ziehan, the paranoia chronica of Siemerling, the *Verrücktheit* of Westphal and Sander, the *délires systématises des dégémérés* of Magnan from the other paranoid forms. In concluding he objects to the word schizophrenia, which Bleuler has devised and proposed as a substitute for the name dementia præcox, as not distinctive, and expresses the hope that it will not survive.

3. Our American Voice and Articulation.—Charles Prevost Grayson feels sure that no amount or depth of patriotism can anesthetize our ears that they will find anything musical in the voice of the average American, male or female, particularly female. He thinks

that those who are self-appointed custodians of the larynx and its vocal function, and of every nerve and muscle that plays a part in articulation, should assume a responsibility in correcting this national defect. They should all unite in saying that vocal instruction should be introduced and made an essential part of the curriculum of every school, public or private; that every child should be taught not only how to use his voice correctly but that he should be marked as rigidly for his proficiency or his lack as he is for any other of his studies. This instruction should be continued through high school, college, and university, and should include distinct enunciation as well as correct pronunciation. He urges that it is a part of the duty of each individual laryngologist to help bring about this innovation. It is but a commonplace to say that nothing so promotes the health and functional vigor of the larynx as cultivation of either the speaking or the singing voice. In all probability there is scarcely a day that each laryngologist does not warn one or more of his patients of the injury they are inflicting on their throats by some more or less glaring misuse of the voice. How much better would it be to render such warning entirely unnecessary by beginning the prophylaxis of the laryngeal trouble and the conservation of the human voice before harm has been done and bad vocal habits have been formed?

5. **Health Insurance from the Viewpoint of the Physician.**—A. C. Burnham discusses the more salient abuses occurring in the administration of the benefits of health insurance, and suggests solutions for a few of the problems that may arise. He believes that the systematic care of the industrial population on a large scale can be accomplished only by means of State control through a department modeled somewhat along the lines of the medical department of the United States Army, having hospitals, full-time medical officers, nurses, and other necessary medical employees. He outlines the plan as follows: The State would be divided into districts, and a medical unit having full care of the insured would be assigned to each district, the insured being directed for treatment to the headquarters of the unit having charge of the territory in which he lives. Specialists would be in attendance at certain hours and on call when required. Regular attendance upon the patients would be assured, the physician being sent from the medical center upon request. The clerical work would be done at the various centers by lay employees. If in such a system the salaries were made large enough, permanency of position was assured, and opportunity for advancement permitted, many physicians would be eager to choose just such a career. This system would, as a rule, assure quicker convalescence and more scientific treatment for the injured, pleasanter and more satisfactory work for the physician, and cheaper and better results for the State. Finally the author urges that if we are to have health insurance, and if we are to hope to benefit by the mistakes of others, this subject should be kept before the profession and thoroughly discussed before the Health Insurance act is passed—not afterward.

7. **Hereditary Chorea.**—Clarence King describes the principal features of this condition and calls attention to an observation made by H. O. Waters, who was one of the first men in this country to write upon this subject, which seems to have escaped the notice of other writers. This authority recorded that in one of his patients the movements ceased temporarily under the influence of all kinds of instrumental music except that from a common jewsharp. The writer refers to a case coming under his observation and previously reported in which the soft tones of a church organ had a remarkably quieting effect which lasted about an hour. He now reports another case in which the music of a violin had a quieting effect upon the patient, so much so that it became a regular practice for a fellow patient to play a few strains of music before he attempted to eat his meals. It was not uncommon for him to throw himself from bed or nearly so unless soothed by music. The questions arise whether in some of these patients there may not be an idiosyncrasy by which pathological stimulation of the nerve tracts leading to involuntary twitchings of the muscle fibers is interrupted or held back by psychic means for a time, or the inhibitory action of the sympathetic stimulated in the same way that intense fear or anger deadens pain. These cases suggest the possibility that music may be made a more valuable therapeutic measure than has been supposed, possibly ranking with, or even higher than, suggestion or hypnotism.

8. **Gonorrhea and Its Complications.**—A. Hyman reports a series of twenty-five cases of gonorrhea and its complications treated with the vaccine of Nicolle and Blaizot. During the period of vaccine treatment local therapy was withheld. Seven of the cases were definitely cured by the vaccine. Cases of uncomplicated acute or chronic urethritis were not influenced by the treatment. Cases of epididymitis were only slightly improved. Cases of chronic prostatitis showed the highest percentage of cures. Rather marked improvement followed the treatment in a few cases of gonorrheal rheumatism. From this experience it may be concluded that the atoxic gonococcus vaccine, although occasionally followed by a brilliant result, is most inconstant in its effects. It cannot be relied upon for a satisfactory result in any given case. The results in some of the cases justify further experimentation with the vaccine of Nicolle and Blaizot.

Journal of the American Medical Association.

August 12, 1916.

1. The Nervous System as Influenced by High Altitudes. George A. Moleen.
2. Complications and Sequelæ of the Operation for Inguinal Hernia; an Analysis of One Thousand and Five Hundred Cases at the Massachusetts General Hospital. Lincoln Davis.
3. The Prevention of the Obstruction of Gas Following Operations on the Colon. A. J. Ochsner.
4. The Superiority of the Right Side Anus in the Handling of Partial and Complete Obstruction of the Lower Colon and Sigmoid in the Cases Unsuited for Radical Operation. John Young Brown.
5. Lipectomy and Umbilical Hernia. Walter Lathrop.
6. The Action of Various "Female" Remedies on the Excised Uterus of the Guinea-Pig. J. D. Pilcher, W. R. Dellzell, and G. E. Burman.
7. Operative Treatment for Threatened Gangrene of the Foot, with Special Reference to Reversal of the Circulation. J. Shelton Horsley.
8. Tuberculosis of the Cervical Lymphatics: A Study of Six Hundred and Eighty-Seven Cases. Charles N. Dowd.
9. Osteoclasis and Osteomy. Wallace Blanchard.
10. Lues Maligna: With Report of Two Cases. Perry A. Bly.
11. Intraspinal Injection of Magnesium Sulphate in Delirium Tremens. Edward A. Leonard, Jr.

1. **The Nervous System As Influenced by High Altitudes.**—George A. Moleen refers to the general belief that "nervousness" is a result of living at high altitudes which has been accepted by the public, and in no little part by the profession, without inquiry as to the reason for the manifestations commonly grouped under the term "nervousness." An investigation of this subject shows that neurasthenia does not occur more frequently at high altitudes than at lower ones, because the general standard of living is better than in the more congested centers of population; the confined artificially lighted indoor workers are less common; there is a greater average of bright, cloudless days, and lastly, there is a greater intensity or actinism of the light. It is the class of patients who are able to live with more comfort at the lower altitudes and who manifest

irritable neurotic disorders repeatedly on going to higher elevations that prompted this investigation as a result of which it may be concluded that the demand for oxygen carrying elements of the blood increases directly with the altitude. In normal individuals this requirement is met through an increase in the red blood corpuscles and hemoglobin in from three to five weeks. This is normal acclimatization. This power of adaptation is diminished or wanting in certain individuals and results in oxygen want or anemia. As a result of diminished or limited oxygen supply, the increased excitability or irritability of the nerve structures may be explained. If by therapeutic or other means the blood-forming mechanism can be stimulated into activity, individuals should find no more difficulty in living tranquil lives in the high altitudes than at the sea-levels.

2. **Complications and Sequelæ of the Operation for Inguinal Hernia.**—Lincoln Davis presents an analysis of 1500 consecutive cases of inguinal hernia operated upon at the Massachusetts General Hospital from October, 1908, to December, 1914. In the 1500 cases there was a total of 1,756 operations, counting double hernia as two operations. In the male cases, numbering 1,388, the Bassini technique was employed 834 times, the Ferguson 764, and Halsted 15, with 24 cases of varying and miscellaneous technique. In 88 cases the hernia was direct; in others indirect. No cases of strangulated hernia were included. In 10 cases the hernia was of enormous size. In 69 cases the hernia was complicated by undescended testicle. There were 9 cases in which the bladder was contained within the sac. The appendix was found within the sac eight times, and removed in the course of the operations 46 times. There were 7 cases of sliding hernia. There was hydrocele present in 40 cases, marked varicocele in 26 cases. In 50 cases there had been a previous operation for hernia with recurrence. The anesthesia was general in 1,319 cases. Non-fatal postoperative complications of more or less severity developed in 438 cases, or 28 per cent.; some of these were trivial. In many cases the complications were multiple. Among the complications were sepsis in 178 cases; hematoma in 112 cases; affections of the respiratory tract in 138, and many miscellaneous complications, as otitis media, cholangeitis, persistent hiccough, phlebitis, acidosis, pyelitis, and mental symptoms. In summing up the writer states that the results of operation are on the whole good. The operation has a definite though low mortality rate (in this series 0.53 per cent.) and should not be undertaken on the old and infirm without good reason. Postoperative cough, hematoma, and sepsis are important factors in the incidence of recurrence, but the latter seems to play a lesser rôle than is generally assigned to it. A strikingly large number of patients anatomically cured complain of pain, probably due to nerve traumatism. General anesthesia is still best in the routine cases. Spinal anesthesia, on account of its greater danger and serious sequelæ, should have little place in this operation. Local anesthesia has a wide application in cases in which inhalation anesthesia is contraindicated, but carries a slightly greater risk of sepsis.

3. **The Prevention of Obstruction of the Passage of Gas.**—A. J. Ochsner. (See MEDICAL RECORD, July 8, 1916, page 82.)

4. **The Superiority of the Right Side Anus.**—John Young Brown. (See MEDICAL RECORD, July 8, 1916, page 82.)

5. **Lipectomy and Umbilical Hernia.**—Walter Lathrop. (See MEDICAL RECORD, July 8, 1916, page 86.)

6. **The Action of Various "Female" Remedies on the Excised Uterus of the Guinea-Pig.**—J. D. Pilcher, W. R. Delzell and G. E. Burman make a report on their investigations of this subject undertaken at the suggestion of the Therapeutic Research Committee of the American Medical Association. They have found that when the contractions of the uterus were altered the tendency was always toward a reduction in the amplitude of the excursions; in no instance did a drug appreciably increase the excursions. The following drugs lessened the amplitude of the excursions: *Aletris farinosa, Pulsatilla pratensis, Ichthyomethia piscipula, Scrophularia nodosa;* somewhat less active were *Valeriana officinalis* and *Cypripedium pubescens;* the drugs possessing very weak action were *Dioscorea villosa, Senecio aurcus* and *Scutellaria lateriflora.* A large number of drugs were found to be entirely inactive; among these were *Viburnum prunifolium, Viburnum opulus, Mitchella repens, Castanea dentata, Chamælirium luteum, Passiflora incarnata, Cnicus benedictus, Silybum marianum* and *Leonurus cardiaca.* The work shows that the domestic use of teas made from these drugs for any supposed action on the uterus is quite irrational, for water either extracts but a very small part of any of the active principles of the drugs, or, in the majority of them, none at all. These investigators conclude that not only are the drugs in this list unimportant, but that they are practically worthless. Their use is harmful as well as futile, since it tends to perpetuate therapeutic fallacies.

7. **Operative Treatment for Threatened Gangrene of the Foot.**—J. Shelton Horsley. (See MEDICAL RECORD, July 1, 1916, page 35.)

8. **Tuberculosis of the Cervical Lymphatics: A Study of Six Hundred and Eighty-seven Cases.**—Charles N. Dowd. (See MEDICAL RECORD, June 17, 1916, page 1112.)

11. **Intraspinal Injections of Magnesium Sulphate in Delirium Tremens.**—Edward A. Leonard makes this preliminary study based on his experiences with 12 cases in which lumbar puncture was performed, the amounts of cerebrospinal fluid removed varying from 10 to 40 c.c. After removal of the cerebrospinal fluid a cubic centimeter for every 25 pounds of body weight of a 25 per cent. solution of magnesium sulphate, at a temperature from 95 to 100° F., was introduced through the lumbar puncture needle into the canal. There were ten recoveries and two deaths in the series.

There is a rapid subsidence of the delirium and restlessness, and a restoration to normal within twenty-four hours, following this treatment; it is certainly of value in view of the little good sedatives do and the high mortality among these cases.

The Lancet.

July 22, 1916.

1. An Inquiry Into the Cardiac Disabilities of Soldiers on Active Service. John Parklinson.
2. An Enteric-like Fever in the Anglo-Egyptian Sudan. Albert J. Chalmers and Norman Macdonald.
3. The Gangrene of War: Gaseous Cellulitis or Emphysematous Gangrene. Alfred J. Hull.
4. Cardiac Symptoms Following Dysentery among Soldiers. E. B. Gunson.
5. The Radical Treatment of Gastric Ulcer. Joseph Cunning.
6. The Treatment of Hemorrhoids by Interstitial Injection. T. Bird.
7. An Unusual Case of Albuminuria. O. Leyton.

1. **An Inquiry into the Cardiac Disability of Soldiers on Active Service.**—John Parklinson records the results of an inquiry into the various conditions which lead men on active service to report sick with symptoms suggesting heart disease. It is based on 90 unselected cases passing through a casualty clearing station in France. Among these 90 cases valvular disease was present in 28. In 16 cases there was a history of acute rheumatism; in 18 the chief symptom was shortness of breath; in 8 it was pain; all cases with pain had also

shortness of breath. Palpitation was an additional symptom in one-half the cases. The symptoms were provoked by doubling and marching, and in 25 cases they had been present before enlistment. There were in this series 40 cases of so-called "soldier's heart," which the writer considers more in detail, and in commenting on these he states that among soldiers in training and on active service are found a number who report sick for cardiac symptoms on exertion, but show none of the physical signs indicative of heart disease. These men are the subjects of a cardiac disability which is unmasked by the exertion required of a soldier. It is not a specific variety of heart disease, and needs no specific name. In about one-half the cases in this series the disability had been present to some extent in civil life, and was, therefore, not the result of military service. This relative cardiac inefficiency may be a sequel of acute rheumatism, dysentery, influenza, or other infection; the result of myocardial changes due to age, especially in soldiers over forty; it may be associated with nervous disorder, particularly where palpitation is a prominent symptom; it may be due to a heart endowed with limited efficiency, the individual having always been "short-winded." A simple exertion test, such as climbing 25 or 50 steps, reproduces the symptoms in these patients, and so furnishes valuable information on the functional efficiency of the heart. Some degree of myocardial disease is present in a number of cases to which the history of infection bears witness. The absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the army if, under training or on active service, he shows breathlessness and precordial pain whenever he undergoes exertion well borne by his fellows. In this series was one man of forty with a to-and-fro murmur at the aortic area, who had served 16 months with no symptoms whatever of aortic incompetence, the defect having been discovered at a chance examination.

2. **An Enteric-like Fever in the Anglo-Egyptian Sudan.**—Albert J. Chalmers and Norman Macdonald state that, in addition to the usual varieties of enteric fever, last year they came across a number of cases of an enteric-like fever which was not caused by the ordinary organisms, as shown by blood cultures, fecal cultures, and agglutination tests. They have isolated an organism from these cases, the cultural and biochemical reactions of which indicate that it belongs to the Typhoid-Colon group. This organism the authors have named the *B. khartoumensis*. They find that it can be differentiated from the more important members of the Colon Subgroup, and that it belongs to the Entericus Subgroup, which can be easily distinguished from the Typhoid-Colon Subgroups. They also show that it can be differentiated from other members of this subgroup. They therefore conclude that it is a distinct species, and describe it in detail. It failed to agglutinate with a colon specific serum of high titre, but it showed group reactions with high titre paratyphoid A and B specific sera. It is, therefore, related not merely to the Colon Subgroup, but to the Paratyphoid-Gaertner Subgroup, and the writers consider it, and possibly the whole Entericus Subgroup, to be connecting links between the two collections of organisms.

5. **The Radical Treatment of Gastric Ulcer.**—Joseph Cunning states that gastrojejunostomy has fallen into disrepute because it frequently fails to relieve the symptoms, because it is sometimes performed upon pre-operative diagnosis of ulcer, when the real cause of the symptoms lies elsewhere, and because it may add to the patient's former troubles bilious vomiting or jejunal ulcer. His experience teaches that all gastric ulcers can be excised except those that are adherent to important structures in the neighborhood, and that gastrojejunostomy is useless for these. When the ulcer is adherent to important structures, the stomach can be detached from the base of the ulcer, the opening closed, and the base of the ulcer, after being scraped, and being now excluded from the stomach, will give no further trouble.

6. **The Treatment of Hemorrhoids by Interstitial Injection.**—T. Bird writes of this method of treatment of hemorrhoids, not because it is new, but because he thinks it does not receive the attention it deserves. It was used in this country by Hoyt some thirty years ago, and consists of equal parts of hazeline and distilled water, to which is added 10 per cent. of pure carbolic acid; the whole of the acid is not dissolved unless warmed. The bottle must be shaken, when the solution becomes turbid, and it is then ready for use. As much as 15 minims may be given at one sitting, though it is customary to begin with 3 minims. It usually requires eight or nine injections, at intervals of two days, to effect a cure. When this method is used, recurrences are very rare. Some cases in old people are better treated in this way than by cautery or incision.

British Medical Journal.

July 22, 1916.

1. On Industrial Diseases Prevailing among Iron and Steel Workers in Middlesbrough. J. Watkin Edwards.
2. Head Injuries in War. Augustus W. Addinsell.
3. Notes on the Treatment of Hernia Cerebri. S. Smith.
4. Treatment of Fractured Mandible Accompanying Gunshot Wounds. H. P. Pickerill.
5. The Treatment of Chlorine Gas Poisoning by Venesection. A. Stuart Hebblethwaite.
6. Death After Nitrous Oxide-Oxygen and Local Anesthesia. W. J. McCardie.

1. **Industrial Diseases Prevailing among Iron and Steel Workers in Middlesbrough.**—J. Watkin Edwards quotes from the Supplement to the Sixty-fifth Annual Report of the Registrar General the statement that in the iron and steel industry the mortality at every stage of life is above the standard for "Occupied and Retired Males." At every stage of life the death rate exceeds the average for metal workers generally, being 18 per cent. above the standard. This led the author to investigate conditions at Middlesbrough, where the manufacture of iron and steel is the chief industry. He finds that the death rate here for males between the ages of twenty-five and sixty-five is 40 per cent. higher than that of females. The diseases which caused the most deaths were organic heart disease, pulmonary tuberculosis, bronchitis, and pneumonia, the latter causing by far the largest number of deaths. The adverse influences which seem to be at work causing these diseases are: Working at high temperatures; long hours of work; fatigue; insufficient rest, sleep, and recreation; working at night; careless exposure to cold and wet; intemperance; inhalation of dust; inhalation of poisonous gases, such as CO; trauma. The death rate from pneumonia is between two and three times higher in Middlesbrough than in the country generally, and men engaged in the iron and steel industry are much more liable to it than others. In the majority of cases the disease seems to be conveyed by autoinfection, a condition of lowered resistance due to one or more of the above-mentioned causes furnishing the state of ill health favorable to the growth of the organism. As prophylactic measures special attention should be given to oral sepsis, enlarged and unhealthy tonsils and adenoids, indigestion, and constipation. In a general way, where work entails great effort and the full natural workday of 240 foot-tons is much exceeded, an eight-hour day should be the maximum demanded.

2. **Head Injuries in War.**—Augustus W. Addinsell states that they have been told that "practically always" depressed fracture of the inner table is accompanied by "a cone-shaped pulping of the underlying brain which acts as an immediate source of irritation to the surrounding brain, and therefore that an apparently wounded dura should be opened." He objects to this statement on the ground that the pulping of the brain tissue cannot be recognized before the dura is opened and that there is no evidence that softened brain tissue is a source of irritation or is beyond recovery. Therefore, in those cases in which he has removed pieces of depressed bone and foreign bodies and the dura has been intact he has not opened it. His experience has embraced thirty-seven cases. The plan usually adopted is to allow the patient complete rest for three or four days, unless the symptoms very urgently call for immediate interference. These cases show in general that a wound of the skull, however slight, should not be regarded too lightly. They also seem to show that when definite focal symptoms arise while the case is under careful observation they should be dealt with promptly if they be within the reach of legitimate surgery. In defense of his waiting policy the author states that all of the patients who have developed epileptiform seizures and paralysis while they have been in the hospital, and upon whom he has operated for depressed fragments of bone, have either recovered from their symptoms or improved, and in none have the symptoms returned prior to their transference to England. He rarely uses a drain inside the skull unless the wound of the brain is so deep as to give rise to grave risk of the destroyed and infected brain matter finding its way into the ventricles. Another practical point emphasized is in the matter of incision of the scalp. It is advisable nearly always to turn down a flap for the purpose of examining for bone injuries, which in a number of cases have been found to occur at some distance from the wound of entrance in the scalp, due to shell or schrapnel having pierced the scalp in an oblique direction.

3. **Notes on the Treatment of Hernia Cerebri.**—S. Smith records his experience at a base hospital where between six and seven hundred cases of gunshot wound of the head have passed through his hands. One of their most difficult problems was the prevention of, or, if that was impossible, the treatment of, hernia cerebri. As a means of diminishing the cerebral exposure they have found suture of the edges of the scalp wound after excision of the edges of the original wound only possible in a very small proportion of their cases. As an antiseptic lotion they have found a mixture consisting of equal parts of carbolic lotion (1 in 20), hydrogen peroxide (10 vols.), and water especially valuable. In cases in which hernia cerebri occurs, whether following operation or where no operation has been performed, the systematic use of lumbar puncture has proved of the utmost value. If after the first puncture the hernia shows no signs of decreasing and compression symptoms do not decrease, the tapping is repeated on alternate days until the pressure, as shown by the manometer readings, is brought down to within reasonable limits. The author describes his method of performing the lumbar puncture under general anesthesia, and emphasizes the importance of the sitting posture as a valuable auxiliary in the treatment of these cases.

5. **The Treatment of Chlorine Gas Poisoning by Venesection.**—A. Stuart Hebblethwaite gives a detailed account of thirty cases of chlorine gas poisoning upon whom venesection was performed and who lived. He states that venesection is not required for all cases. Two types of cases, which he calls the "cyanotic" and the "cardiac failures," require no bleeding. In order to be successful early venesection is necessary. It is performed by direct incision into the median cephalic or median basilic vein, the amount of blood extracted ranging from 15 to 25 c.c., depending upon the patient. The results in practice were relief of the cyanosis, relief of congestion in the lungs, relief of acute headache, and promotion of sleep. The theory upon which the treatment is based is that (a) the resistance of the heart is lowered in ratio to the amount of blood withdrawn and (b) the resulting abstraction of fluid from tissues to make up for the loss—and it is not unreasonable to suggest that this abstraction takes place from a place where fluid is in excess—that is, in the waterlogged lungs. This again would lead to a lessened resistance through the pulmonary system.

Journal de Médecine de Paris.

July, 1916.

Paludism and Quinine.—Job and Hirtzmann, after some laboratory research in a military hospital, conclude that the action of quinine upon the hematozoon is constant even amid variations. When the condition is a paludism of first onset without gametes in the blood—*i.e.* when the first manifestations of the disease date back only eight or ten days—an intensive quinine treatment maintained for three or four weeks will sterilize the body so that there will be no recurrence. After the gametes have appeared in the blood, quinine medication will suppress the anemia and in a general way the other manifestations of chronic paludism; but it must be kept up until the disappearance of splenomegaly and until the blood count is normal, as shown by repeated examinations. The authors have never seen the so-called quinine-resisting hematozoa. If there is any reason to believe that the drug is not absorbed in the intestine it may be given by hypodermic. During the first two days 1.5 grams are given in six doses, one every two hours. The dose is then reduced to 1 gram for the next four days. The patient has thus received 7 grams during one week. During the second week the patient takes a gram for five consecutive days, and during the third week the same dose for four consecutive days, then for three days, and so until cured. The results of giving quinine as a preventive are lacking in precision. At least half a gram daily should be used and the results may still be in doubt. Probably 1 gram given on two consecutive days each in one week will give better success.

Le Bulletin Médical.

July 28, 1916.

A Certain Method of Differentiating Diphtheria Bacilli from Its Congeners.—Martin and Loiseau refer to cultivation of the diphtheria bacilli in Veillon tubes, in which the organisms proliferate throughout the medium. It was long ago noted that the Klebs-Loeffler bacillus is anærobic, while the microorganisms associated with it and resembling it are ærobic and flourish at the surface of the medium. The latter is classed as a peptonated, saccharated gelose. Two hundred and fifty cubic centimeters of minced veal are macerated in 500 c.c. of water and mixed with an equal portion of Martin peptone. To each liter of this mixture are added 8 grams gelose, 15 grams glucose, and 2 grams potassium nitrate. After solution add the white of one egg. Then heat at 115° C. for one hour and filter. Divide among sterile test tubes of the height of 10 or 12 cm. Sterilize again by heating at 100° C. for half an hour on three consecutive days. Begin with a pure culture. With a glass hook take a bit of colony

and place it in a tube containing 10 c.c. sterile bouillon. A little of this dilution should be slid down the side of the Veillon tube and the latter then shaken to scatter the microorganisms. The gelose in the tube should now be melted by boiling, then cooling rapidly to 50° F. Now add with a pipette 1 cm. of the bouillon dilution of bacilli to the length of the tube and mix carefully. Cool the tube and place it in the incubator. Often after fifteen hours we shall find colonies scattered uniformly throughout the tube without any predominance in the field of ærobiosis. The so-called Hoffman bacillus, on the other hand, while it behaves in the same manner in nonsweetened media, is quickly differentiated from the true diphtheria bacillus in the Veillon tube, in which in from twenty-four to thirty-six hours it may be seen in the uppermost centimeter of the tube, close to the surface. After some days standing colonies are seen growing luxuriantly on the surface of the medium, while the diphtheria bacillus remains unchanged beneath the surface. The term Hoffman's bacillus is synonymous with the pseudo-diphtheritic bacillus of writers.

Metastases Which Follow the Treatment of Tumors with Roentgen Rays and Radium.—Kirmisson contributed an article on this subject in the Bulletin for July 12, and following is the discussion: Bazy mentioned a case of lymphadenoma in the parotid region (diagnosis by biopsy). As it was deemed inoperable, a radium tube was inserted. This was six years ago, and the patient is now alive and well. Ten years ago a radiologist treated his wife for cancer of the cervix with *x*-rays, within and without. She, too, is living and well to-day. The case was a postoperative recurrence. Schwartz saw prompt improvement follow the use of radium on a ganglionary malignant tumor, but a fatal metastasis suddenly appeared at the base of the skull. He also cites a case of local recurrence after radium treatment and a pelvic recurrence of cancer of the uterus which was doing splendidly under radium treatment. But these cases are exceptional. Routier saw a remarkable cure of a lymphosarcoma of the tonsil under radium; on the other hand, a cancer three times removed seemed to relapse with unusual rapidity under radium treatment. Gaucher stated that even superficial cancers sometimes recur after radium and *x*-ray treatment. As is well known, both resources are at times able to cause cancer *de novo*. To offset such cases, Béclère, whose experience is immense, has cured with radiotherapy a number of deep-seated, inoperable intraabdominal tumors. Thus in a case of a large metastasis to the spleen from a testicular tumor, with advanced cachexia, seven days' use of the tubes caused a rapid disappearance of the splenic growth with a gain of 24 kg. That was five years ago, and the patient is now fighting at the front!

La Presse Médicale.

July 27, 1916

Remote Results of Pleuro-Pulmonary Projectile Wounds.—Denechau sums up his experience as follows: There is a definite syndrome common in these results. In about one-half the victims an active life is possible—even a return to the ranks. The condition is amenable to treatment by respiratory gymnastics, but remote complications may supervene. These include pulmonary tuberculosis; while simple pleurisy may pursue a severe course with empyema, abscess, gangrene. Projectiles which remain in the thorax constitute a source of danger of infection, and should, if possible, be removed. The author has studied fifty cases. At first at least forty, or 80 per cent., seemed to have recovered in all respects. Examination, however, revealed the presence not only of functional but structural anomalies. The former comprised pain and dyspnea. Pain was constant at the site of the wounds, spontaneous but increased by cough, rapid exertion, yawning, etc. In sixteen out of forty dyspnea was severe enough to interfere with an active existence. In a number of cases the injury had evidently been responsible for tracheobronchial adenopathy. The *x*-ray also showed evidences in the wound track in nearly every case examined. In nineteen of the material the bullet was still in the thorax and in fourteen of these seemed to be well tolerated. In three a small cavity formed, which in one instance suppurated at recurring intervals. A fistula eventually formed. In this patient the ball was extracted and no more pus formed. In six other cases the ball was also extracted, but no details are given. In the entire series of seven cases there was no improvement followed in the functional anomalies.

Improved Tracheotomy in the Adults.—Luc believes that he has simplified the technique and cut short the duration of this operation. He is at present at the Val de Grace, where tracheotomy is often required in soldiers with laryngeal stenosis. Local anesthesia is always employed. The patient's throat is made prominent by placing a cushion under his shoulders, with head extended and supported by an aid. If, as often happens, the patient is in dyspnea, the latter elevates the head at each paroxysm. The operator should be at the left of the patient while giving the anesthetic (novocain-adrenalin). Five minutes are allowed for diffusion. The incision is begun at the upper border of the cricoid cartilage and its entire length is 5 cm. Retractors are then applied and the cartilage denuded, while the trachea is similarly exposed under the use of a grooved director. A special narrow retractor is now applied over the first ring of the trachea in the lower angle of the wound and pulled downward, fully exposing the passage. The bistoury is now plunged into the tracheal wall, the back of the instrument being against the retractor, and the rings are successively divided from below upward. The tracheotomy tube is now inserted and the small retractor withdrawn. A few clamps bring the lips of the wound together and hold them in apposition.

Excessive Fertility.—A correspondent calls attention to a remarkable case of fertility in an Italian woman of 40, residing not far from Pompeii. Up to date she had borne 56 children. She had given birth once to sextuplets and at least twice to quadruplets, while triplets had been born on a number of occasions. While some of these children had been born alive the mother had been unable to raise any of them with a single exception, that of the first born daughter. The ages at death and causes of death are not mentioned. The surviving child had been placed by the mother in a convent.—*Correspondenz-Blatt für Schweizer Aerzte.*

Dialysates.—The principle of Bürger of obtaining active principles of fresh plants by dialysis, which has recently attracted notice, is only a reintroduction of the principle of Golaz, who was the first to claim that dialysates are superior to extracts. Preparations made by Golaz's procedure have been in the market since 1896, and have been continuously in use, according to a letter from a correspondent who likes especially a dialysate of valerian which can often replace bromides, the cost of which is now excessive. Other dialysates may prove useful as substitutes for high priced drugs. The writer also likes the dialysates of digitalis and strophanthus. — *Correspondenz - Blatt für Schweizer Aerzte.*

Book Reviews.

THE TREATMENT OF INFANTILE PARALYSIS. By ROBERT W. LOVETT, M.D., Boston, John B. and Buckminster Brown Professor of Orthopedic Surgery, Harvard Medical School; Surgeon to the Children's Hospital, Boston; Surgeon-in-Chief to the Massachusetts Hospital School, Canton; Consulting Orthopedic Surgeon to the Boston Dispensary; Member of the American Orthopedic Association; Corresponding Member of the Royal Society of Physicians, Budapest; Korrespondierendes Mitglied der Deutschen Gesellschaft für Orthopadische Chirurgie, Socio della Società Italiana di Ortopedia. With 113 illustrations. Philadelphia: P. Blakiston's Son & Co., 1916.

COMING from the pen of so distinguished a surgeon who has devoted many years to the therapeutic as well as the surgical treatment of infantile paralysis this book needs but little comment except to recommend it heartily to the members of the medical profession who are desirous of the most approved up-to-date methods of combating the sinister results of this dread disease. Dr. Lovett himself says that since the great prevalence of infantile paralysis in America from 1907, our advance in knowledge of the affection and its treatment, especially on the therapeutic side, has been so rapid that it has not had time to find its way into the text-books, but exists almost wholly in the fugitive periodical literature. The book is a small one, containing but 161 pages. However, not a word is lost, as the explanations are remarkably clear and concise, almost elemental in their directness. To add to the clearness of text, the illustrations are clean-cut and well-produced. The author dwells at length on the subject of muscle training, because, as he says, all experienced surgeons are to-day agreed that the operative treatment of this disease should not be undertaken until at least two years after the onset, and during this time, when the most rapid progress is to be made, the treatment needs to be a non-operative one of which muscle training is the most important therapeutic measure. The text is divided into the treatment of the acute, convalescent, and chronic phases, operative treatment, muscle training, and the spring balance muscle test.

SURGERY IN WAR. By ALFRED HULL, F.R.C.S., Major Royal Army Medical Corps, Surgeon British Expeditionary Force; Late Lecturer on Surgical Pathology, Royal Army Medical Corps, Millbank; and Surgeon, Queen Alexander Military Hospital. With a Preface by Sir ALFRED KEOGH, K.C.B., M.D., Hon. Physician to H. M. the King; Director General Army Medical Service. With 26 Plates and 55 Text Figures. Price, $4.00. Philadelphia, Pa.: Blakiston's Son & Co., 1916.

THE surgical practice of the present war is in many respects novel; that is to say, the manner in which wounds should be treated has been, to some extent, revised as a result of the teaching of the present campaign. This is due partly to the character of the wounds brought about by modern implements and engines of destruction and partly to the unprecedented conditions under which war is being waged. Mr. Hull's book is the summary and conclusions of the surgical experiences of an able surgeon of the present campaign from its commencement up to the time when the book was written. The most interesting portion of the work is that which deals with the methods of treating sepsis. Sir Almroth Wright's work on the bacteriological side together with recent surgical developments have probably revolutionized measures of treating sepsis, although it must be borne in mind that by no means the last word has been said on the subject. The book by Hull, as well as being interesting in a high degree, is valuable in the existing state of affairs in this country.

MANUAL OF OPERATIVE SURGERY. By JOHN FAIRBAIRN BINNIE, A.M., C.M. (Aberdeen), F.A.C.S. Surgeon to the Christian Church, the German and the General Hospitals, Kansas City, Mo.; Fellow of the American Surgical Association; Membre de Société Internationale de Chirurgie and of the Western Surgical Association. Seventh edition, revised and enlarged. Price, $7.50 net. Philadelphia: P. Blakiston's Son & Co., 1916.

MOST books on operative surgery are written with one eye to the needs of the student and the other to those of the practising surgeon, the result often being a combination of elementary and advanced material satisfactory to neither. Binnie not only makes no bid for textbook honors, but specifically disclaims catering to undergraduate requirements. His book, therefore, is somewhat unique; for it is especially devoted to the unusual and difficult phases of the subject rather than to the typical and more or less commonplace. This does not mean that what might be called the normal surgery of the appendix, gallbladder, etc., has been neglected, but that more space has been devoted to the problem of dealing with complications which may be found or which may arise during the course of operation than is usual in other operative surgeries. In addition, much space has been given to such subjects as the surgery of the pituitary body, spleen, pancreas, heart, blood-vessels, and other organs and structures where surgery steps in comparatively rarely, or where there has been marked progress in surgical technique in recent years.

Some rather surprising omissions may be noted. Cushing's work in pituitary surgery is barely mentioned and his method of operating is not described, although Cushing has been sufficiently prominent in this field to warrant rather full reference to his work. In discussing the treatment of hydrocephalus I. S. Haynes' method of draining the cisterna magna certainly not only deserves mention, but detailed description and comment. In the section of blood transfusion it is surprising to find no reference to the Lewisohn-Weil citrate method. Much more successful clinical surgery of the heart has been done than the book seems to indicate. In the section on cervical tumors there is no mention of tumors of the carotid body, although Callison and McKenty reported one case and analyzed the reports of fifty-nine others from the literature in December, 1913, while we have noted reports of several others since then. While agreeing that section of the vagus "is not necessarily fatal," its danger should be emphasized rather than minimized, as was emphasized editorially in the MEDICAL RECORD for January 3 and 10, 1914. The value of the article on cervical rib would be much enhanced by utilization of the material contained in Henderson's report of thirty-one cases observed at the Mayo Clinic. While Fuller's method of seminal vesiculotomy is described and discussed, Binnie fails to mention that of Squier which represents a distinct advance in the surgery of precision.

Among minor criticisms we would note that iodoform in the form of powder, emulsion, or as iodoform-impregnated gauze is continuously and obtrusively recommended. Because of the danger of iodoform poisoning, if for no other reason, we feel that the indiscriminate use of iodoform gauze as a drainage material should be condemned. Finally we note that there are a great many typographical errors both in the text and in the otherwise excellent index.

AMERICAN PUBLIC HEALTH PROTECTION. By HENRY BIXBY HEMENWAY, A.M., M.D., author of the Legal Principles of Public Health Administration, etc. Price, $1.25. Indianapolis: The Bobbs-Merril Company, 1916.

THIS book has been written with the object of arousing the public to a sense of their selfish interest in efficient public health administration. With the view of thus arousing these instincts of self-preservation the work is dedicated to the Women of America as "the power behind the throne." Dr. Hemenway appears to have written a forcible little work which should aid in achieving his object.

THE SEX COMPLEX. A STUDY OF THE RELATIONSHIPS OF THE INTERNAL SECRETIONS TO THE FEMALE CHARACTERISTICS AND FUNCTIONS IN HEALTH AND DISEASE. By W. BLAIR BELL, B.S., M.D., London, Examiner in Gynecology and Obstetrics to the University of Belfast, and to the Royal College of Surgeons, England; Hunterian Professor of Royal College of Surgeons, England; Gynecological Surgeon to the Royal Infirmary, Liverpool, etc., etc. Price, $4.00. New York: William Wood & Company, 1916.

THIS new and important work on endocrinology should be read by all progressive physicians. The first section is devoted to the results on the female genitals and constitution of extirpation of the various endocrinic glands. This is necessarily based for the most part on animal experiment. The second section deals chiefly with human physiology and pathology—the results upon the uterus, ovaries, and secondary sexual characteristics of derangement of endocrinic functioning, the phenomena of puberty and the menopause, hermaphrodism, etc. While most of these facts in Part II are well known they are summed up and correlated in a logical and concise manner.

DIAGNOSTIC METHODS, Chemical, Bacteriological and Microscopical. A Textbook for Students and Practitioners. By RALPH W. WEBSTER, M.D., Ph.D., Assistant Professor of Pharmacological Therapeutics and Instructor in Medicine in Rush Medical College, University of Chicago; Director of Chicago Laboratory, Clinical and Analytical. Fifth edition. Price, $4.50 net. Philadelphia: P. Blakiston's Son & Co., 1916.

THIS work first appeared in 1907 and the appearance at this time of the fifth edition is one of the best testimonials to the value of the book. The frequency with which the editions have appeared have enabled the author to keep up with the times in the presentation of the numerous new methods which are appearing in such rapid succession. A large number of the newer methods have been added to this edition and the number of references has been generously augmented so that it is some twenty pages larger than the previous edition. It is also rather more attractively bound than the fourth edition was. The discussion is treated conservatively, but it is chiefly as a book of methods that the work is valuable. It can be unreservedly recommended.

CAMBRIDGE PUBLIC HEALTH SERIES. Under the Editorship of G. S. GRAHAM-SMITH, M.D., and J. E. PURVIS, M.A. POST-MORTEM METHODS. By J. MARTIN BEATTIE, M.A., M.D., Professor of Bacteriology, University of Liverpool. Formerly Joseph Hunter Professor of Pathology, University of Sheffield. Price, $3.25. Cambridge: The University Press; New York: C. P. Putnam's Sons, 1915.

THE present volume is the most recent addition to the excellent series of monographs on subjects relating to public health published by the Syndics of the Cambridge University Press. About one-half of the book is devoted to the general technique of autopsies and contains nothing strikingly different from what is said in most works on the subject. The second half is of especial interest, however, for it consists of a series of chapters on the diseases of the various systems and organs of the body, and on the more important diseases. Under syphilis or leukemia, for example, will be found enumerated all the evidences of those diseases that may be found after death, and in a similar way the other commoner conditions are discussed, as well as many tropical disorders. There are also useful sections on the bacteriological methods to be employed, on the recognition of cases of poisoning, and also on making autopsies on animals. The book is one that will be found useful by anyone engaged in post-mortem work, and contains a great amount of information in a very compact form.

A MANUAL OF SURGICAL ANESTHESIA. By H. BELLAMY GARDNER, M.R.C.S., L.R.C.P. London. Honorary Anesthetist to the King George Hospital; Formerly Anesthetist and Instructor in Anesthetics at Charing Cross Hospital; Anesthetist to St. Mark's Hospital for Fistula, The National Orthopedic Hospital and the Male Lock Hospital; Assistant Anesthetist to the Royal Dental Hospital of London. Second Edition. Octavo of 220 pages, with 8 plates and 36 illustrations. Price, $2.25. New York: William Wood and Company, 1916.

IN this book the subject of general anesthesia is taken up thoroughly and cardinal principles are strongly emphasized, both in connection with anesthesia in general and as applied to the administration of the various individual anesthetics, anesthetic mixtures, and sequences. Chapters are also included on spinal and intratracheal anesthesia, ether infusion, and anociassociation. The result is a very useful manual for the student or recent graduate who is about to begin his hospital interneship, or for the practitioner who has not had the benefit of such a training in administering anesthetics as is obtained by members of a hospital house staff. While this book is written with the idea of instructing in all the principles pertaining to the art of inducing safe general anesthesia, and while all pains have been taken to warn the practitioner of the pitfalls that are to be avoided if one is to bring the patient through the anesthesia successfully, the author recognizes the fact that no amount of book knowledge *alone* will make a successful anesthetist—that a man must have a certain amount of experience under direct, competent supervision. One who is thoroughly conversant with the teachings herein contained will be well equipped to profit by the practical clinical instruction that every doctor should receive before attempting to administer a general anesthetic on his own responsibility.

THE BASIS OF SYMPTOMS. The Principles of Clinical Pathology. By Dr. RUDOLPH KREHL, Professor and Director of the Medical Clinic in Heidelberg. Authorized Translation from the Seventh German Edition by ARTHUR FREDERIC BEIFELD, Ph.B., M.D., Instructor in Medicine, Northwestern University Medical School, Chicago. With an Introduction by A. W. HEWLETT, M.D., Professor of Internal Medicine, University of Michigan, Ann Arbor. Third American Edition. Price, $5. Philadelphia and London: J. B. Lippincott Company, 1916.

READERS who are familiar with the earlier editions of Krehl's classical work will find in the present translation of the latest German issue many important changes. In the first place, the new title more truly represents the scope of the book than the old, which now appears as a subtitle. There is much new material on such subjects as the disorders of heart action, especially in relation to rythm, on nephritis, the functional tests of the kidney and the significance of the non-protein nitrogen, on gastric secretion and motility, on the diseases of metabolism and the glands of internal secretion, and on questions of infection and resistance, etc. What is of especial importance is that the translator has added much material, incorporating the work of American investigators, which has not been sufficiently recognized in the German text. The editorial notes so introduced are numerous and add greatly to the value of the book, which is unique in the field covered and should certainly be read by every student of medicine.

STUDIES IN SURGICAL PATHOLOGICAL PHYSIOLOGY FROM THE LABORATORY OF SURGICAL RESEARCH, NEW YORK UNIVERSITY. Volume I, 1915.

THIS volume, edited by Dr. John William Draper, is composed of reprints of twenty-seven articles on various topics by certain physicians and surgeons connected with the New York University, together with an announcement regarding courses in research work in surgical pathological physiology that are offered in that University. A short "Foreword" is contributed by Dr. William J. Mayo, in which he remarks that the growing practice of republishing in one volume the results of investigations of a group of men studying different aspects of the same subject is most helpful; and, referring to this volume in particular, he says that the contents should be familiar to every surgeon, since its subject matter is representative not only of the surgery of to-day, but of to-morrow. Upon reading this volume we must say that Dr. Mayo has expressed our own sentiments most happily.

There are so many topics discussed that it is manifestly impossible to enumerate them here. Some papers detail studies upon the alimentary and neural canals; others discuss the Abderhalden reaction in its various aspects, particularly in its relation to surgical diagnosis; shock comes in for its share of attention; there are a number of papers on renal and ureteral conditions; and many others on topics too numerous to mention individually. The *ensemble* is the result of much hard and infinitely painstaking work by the authors; and we hope that the University authorities will continue to publish such volumes in the interest of the wider dissemination of accurate knowledge along these or similar lines.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago, Vol. V, No. 2, April, 1916. Octavo of 176 pages with 33 illustrations. Published bimonthly. Price per year, paper, $8; cloth, $12. Philadelphia and London: W. B. Saunders Company, 1916.

THE initial article in this number of the Clinics is a talk on the surgery of the tendons and tendon sheaths. Among the topics illustrated by clinical cases are: Wry neck; cervical rib, with a collective review on the surgery of cervical rib; hemorrhagic dural cyst; phlegmon of conus medullaris, with diagnostic discussion by Dr. Mix; musculospiral paralysis treated by tendon transference, and various other paralytic cases treated in this way or by tendon lengthening and fascial division; perforating ulcer of the heel; traumatic synovitis of the shoulder; and a number of others in addition to the usual crop of bone and joint cases. From the standpoint of the average subscriber we should say that this number deserves as strong commendation as the previous issue deserved criticism.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held April 24, 1916.

THE PRESIDENT, DR. FREDERIC E. SONDERN, IN THE CHAIR.

Resolutions upon the Death of Dr. Wisner R. Townsend.—Dr. ALEXANDER LAMBERT read these resolutions.

Resolutions upon the Death of Dr. Charles H. Richardson.—Dr. JOHN VAN DOREN YOUNG read these resolutions.

Delegates to the Medical Society of the State of New York.—Dr. J. MILTON MABBOTT was appointed to fill the vacancy caused by the death of Dr. Charles H. Richardson. Dr. Samuel J. Lopetsky was appointed to fill the vacancy caused by the resignation of Dr. Floyd M. Crandall.

The scientific session was devoted to a symposium on gastric and duodenal service as studied at the Mount Sinai Hospital.

Experimental Studies of Etiology of Gastric and Duodenal Ulcer.—Dr. HERBERT L. CELLER and Dr. WILLIAM THALHEIMER presented this communication, which was read by Dr. Thalheimer. Many attempts had been made to produce chronic ulcers experimentally in animals, but without success. Rosenow in a recent report stated that he had recovered streptococcus from 96 per cent. of excised gastric ulcers, and had produced acute and chronic ulcers in 60 per cent. of the animals injected intravenously with the streptococci. These streptococci were non-hemolytic and corresponded to the *Streptococcus viridans* or mitis type. As a result of these investigations Rosenow came to the conclusion that non-hemolytic streptococci were the cause of gastric ulcers in man, but that these organisms reached the stomach by a hematogenous route. They used the same technique as Rosenow, a description of which was furnished by him. Recently isolated cultures were used for animal inoculation as recommended by Rosenow. They examined eight ulcers removed at operation, and the consistency of the results obtained warranted this report. All of the ulcers were of the chronic indurated type. From six ulcers they recovered non-hemolytic streptococci—streptococci were seen in cultures from the seventh, but could not be isolated—and from the eighth no streptococci were recovered. Yeast was recovered from four ulcers. These resembled saccharomyces. They studied an additional specimen of peptic ulcer which occurred at a gastroenterostomy stoma of a case operated upon two years previously, in which a pyloric exclusion and gastroenterostomy were performed for duodenal ulcer. Streptococci were also recovered from this peptic ulcer. They did not find organisms in the depth of the ulcers, as reported by Rosenow, but only on the surface. Streptococci and yeast were the common findings, but other types occurred as well. As a result of their studies it was impossible to decide definitely whether or not the gastric lesions produced by the injection of streptococci were to be considered ulcers. The superficiality of the rabbit lesions following the injection by the intravenous route, as well as the entire absence of inflammatory reaction in the deeper gastric tissues, inclined them to believe that these defects were certainly not analogous to the chronic ulcer seen in the human stomach. The promptness of healing in the embolic lesions in the cats tended to strengthen this conclusion. It had been demonstrated by Bolton, Wilensky, Geist, and others that defects produced mechanically in the gastric mucosa and muscularis of cats healed in two to four weeks. In the defects produced in the rabbits by injection of streptococci into a branch of the gastric artery, these organisms were found in great numbers in the tissues about the lesions. By analogy it might be assumed, even in the absence of microscopic proof, that streptococci were also present at some time in the lesions in the cats. The embolic lesions in the stomach of the cats in their series healed spontaneously within approximately the same length of time as those mechanically produced. It was evident, therefore, that in these instances the injected streptococci failed to retard the process of healing. The constant presence of non-hemolytic streptococci in human gastric ulcers might be adduced as an argument in favor of the rôle played by this organism as the cause of the ulceration or its chronicity. If streptococci could be demonstrated in considerable numbers in the depth of human gastric ulcer this conception would gain a firmer basis. Gastrojejunal ulcer might readily be considered as due primarily to purely mechanical factors. Streptococci were recovered culturally from emulsified pieces of tissue. Although the histological picture was identical with that of the other ulcers in the series the most careful search failed to show the presence of streptococci on the surface of the lesion or in the tissues about it. One must consider the possibility that in this case the streptococci were directly deposited upon a preexisting mechanical defect and were not the essential causative factor in the formation of the ulcer. The nature of both the experimental gastric and cardiac lesions indicated that the streptococci recovered from the ulcers were of a low grade of pathogenicity. In addition to the streptococcus other organisms were invariably recovered from the inoculated tubes. No attempt was made to identify these strains culturally. The same types were usually identified microscopically in sections, proving that the isolated organisms other than streptococci were not accidental contaminations. Furthermore, these bacteria were quite as numerous in the sections as streptococci, and penetrated to the same depth in the ulcer. The types most frequently encountered were yeast and a thick Gram positive bacillus. Some of the isolated strains of yeast proved pathogenic for rabbits on intravenous inoculation. Their data were insufficient to warrant an expression of opinion as to the sigificance of these organisms. In conclusion they stated that it must be assumed that some cause was operative in certain cases of gastric ulcer and prevented the healing of defects in the gastric mucosa and was inoperable in others. Even though non-hemolytic streptococci were present practically in all gastric ulcers, they could not convince themselves that these organisms had been proven as yet to be the factor which either initiated the ulceration or prevented healing. Nevertheless, the constant presence of streptococci in this type of lesion was a suggestive fact, and further experiments to determine their significance were being undertaken.

Consideration of Causes of Recurrent Symptoms After Operation for Gastric and Duodenal Ulcer.—Dr. ABRAHAM O. WILENSKY read this paper. He said the surgical treatment of ulcer of the stomach or duodenum did not terminate with the completion of the healing of the abdominal wound and the discharge of the patient from the hospital. It should be followed by a long period of careful after-treatment directed toward the correction of those accompanying disturbances in the functions of the stomach which were always initiated by the ulcerative process. Such treatment was properly in the domain of the general practitioner from whom such patients were usually referred for operation, or in that of the expert medical man devoting himself to the care of these disorders of the stomach or duodenum. During this postoperative period symptoms frequently arose referable in a general way to the original seat of trouble, at times at variance with those complained of before operation, at other times mimicking those anteoperative symptoms in some of their aspects, and often again reproducing the original symptom complex. In order to point out the causes productive of these postoperative symptoms, they had made a careful study of all the patients operated upon for gastric and duodenal ulcer and had correlated the complaints of these patients with anatomic and pathologic facts made evident at secondary operations, and had attempted to show the physiological relationships between the resultant postoperative symptoms and the causative objective findings. When these patients were discharged from the hospital the subjective symptoms had been alleviated and the gnawing pain and distressing nausea and vomiting had disappeared; the patients then believed that a cure had been accomplished, and excesses were immediately committed, and enormous quantities of food taken. What happened then gave them, perhaps, the largest group of cases. The most common symptom was vomiting: if not corrected pain, pyrosis, and gaseous eructations appeared. Ulcer of the stomach or duodenum was almost always associated with changes in the quality and relative quantities of the ingredients of the gastric juice, and this disturbed condition of the normal secretory function gave rise to symptoms that appeared immediately or very shortly after operation. The great majority of these symptoms orginated in indiscretions in diet. The usual symptoms were pyrosis and belching. Secondary symptoms due to a reflex interference with the motility of the large intestine led commonly to various degrees of constipation and

in a few cases to diarrhea. There were some patients who began to complain even before their discharge, and the symptoms described were exactly the same as were present before the operation. Secondary operations might be done, and it would be impossible to find traces of any open ulcerations or of the scars of any healed ulcers, or in fact any other intraabdominal lesion amenable to surgical treatment. It might be assumed, therefore, that these patients had never had any lesion in the stomach and that the original operation had been unnecessary.

Cases were also found in which pain was experienced for a short time following operation, due to a want of accurate apposition in the suture line of the gastroenterostomy or remaining after the excision of the ulcer-bearing area. True peptic ulcerations appeared in the line of the stomach or a short distance therefrom in the jejunum in about 2 per cent. of those patients who had a recurrence of their symptoms, and the clinical picture was very characteristic. A reproduction of the original symptom complex occurred in a short time after the operation and the patient believed that the old ulcer had reappeared. Progression might be very rapid and perforation with its consequent peritonitis might quickly arise. Secondly, the symptoms continued much as before the operation. Most of the cases of gastrojejunal ulcer belonged to this group. Thirdly, the symptoms developed slowly and a tumor formed in the upper abdomen. Operation revealed a fairly large jejunal ulcer which had undergone subacute perforation and had become surrounded by a large mass of indurated and adherent intestine and omentum. Fourthly, such a tumor developed suppuration within it and the abscess ruptured into an adherent hollow viscus. In other patients the period of good health extended over a much longer period than was indicated in the previous groups, the symptoms beginning insidiously and increasing slowly. Vomiting soon appeared and became prominent and disturbances were found in the mechanics of the stomach. In some patients there seemed to be a natural predeliction toward the formation of postoperative intraabdominal adhesions. As regards the recurrence of the ulcerations or the formation of new ulcerations, one might say very little for they were as little enlightened in this respect as in the etiology of the original ulcer.

Limits of Operability in Carcinoma of the Stomach.—Dr. RICHARD LEWISOHN read this paper. He said that the question of surgical interference in cases of cancer of the stomach was still very much under discussion. Though this subject had been widely debated for over thirty years, opinions as to the advisability of surgical interference in these cases still differed very widely. On the one hand they found many of their colleagues who claimed that every case in which a diagnosis of cancer of the stomach had been established ought to be operated upon; on the other hand, they often heard the opinion expressed, and mainly from their medical confrères, that once the diagnosis of cancer of the stomach was established an operation would be useless, because at the very best such an operation might prolong life for a few months only. There could be no doubt that their present operative results were far from being perfect. Their operative statistics could be improved materially if these cases were turned over to the surgeon at a much earlier date than had been the custom before. The physician hesitated to subject his patient to an operation unless he had established the diagnosis beyond a doubt. This brought up the question: "What established the diagnosis of cancer?" It should be stated most emphatically that all the clinical findings varied very materially in the different cases, and if they waited until all their clinical data pointed absolutely toward cancer of the stomach, the time for the possibility of a permanent surgical cure of this disease had usually been passed. At Mount Sinai Hospital during the last three years, 134 cases of cancer of the stomach came under observation. A detailed investigation of the different clinical factors which led them to establish the diagnosis proved that in many of the cases only a small percentage of the so-called cardinal symptoms were present. Lactic acid, which was often considered as one of the cardinal symptoms, was absent in 30 per cent. of the cases, whereas free hydrochloric acid was present in about 40 per cent. Frequent and persistent vomiting was often found in pyloric tumors, whereas carcinomatous growths of the lesser curvature rarely caused vomiting. Many a case of gastric carcinoma had been treated medically for an unduly long time because of the erroneous argument that a diagnosis could not be established in the absence of vomiting. The absence of blood in the stools, blood in the vomitus, palpable mass, etc., did not by any means exclude the presence of gastric carcinoma. Youth did not exclude the presence of gastric carcinoma for 13 per cent. of their patients were under 40 years of age and one was only 25 years of age. Even the *x*-ray had failed them in some cases which were proven to be stomach cancers on the operating table. They had no diagnostic symptom which made the diagnosis an absolute certainty and, in order to give to the greatest number of patients the benefit of a possible radical cure, they had to risk an occasional unnecessary exploratory laparotomy. However, their experience had shown that such an exploration with a negative result was very rare. Even in cases which clinically gave the suspicion only of cancer of the stomach, the operative findings usually showed that the growth was much more extensive than they had assumed from their clinical studies of the case. What advice should they give to patients who came to them with large palpable tumors? Their experience caused them to believe that cases of large carcinomas of the stomach could be divided into four groups. (1) If a large tumor of the stomach was causing pyloric stenosis, the indication for operation was clear. If a radical operation was possible, such a tumor should be removed, otherwise a gastroenterostomy. (2) An attempt at operative interference ought to be made if the general cachexia was not too far advanced. Localized metastatic involvement was no contraindication; such glands could be easily removed with the tumor *en masse*. In a great many cases the patients with large tumors were very good operative risks. In the majority of the cases the removal of the tumor was technically very easy. (3) These were cases with large movable tumors and metastasis which made a radical cure impossible. A removal of the tumor would prolong the life of the patient and make his existence much more comfortable. (4) Fixed tumors of the stomach with extensive metastasis. These were really the only inoperable cases. The current idea that when a large tumor was palpable the case must surely be inoperable on account of extensive metastasis was certainly not in accordance with their observations. Among the 134 cases which were admitted in the last three years, 22 were considered as having inoperable tumors and the patients were sent home. In 28 cases only a palliative operation was possible, and in 51 cases nothing but an exploratory operation was performed. Resection of the tumor was possible in 33 cases. They did not consider that the size of the tumor alone was a contraindication if the general condition of the patient, metastasis in the liver or in the cul-de-sac and other considerations did not stamp the case as obviously inoperable. Although very many of these cases made an uneventful recovery, the number of radical cures was very small, between 5 and 10 per cent. Being aware, however, of the fact that operative interference was the only possible means of a cure and that without operation these patients had no chance of recovery, they should not be too conservative in their operative indications. For the present the knife of the surgeon offered the only possibility of a radical cure.

Recurrent Ulcer of the Stomach and Gastric Jejunal Ulcer.—Dr. ALBERT A. BERG described the method employed by him in doing a gastroenterostomy plus pyloric exclusion. He was very optimistic regarding the results recently obtained.

Dr. LEOPOLD O. STIEGLITZ said, that he wished that the internist who saw many cases of ulcer of the stomach or duodenum could share Dr. Berg's optimistic views as to the ultimate result of the operative treatment of this condition. The internist might be more ready and willing to submit their cases to the surgeon if the permanent results obtained were as satisfactory as those obtained by the surgeon in the treatment of appendicitis or gall stone disease; in the latter cases the internist could feel confident, that the surgeon would achieve an actual cure by the removal of the "causa peccans" of the patient's illness. But in operating for ulcer of the stomach the surgeon did not change the underlying morbid condition, that originally led to the formation of an ulcer—an ulcer was not a disease in itself, but rather a complication of a morbid gastric condition—and gastroenterostomy did not permanently affect this underlying morbid condition, nor change the factors that originally caused the ulcer to form. It was very much like treating an ulcer of the leg without paying any attention to the varicose veins that were the real cause of the ulcer formation. The cause of

failure in many of the operated cases might be ascertained by a careful study of the individual case. Thus in a case of ulcer of the pyloric region with total anacidity in which very profuse hemorrhages had led to operative interference a gastroenterostomy had been done with occlusion of the antrum. Within a week another profuse hemorrhage had occurred; some nine months later another one and two years thereafter another almost fatal hemorrhage. Now the *x*-ray had shown that in achyllia gastrica the pylorus was not tightly closed, and there was reason to assume that some of the peptic ulcers of the pyloric region were caused by the regurgitation of pancreatic secretion through the patent pylorus into the anacid stomach, where self-digestion took place. If that was the case it was easy to understand why in the case in question the hemorrhages had recurred, as there was nothing to interfere with the continued regurgitation of pancreatic secretion into the antrum of the stomach. He also reported another interesting case with enormous hyperacidity in which the operation had not given permanent relief. He stated, however, that the results achieved by medical treatment—as far as the question of permanent cure was concerned—were about as disheartening as those by surgical methods. They could not promise the patient that any medical or surgical methods would effect a permanent cure. But these cases certainly offered a splendid field for further study and investigation.

Dr. Seymour Basch said that the field of gastric ulcer was very broad and few had any conception of the problems attending the solution of the questions arising; all surgical and clinical investigations were of great value, but it was well to check both the surgeon and the internist. Only recently the experimental work of Rosenow had taken the world by storm. His investigations, however, could not be substantiated. The results obtained in experiments on animals were not the same as those obtained in the human being. In animals the incidences in their lives were vastly different from those in the human being. The first consideration must be paid to the public. How frequently did not the people state that in these cases of gastric or duodenal ulcer operation was the last resort. Again, frequently the internist was convinced that a patient should be operated upon, but yet the patient would put the time of operation off so long that the operation would fail to do him any good; then, too, the operation would jeopardize the life of the patient at this late period. Surgeons were often at fault because they lacked a unanimity of opinion as to the treatment. The internists were at sea because they were not able to interpret the findings and state what the end results might be. The patients lost confidence. Dr. Basch believed, however, that these cases could be better clarified if they were studied in a broad and proper way. It was better for the patient if he was in a hospital where he could receive the benefits of the laboratory, the *x*-ray, and better clinical observation. The worse cases were those who were without the hospitals. If they could adopt in private practice the methods employed in the hospital they would without doubt get better results. One of the best means for dividing the surgical from the medical cases was the *x*-ray. This would show the uncomplicated cases that would be better treated by the internist; it would also point out the cases in which certain complications had occurred and where medical means would not avail. With regard to some of the causes of recurrences in the late cases, they had not been as yet sufficiently studied out, but it was well known that certain concomitant conditions were often overlooked. Some frequently did not make a diagnosis of ulcer, and yet ulcer was present. One late cause was the gradual closing of the gastroenterostomy opening and another the making of an opening too high up. A frequent cause of failure was that the surgeon did not turn the patient over to the internist for treatment after operation. Again the internist was often very careless in the after-treatment. There were two points in the treatment that Dr. Basch wished to emphasize, the importance of rest and protection. If one gave us improper diet there could be no rest for the ulcerous area. In many cases of chronic ulcer wonderful results were obtained from the use of the duodenal tube, which gave both rest and protection to the area involved.

Dr. Edward A. Aronson said that the papers and the discussion they had listened to led them to the old battleground, the medical treatment *versus* the surgical treatment for the cure of gastric and duodenal ulcer. It was hardly fair to make a comparison for the following reasons: The internist could never be positive about his diagnosis because there was no *absolute* diagnostic sign of the presence of an ulcer. The surgeon sometimes erred also for an ulcer might be present or absent, and they could only accept his word as to its presence when he opened and inspected the stomach itself. The personal equation of the surgeon counted for much in that one surgeon would consider an induration another would pass by and regard the contrary. They based their estimate on surgical statistics, but this was wrong, because no two surgeons operated exactly alike. The economic conditions of their patients also played a big rôle. The bread-winner of the family wanted a quicker road to complete recovery, and they could expect this sooner from surgery than any medical means. This accounted in a way for the selection of cases for medical and surgical treatment. The former class included patients whose financial condition was so much better than the latter. Dr. Aronson said he had been in the fortunate position of being able to see a very large amount of postoperative material which was directed to his clinic at the Mount Sinai Hospital Dispensary from the surgical divisions of the hospital and to study the results of both medical and surgical treatment of ulcer. When the patient was returned to the physician uncured, that was, still complaining of symptoms referable to his stomach after surgical treatment, he believed it was his first duty to endeavor to determine whether any complication of the operation was present, whether the symptoms were due to indiscretions in both choice and quantity of food, whether they were purely nervous, or whether the original disease was still causing the symptoms. Consideration of the complications of the operation constituted a most important factor because the frequency of these complications resulting from surgical technique depended upon the experience of the surgeon. It was needless to state that unfortunately not every surgeon could perform a properly functionating gastroenterostomy, and it was also gratifying to say that as a result of improved technique many of the former frequent bad surgical results were rapidly disappearing. Retention of food or the presence of a large amount of gastric secretion in the stomach was an important factor in preventing the normal healing of an ulcer, and the object of gastroenterostomy was partly to facilitate the emptying of the stomach and to prevent any retention of food or undue increase in the normal intragastric pressure by excessive peristalsis. The majority of cases cured by gastroenterostomy were those in which there had never been any difficulty whatever in the emptying of the stomach. At the present time the late end results of surgical treatment, that was, gastroenterostomy plus pyloric exclusion for ulcer, were being studied, some of the patients having been operated upon almost three years ago. In the majority of those patients who complained of symptoms referable to the stomach, it had been found that they were due to a retention of either food or gastric secretion dependent upon lack of muscular tone, that was, a diminished peristole of the stomach. The latter was determined by a rather novel method in the hands of two investigators at the hospital who would shortly publish their results. There was but little doubt that this so-called atony had a direct bearing on the prolongation of the symptoms.

Dr. F. B. Turck said that the negative findings were of value not only in eliminating all but the essential factors in a problem, but especially in correcting a false conclusion which might otherwise become established. These experiments of Celler and Thalheimer indicated that ulcer was not produced by streptococci. They also showed that in no case of ulcer in man could streptococci be found in the deeper tissue. It was shown long since by Holman, Nauwerck, and others that any erosion or ulcer in the stomach would show bacterial forms on its surface, including, of course, the streptococcus; but such findings had no significance—no causal relationship to ulcer. Dr. Turck's experiments, published in 1906, showed that bacterial injections did not produce ulcers in animals. Only by the feeding of intestinal bacteria could peptic ulcer be reproduced just as it was found in the human stomach. As regards the surgery of ulcer, he personally considered perforation and cicatricial stenosis as the only indications. Senn, ten years ago, and Bland Sutton to-day gave weight of opinion against routine operation. This was in line with recent conclusion of Kuttner, Faulhaber, von Redwitz, Boyd, E. von Herezel

Pester, and Zweig. The reason of surgical failure was explained by the observations of Hamburger and Leach. Rational treatment would consider the whole ulcer status rather than merely the local lesion of ulcer itself and an outline of this therapy was to be published very shortly.

Dr. MARK I. KNAPP said he would confine his remarks only to the question of the etiology of ulcer. They had heard the analogy of gastric and duodenal ulcer to ulcer of the leg, as caused by varicose veins. This comparison was excellent. In the leg they had the bursting of a distended vessel, which resulted in an ulcer, because of the inability of the constantly irritated surface to heal. If then, they were to have in the stomach similar conditions, they could understand the formation of ulcers here. If they should have varicose veins in the stomach, they would have the first conditions necessary to ulcer formation. Had they such varicose veins in the stomach? Why, yes; varicose veins in the stomach were quite frequent. Did such dilated, varicose veins in the stomach ever rupture? Again, yes. He reminded them of the condition known as hemorrhagic erosions of the stomach. The hemorrhages did issue from the dilated and distended vessels, which burst open. Again, Dr. Thalheimer told them of yeast being found in the ulcers and also streptococci. If, now, such burst vessels were prevented from healing by the constant irritating presence of microorganisms and yeasts, they got the open, non-healing wound of ulcer. Dr. Thalheimer spoke of the presence of yeasts. He reminded them of his article on "Organacidia Gastrica," published in the MEDICAL RECORD, September 6, 1902. It was there he described for the first time organacidia gastrica, and made three subdivisions, one of which he named "zymosia gastrica," which meant yeast fermentation in the stomach. It was in this disease, where they found not plain yeast cells—these did no harm—but the growing, budding, sporulating yeasts and microorganisms, which were of grave consequence. It was the presence of these which kept the exposed, torn vessel from healing and developed the ulcer. And now the question was, how did they get the distention and thinning of the vessels? Here they had to think of the vessels as they ran through the muscularis. If there was a great spastic contraction of the muscularis, the return circulation would, for the time being, be impeded or, perhaps, stopped altogether. If such contraction again and again recurred, the result would, of necessity, be an attenuation and finally a rupturing of the distended vessel, the same as in hemorrhoids. Therefore, for the production of an ulcer they must have repeated spastic contractions of the muscularis with consequent distention and attenuation of the choked-off vessel, the final rupturing of such distended vessel, and, in addition thereto, there must be chronically present in the stomach irritating material, which irritated the wounded surface of the torn vessel and, not only, prevented it from healing, but caused the attendant inflammatory changes around the wounded vessel, the identity of which was finally effaced by the inflammatory exudate and infiltrate surrounding it. Therefore, prolonged irritation caused within the stomach, if continued for long time, the chronic spastic contractions of the muscularis which would ultimately lead to the developing of ulcer. The continued chronic irritation of the stomach proceeded from the pathological presence within the stomach of the volatile, acrid, irritating organic acids, mentioned and described by him in the article above mentioned. The presence of these acids must not be assumed, but proved by the tests which he had given and which were so easily and rapidly performed.

Stated Meeting, Held May 22, 1916.

THE PRESIDENT, DR. FREDERIC E. SONDERN, IN THE CHAIR.

Modern Methods in Municipal Milk Control.—Dr. CHARLES E. NORTH presented this communication, which was illustrated with lantern slides. He said there were four objects of municipal milk control which must be the aim of the public health officers in undertaking municipal control work and were as follows: (1) To insure the food value of milk as an article of food. This referred to those physical and chemical characteristics which identified it as milk, including standards for its chemical components, such as butter fat, total solids, solids not fat, and salts. (2) To insure so far as possible the safety of milk. This referred to the prevention of milk infections, and the prevention of the transmission of disease by milk. Specifically, it related to the bacteria of infectious diseases transmissible by milk, and to bacteria which could not be well recognized as specific, but which damaged the milk itself or by toxic products damaged the milk consumer, especially infants. (3) The promotion of decency as a characteristic of milk. The value of decency in food products deserved special consideration for its own sake, entirely apart from questions of safety. This subject related especially to the sanitary care which had been exercised to protect milk from contamination and pollutions so that it was clean and pure. (4) The provision for an abundant supply at the lowest price consistent with the characteristics above mentioned. The value of milk as a food made it desirable that it should be made available to all consumers at a moderate cost. Regulations which increased the cost so that it became a hardship to the consumer decreased the use of milk, and caused injury to persons who would benefit from its wider use. The methods used in the past in municipal milk control were chemical analysis, dairy inspection, veterinary inspection of cattle and tuberculin testing, medical inspection of employees, certified milk, and bacterial testing. The modern methods of milk control were considered under the following headings:

1. *Grades and Standards for Milk.*—The purpose of grading was to attach proper labels to milks of different sanitary character. It was recognized that there were an unlimited number of degrees of excellence, from the highest to the lowest. For practical purposes, in large cities arbitrary lines could be drawn between three degrees of excellence. The highest grade of milk, carrying a "Grade A" label, should be milk satisfactorily clean, which was entirely safe, and which could be sold at a reasonable price, although such price must be necessarily higher than the price of any other grade. The primary object of this grade should be to place before the public a milk satisfactory for infant feeding. The second grade milk should correspond to the bulk of the market milk in sanitary character, and be sold at the regular market price, and while not so clean, yet entirely safe, and suitable for drinking purposes, especially by persons who were not so sensitive to the requirements of decency in milk which was to be used for drinking purposes. The third grade milk should be milk unfit for drinking purposes, but which still had some value for manufacturing purposes. In small cities two grades might be sufficient: "A" and "B." The lines of division should not be drawn until a careful survey of local conditions had been made, and the degrees of excellence on which these lines were based would necessarily differ in different communities.

2. *Pasteurization and the Place It Should Occupy.*—Pasteurization had come to occupy a place of first importance in furnishing a guarantee of safety to milk. No other measure yet discovered was able to give a life insurance to milk, or to protect milk consumers against infectious bacteria. The alleged objections to pasteurization as causing changes in the food value of milk were not substantiated by extensive medical observation. While there was some evidence that the feeding of pasteurized milk in infants might, in some cases, tend toward the development of rickets or scurvy, yet the feeding of orange juice so easily offset any such tendency that this objection could not be permitted to offset the enormous advantages to be gained by pasteurization. The infectious diseases caused by raw milk, even of the best character, justified the pasteurization of all milk, including such raw milk as certified. Pasteurization could be easily controlled by public health authorities by the use of recording instruments and bacterial testing.

3. *Tuberculin Testing, and the Place It Should Occupy.*—Tuberculin testing of dairy cows had been emphasized unduly by many municipalities as a measure of primary importance in safeguarding municipal milk supplies. In the first place, tuberculin testing was protection only against bovine tuberculosis, and was not a protection against any other infectious disease transmissible by milk. In the next place, it was not a complete protection against bovine tuberculosis even in the hands of the best dairymen and veterinarians. Experience had repeatedly shown the presence of tuberculosis in dairy herds and in certified dairies which were under the supervision of medical milk commissions. Tuberculin testing had a place, but only a small place, in municipal milk control. The pasteurization of

milk entirely destroyed the tubercle bacilli, and the adoption of pasteurization made tuberculin testing unnecessary as a protection against bovine tuberculosis. Such testing then became primarily an economic measure, which it was desirable to use for the protection of dairy herds and of the dairy industry. In most large cities at best but a small portion of the milk supply could be obtained from tuberculin tested cows. The complete control of bovine tuberculosis by this test in most dairy districts would mean the loss of from 30 per cent. to 50 per cent. of dairy cows, a milk famine, and an enormous increase in the price of milk, without corresponding benefits to the milk consumer.

4. *Vetcrinary Inspection of Cattle.*—Dairy cattle should be free from obvious disease. Common decency demanded this. Cattle diseases that could be detected by the physical examination of a competent veterinarian should be eliminated. To accomplish this it was necessary to establish regulations requiring periodic physical examination of dairy cows.

5. *Medical Inspection of Dairy Employees.*—Dairy employees should also be free from obvious disease. Regular medical examinations to determine this involved an expense hardly justified where the milk was to be pasteurized. The only safeguard in this matter upon which the public could depend was the reporting of cases of infectious diseases by the dairymen. This was not worth much, but was all that it seemed feasible to request at present.

6. *Bacterial and Chemical Testing, and Its Function.*—The milk testing laboratory must necessarily make a sufficient number of chemical tests to determine whether milk was being adulterated, or watered, or skimmed, or altered in any way dishonestly. Prosecutions based on these tests were almost universally practiced by municipal, state, and federal authorities, and should continue as a fundamental part of the municipal milk control. The bacteriological laboratory had a much larger function to perform. The close parallel between the numbers of bacteria in milk and its sanitary character made the bacterial test the surest and most valuable means of detecting faults in milk sanitation. When milk was clean and fresh the numbers of bacteria were certain to be very low. When it was dirty or stale, the numbers would be very high. It was always certain that milk containing large numbers of bacteria was either dirty or stale, or both. In the grading of milk the lines drawn between the different grades should be based on difference in sanitary character. This meant differences in contamination with dirt, and in staleness due either to age or lack of refrigeration. Consequently the most important element in milk grading should be the bacterial standard for each grade. In well conducted laboratories the variations between consecutive tests of the same milk was so small that only a few such tests were necessary to give a correct index of the sanitary character of the milk. Five consecutive tests showed plainly the sanitary grade in which a milk belonged. The laboratory testing of milk was no longer a matter of mystery or great expense, but could be put on an efficiency and business basis which made possible a large volume of testing at comparatively nominal expense to municipalities. Laboratories capable of testing 100 samples of milk daily could be installed for $200. Laboratory workers capable of plating and counting from 50 to 100 samples daily could be secured in many places from $10 to $12 a week salary. Thus every municipality could have its own bacteriological laboratory, and even small towns and villages could be possessed of these facilities. Milk dealers, even those having comparatively small businesses, could afford to conduct regular laboratory tests for bacteria. Another new and most important function of the bacterial laboratory was that it should act as a guide to dairy inspection. By proper distribution of bacterial tests over the supplies of the milk dealers distributing milk in a municipality, the health department could soon ascertain what dealers were bringing clean and fresh milk, and what dealers were bringing dirty and stale milk into the city. The bacteriological laboratory also quickly furnished information as to the efficiency of pasteurization. The tabulation of these reports concerning the character of raw milk and pasteurized milk, for the first time in the history of milk control, laid a correct foundation for intelligent dairy inspection. The assembling of bacterial tests on the desk of an officer in control of dairy milk supply made it possible for him to direct the force of dairy inspectors toward those places which were most in need of such inspection.

7. *Dairy Inspection, and the Place It Should Occupy.*—Dairy inspection had for years been made prominent as a means of milk control. There had been a tendency toward the development of dairy inspection as such in many municipalities to an extent that had overbalanced other methods of milk control, and actually interfered with progress in the right direction. In some municipalities the money and time devoted to the work had not been reflected in a corresponding involvement in the character of the milk supply. Dairy inspection without bacterial testing was aimless. Without the bacterial test, the dairy inspector went to his work blindfolded. Without a knowledge of the results of the bacterial tests of milk from a given dairy district the dairy inspector devoted his time, in many cases, to dairies which needed no inspection and, in many instances, devoted too little time to dairies which were the real sources of polluted milk. The product itself was the object of primary importance to the producer, the consumer, and the health officer. Dairy inspection alone did not lay its emphasis on the product, but on the environment of the product. The place to lay the emphasis in municipal milk control was on the product itself. The first step toward this was the grading of the milk and the establishment of milk standards. This grading should be based primarily on the sanitary character of the product, and not on the dairy score or the inspection of the dairy. The next step in transforming the product was the establishment of a system of laboratory testing of milk for bacteria. Such tests could be made in very large volume at very small cost. By voluminous bacterial testing of this sort the health officer could be abundantly supplied with constant information as to the sanitary character of all sources of the municipal milk supply. By these same tests he could also keep constantly informed regarding the efficiency of pasteurization. Armed with this information, properly tabulated, and in the hands of a central office, the force of dairy inspectors could then be controlled so that its activities, instead of being aimless, vacillating, or uncertain, became concentrated on worst portions of the milk supply as indicated by the laboratory test. The force of milk and dairy inspectors became virtually a flying squadron, directed toward the places where they would do the most good. This meant most intimate coordination between the bacterial and chemical laboratory work and dairy inspection.

Prof. W. H. Conn of Wesleyan University said that the first work on bacteria had been done in his laboratory twenty-nine years ago and since then a great many changes had taken place. The dairy industry had been revolutionized and many early ideas regarding the bacteria had been changed, as well as modified, until now many of their early beliefs of the early days were gone. During that time the significance of bacteria had steadily grown; the bacterial content of the milk had gradually impressed itself upon us until to-day the greater significance of the organisms was greater than ever before. Many attempts had been made to control the milk problem. He said he was sure that the medical profession to-day more fully realize the dangers that are associated with milk than ever before. A great many attempts had been made to get control of the milk industry. Dairy inspection alone did not insure the safety of the product. In 1889 he first made the suggestion to the dairymen in neighboring cities that the dairy inspection would some day be adopted by the municipality, and he was looked at with great amazement. Professor Conn said he wished to say a few words concerning the attempts that had been made to control the problem. Of all these the best had been the system of graded milk and a change that is developing with great rapidity at the present time. New York City was its home; it started in this city, and the influence it exerted extended elsewhere. This graded milk furnished a safe milk for the masses, and this was the key to the whole thing. This grading of the milk unites the producer, the dealer, and the consumer in one common interest. Emphasis was laid upon the four following points in connection with the bacterial standard of milk: (1) Clean, fresh milk from healthy cows would always give a low bacterial count. (2) The high bacterial count would always come from either dirty milk, stale milk, warm milk, or milk from diseased cows. (3) It was perfectly possibly to furnish even New York with a milk of low bacterial count. (4) Taking all things together the bacterial count of milk gives more information concerning the nature of the milk or its wholesomeness than any one fact. The main point he wished to emphasize was that the grad-

ing of the milk supply which was spreading from New York to other cities should be by new administrative methods. The administration of the milk industry in our communities had developed in the past years under different conditions. In earlier years they had aimed at finding men who were delinquent in producing and selling milk illegally, so that they might be taken to court and possibly fined. It was hoped that from such stimulus the dealers would produce a product of milk that was of a proper grade. Now the attempt should be to determine the grade of a dealer's whole supply. New administrative measures were now needed. The grading of milk involved bacteria testing, dairy inspection, and especially the coordination of the two in order to prevent conflicts, to prevent waste of effort, and to pick out delinquent dairies and diseased cows.

Dr. Haven Emerson, Commissioner of Health, New York City, called attention to the policy of the Department of Health in considering matters pertaining to the milk supply and the work that had been done and was being done in connection with the various milk commissions in educating the people with respect to *clean* milk. The New York County Medical Milk Commission, the New York Milk Committee, and the National Commission on Milk Standards had been impressed with the importance not only of local municipal but State control of the milk supply. There should be a closer cooperation between the local and rural health officers of different localities responsible for the care of the communities, so that it would not be necessary to send inspectors from cities into the country to inspect the conditions of milk production. Dr. Emerson referred to the outbreak of typhoid fever in Bay Ridge, where there occurred about one hundred cases infected by milk contaminated by a typhoid carrier who had also been responsible for a number of cases that had recently occurred in a village in New Jersey. This carrier infected the water supply of the dairy. The value of country milk inspections lay in its educational effect. The inspectors should be graded according to the educational work they do. It was interesting to note that the attention of the consumer was being directed to other factors in connection with the milk supply beside the "cream line." The people were now buying milk according to the grade and not according to the "cream line." They recognized safety as of greater importance. The suggestion had been made that the city should not use certified milk or other raw milks, but he believed, contrary to what had been stated, that there would always be a proper demand for a high grade raw milk. It should be possible always to produce raw milk that was safe enough to be marketable.

Dr. William H. Park said that he believed that probably Dr. North was better known in the work on the milk problem than any one else and had done much to simplify the problems confronting them; for instance, he had emphasized over and over again that it was not necessary to have certain kinds of floors in the barns. If the milk was clean and had been pasteurized it would be all that was necessary for the ordinary milk supply. With what had been said regarding raw milk he said he could not agree. It should be remembered that the barns of to-day were supervised by men of intelligence; they were also owned by them. The bacterial count was purely quantitative and not qualitative. With regard to the safety of certified milk, it was impossible for them to say that somebody would not make a mistake. None of them, however, had been able to trace any disease resulting from the use of certified milk since 1902. Therefore, he thought it best to agree with Dr. Emerson that certified milk was a reasonably safe supply. He did not think it was quite fair for anyone to state that the New York City and the New York State and National Committees were responsible for the introduction of the graded milk. Dr. North had a great deal to do with the forming of the committee. The results of the work which had spread throughout the country were of great value. In the City of New York itself most of the good that resulted must have the credit given to Dr. Lederle and Dr. Biggs.

Dr. Linsly R. Williams said that although the present bacteriological examination of milk was eminently desirable, yet it was not feasible except in the larger cities, that pasteurization was of the greatest importance and that in the rural sections certified milk did not always mean that it was produced under ideal conditions. Dr. Williams urged physicians who were sending patients to rural New York for the summer or who, themselves, practiced in other parts of the State, to write to the State Health Department any complaint they might have of any local milk supply in New York State.

Some Recent War Experiences in the Hospitals of France.—Dr. Clarence A. McWilliams told of his experiences in France, where he was sent by the French Hospital to take charge. His talk was illustrated with terior of the hospitals, the trenches, the system of transporting the wounded, the wounded men, etc. lantern slides showing both the interior as well as ex-

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Ohio State Board of Medical Examiners.

June 6, 7, 8, *and* 9, 1916.

ANATOMY.

1. Name the subdivisions of the abdominal cavity.
2. Give a description of the knee joint.
3. Name the carpal bones.
4. Describe the prostate gland.
5. What is the length of the intestine and its divisions?

PHYSIOLOGY.

1. Describe the functions of visceral muscle.
2. What is the nature of the nerve impulse? Discuss nerve fatigue.
3. What are the advantages of a mixed diet? How does a purely protein diet affect metabolism?
4. What is the mode of secretion and discharge of the bile?
5. Give histology of blood plates.
6. Discuss intravascular coagulation. What pathological conditions of the vessels favor its development?
7. Locate the cardio-accelerator center. How is the heart rate affected through the vagus nerve?
8. Describe Cheyne-Stokes respiration. With what pathological states is it usually associated?
9. Describe effects of removal of parathyroid tissue.
10. What is the origin, distribution, and function of the third nerve?

CHEMISTRY.

1. Give the chemical formula for mercurous chloride, mercuric chloride, and mercurous nitrate. Give one characteristic of each.
2. State the difference between a physiological and chemical antidote for poison, and give an example of each.
3. What is organic chemistry? State the general properties of organic compounds.
4. Differentiate between fermentation and putrefaction.
5. What is methyl alcohol? Give formula, properties, and uses.

MATERIA MEDICA AND THERAPEUTICS.

1. Name the three principal serums. Give mode of administration and indication for use of each.
2. Name the different preparations of digitalis and aconite. Give dose and cumulative action of each.
3. Cocaine hydrochloride—its physiological action and principal uses. Give symptoms and treatment of an habitué.
4. For what purposes are diuretics employed. Name the principal ones. How are they usually classified?
5. Give the physiological action, use, and dose of salicylate of sodium.
6. Potassium salts—name the principal ones and give dose and use of each.
7. Name three external antiseptic remedies. Give indications, and state how each may be used.
8. Nux vomica—its therapeutic uses, important preparations—dose of each.
9. Give the indications for internal use of corrosive sublimate; state dose.
10. Give the therapeutic uses and state the dose of opium and its alkaloids.

DIAGNOSIS.

1. Give symptomatology of incipient pulmonary tuberculosis.
2. Give etiology and physical signs of myocarditis.
3. Describe difference in symptomatology of acute dilatation of heart and hypertrophy of heart.
4. How can the functional competency of each kidney be demonstrated?

5. Give differential diagnosis: ulcer of stomach, ulcer of duodenum, and cholecystitis.
6. Give early signs of hyperthyroidism.
7. Differentiate enlarged gall bladder and ptosed right kidney.
8. Describe physical signs of effusion in acute pleuritis.
9. What is the most important sign of leukemia?
10. What are the early signs of acute poliomyelitis?

PATHOLOGY.

1. What is the blood picture in myelogenous leukemia; give source of abnormal cells found.
2. What is a hemorrhagic infarct; what would be the course of such a condition—for example, in the kidney?
3. Describe tubercle formation, and the various pathological results in pulmonary tuberculosis.
4. Give method of preparing a vaccine for furunculosis.
5. Describe your precautions in treating a case of diphtheria: (*a*) for the physician; (*b*) for the patient's family; (*c*) for the general community.

ANSWERS.

ANATOMY.

1. The abdominal cavity is divided into the abdomen proper and the pelvis.
2. The *knee joint* is a ginglymus, and is formed by the condyles of the femur, the head of the tibia, and the patella. "The *external ligaments*: the *anterior* or *ligamentum patellæ* is the continuation of the tendon of the triceps extensor. Above it occupies the apex and rough marking on the lower and posterior surface of the patella; below it is attached to the lower part of the tubercle of the tibia. There is a bursa between the upper part of the tubercle and the ligament. The *posterior ligament* (*ligamentum posticum Winslowii*), broad and thin, covers the back of the joint. It consists of a central and two lateral parts. The lateral parts spring above from the femur above the condyles and are attached below to the head of the tibia. The central part is derived from an expansion of the semi-membranosus tendon, and passes from the inner tuberosity of the tibia to the inner side of the upper part of the outer condyle of the femur. The *internal lateral ligament*, broad and flat, is attached above to the inner condyle of the femur; below, to the margin of the inner tuberosity, to the internal fibrocartilage, and to the inner surface of the shaft of the tibia for 1½ inches. The *long external lateral ligament*, a rounded cord, is attached above to the external condyle of the femur, and below to the external part of the head of the fibula, dividing the biceps tendon into two parts, a bursa intervening. The *short external lateral ligament*, very indistinct, lies parallel and behind the preceding, attached above to the outer condyle of the femur, and below to the styloid process of the fibula. The *capsular ligament*, thin, fills up the intervals between the special ligaments; it is attached to the margins of the articular surfaces of the bones, and blends with the fascia lata of the thigh: above it receives expansions from the vasti (*lateral patellar* ligaments).

"The *Internal Ligaments*: The *anterior* or *external crucial ligament* is attached to the depression in front of the spine of the tibia and to the external semilunar fibrocartilage; it passes upwards, backwards, and outwards to the posterior part of the inner side of the external condyle of the femur. The *posterior* or *internal crucial ligament* is attached to a depression behind the spine of the tibia, to the popliteal notch, and the posterior border of external semilunar fibrocartilage, this latter slip being sometimes called the *ligament of Wrisberg;* it passes upwards, forwards, and inwards, the posterior fibers attached by side of oblique curve of inner condyle, the anterior ones to the fore part of intercondylar fossa and to the anterior part of the outer surface of the inner condyle. The *semilunar cartilages* are thicker at the circumferences than at the central margins and serve to deepen the cavities for the head of the femur. The *internal semilunar cartilage* is oval in shape, the anteroposterior diameter being the longer. Its anterior extremity is attached to the tibia in front of the anterior crucial ligament, and the posterior extremity in front of the posterior crucial ligament. The *external semilunar cartilage* is nearly circular; its anterior extremity is attached to the tibia in front of the spine, the posterior extremity to the back of the spine." (*Aids to Anatomy.*)

3. The carpal bones, from radial to ulnar side, are (in the first row) scaphoid, semilunar, cuneiform, and pisiform; (in the second row) trapezium, trapezoid, os magnum, and unciform.
4. The prostate gland is about the size and shape of a horse-chestnut, and surrounds the neck of the bladder and first part of the urethra in the male. It is surrounded by a dense capsule, and consists of three lobes (two lateral and one middle); it is pierced by the ejaculatory ducts and by the urethra. Its base is attached to the base of the bladder, and its apex is in relation with the posterior layer of the triangular ligament and the compressor urethræ muscle. The posterior surface is in relation with the rectum and is about an inch and a half from the anus.
5. The *small intestine* is about twenty-one feet in length, the *duodenum* being about ten inches, the *jèjunum* about eight feet, and the *ileum* about twelve feet. The *large intestine* is about five or six feet in length, the *cecum* being about two and a half inches, the *ascending colon* about five inches, the *transverse colon* about twenty inches, the *descending colon* about eight and a half inches, the *sigmoid colon* about seventeen inches, the *rectum* about five inches, and the *anal canal* about one and a half inches. All these measurements are liable to variation, particularly those of the large intestine.

PHYSIOLOGY

1. *The function of visceral muscle.* "In a general way is may be said that the visceral muscle determines and regulates the passage through the viscus or organ of the material contained within it. The food in the stomach and intestines is subjected to a churning process by the muscles, in consequence of which the digestive fluids are more thoroughly incorporated and their characteristic action increased. At the same time the food is carried through the canal, the absorption of the nutritive material promoted, and the indigestible residue removed from the body. The blood is delivered in larger or smaller volumes according to the needs of the tissues through a relaxation or contraction of the muscle fibers of the blood-vessels. The urine is forced through the ureters and from the bladder by the contraction of their respective muscles." (Brubaker's *Textbook of Physiology.*) During labor the uterus expels the fetus, followed by the placenta and membranes.
2. *The nature of the nerve impulse.* "As to the nature of the nerve impulse but little is known. It has been supposed to partake of the nature of a molecular disturbance, a combination of physical and chemical processes attended by the liberation of energy, which propagates itself from molecule to molecule. The passage of the nerve impulse is accompanied by changes of electric tension, the extent of which is an indication of the intensity of the molecular disturbance. Judging from the deflections of the galvanometer needle it is probable that when the nerve impulse makes its appearance at any given point it is at first feeble, but soon reaches a maximum development, after which it speedily declines and disappears. It may, therefore, be graphically represented as a wave-like movement with a definite length and time duration. Under strictly physiological conditions the nerve impulse passes in one direction only; in efferent nerves from the center to the periphery, in afferent nerves from the periphery to the center. Experimentally, however, it can be demonstrated that when a nerve impulse is aroused in the course of a nerve by an adequate stimulus it travels equally well in both directions from the point of stimulation. When once started, the impulse is confined to the single fiber and does not diffuse itself to the fibers adjacent to it in the same nerve trunk." (Brubaker's *Textbook of Physiology.*)

Nerve Fatigue. "Inasmuch as nerves are parts of living cells, the seat of nutritive changes, it might be supposed that the passage of nerve impulses would be attended by the disruption of energy-holding compounds, the production of waste-products, the liberation of heat, and in time by the phenomena of fatigue. Though it is probable that changes of this character occur, yet no reliable experimental data have been obtained which afford a clue as to the nature or extent of any such changes. Stimulation of motor nerves with the induced electric current for hours appears to be without influence either on the intensity of the nerve impulse or the rate of its conduction." (Brubaker's *Textbook of Physiology.*)

3. *Mixed Diet.* "The chemical composition of the tissues, taken in connection with their metabolism during starvation, implies that no one article of food is

sufficient for tissue repair and heat production; but that all classes of food—in other words, a mixed diet—are essential to the maintenance of a normal nutrition. Experimental investigation has also conclusively established this fact. Moreover, the amounts of nitrogen and carbon eliminated daily, and the ratio existing between them, indicate the amounts of proteid, fat, and carbohydrate which are required to cover the loss." (Brubaker's *Textbook of Physiology.*)

Metabolism on a purely protein diet. "Notwithstanding the chemical composition of the proteins and the possibility of their giving rise to both fat and carbohydrate during their metabolism, it has been found extremely difficult to maintain the normal nutrition for any length of time on a pure proteid or fat-free diet. This, however, has been accomplished with dogs. It was found, however, that, in order to maintain the equilibrium, it was necessary to increase the proteins from two to three times the usual amount. Thus a dog weighing 30 to 35 kilograms required from 1500 to 1800 grams of flesh daily in order to get the requisite amount of carbon to prevent consumption of its own adipose tissue. Under similar circumstances, a human being weighing 70 kilograms would require more than 2000 grams of lean beef—an amount which, from the nature of the digestive apparatus, it would be practically impossible to digest and assimilate for any length of time. Even the slight habitual excess beyond the amount normally required is imperfectly assimilated and gives rise to the production of nitrogen-holding compounds which, on account of the difficulty with which they are eliminated by the kidneys, accumulate within the body and develop the gouty diathesis, with all its protean manifestations." (Brubaker's *Textbook of Physiology.*)

4. *Mode of secretion and discharge of bile.* "Although the liver presents some physiological peculiarities there is no reason to believe that the conditions of secretion therein are different from those in any other secretory organ, or that any other structure than the cell is engaged in this process. As shown by chemical analysis, the bile consists of compounds, some of which, like the bile salts, are formed in the liver cells, out of material furnished by the blood by a true act of secretion, while others, such as cholesterin and lecithin, principles of waste, are merely excreted from the blood to be finally eliminated from the body. The bile is thus a compound of both secretory and excretory principles. The flow of bile from the liver is continuous, but subject to considerable variation during the twenty-four hours. The introduction of food into the stomach at once causes a slight increase in the flow, but it is not until about two hours later that the amount discharged reaches its maximum. After this period it gradually decreases up to the eighth hour, but never entirely ceases. During the intervals of digestion, though a small quantity passes into the intestine, the main portion is diverted into the gall bladder, because of the closure of the common bile duct by the sphincter muscle near its termination, where it is retained until required for digestive purposes. When acidulated food passes over the surface of the duodenum, there is an increase in the secretion, or at least the discharge of bile, and as this takes place after the nerves distributed to the liver are divided, the assumption is that an agent, possibly secretin, is developed in the duodenal mucous membrane, which, absorbed into the blood, is ultimately distributed to the liver cells and by which they are excited to activity. At the same time there is excited, through reflex action, a contraction of the muscle walls of the gall bladder and ducts, a relaxation of the sphincter, and a gush of bile into the intestine, the discharge continuing intermittently until digestion ceases and the intestine is emptied of its contents." (Brubaker's *Textbook of Physiology.*)

5. The blood platelets are small granular or homogeneous discs, about 1.5 to 3.5 μ in diameter. The edges are rounded and well defined; they have no nucleus; they have been estimated at about 250,000 to 300,000 to the cubic millimeter of blood.

6. *Intravascular coagulation.* "So long as the relations of the blood and the vascular apparatus remain physiological, no coagulation occurs in the vessels. The reasons assigned for this are: (1) the absence of thrombo-kinase in sufficient amounts; (2) the presence of an antithrombin. On either assumption the reaction between prothrombin and calcium with the formation of thrombin does not take place. If the vessels are injured as they are when ligated or torn or in any way impaired, coagulation promptly takes place with the subsequent occlusion of the vessel. As to whether the injured tissues or the blood cells now generate an agent, thrombo-kinase, which activates the prothrombin and calcium, or whether they generate an agent thromboplastin, which neutralizes an antithrombin, is a subject of discussion." (Brubaker's *Textbook of Physiology.*)

7. *The cardio-accelerator center* is in the medulla. The vagus nerve is the inhibitory nerve of the heart; it slows the heart. Section of one vagus produces slight acceleration of the heart. A more marked effect occurs when both vagi are divided. The inhibitory action of the vagus is continuous.

8. *Cheyne-Stokes respiration* "is a condition in which the respirations gradually increase in volume and rapidity until they reach a climax, when they gradually subside, and finally cease for from ten to forty seconds, when the same cycle begins again. It may occur in tuberculous meningitis, cerebral hemorrhages, embolism, thrombosis, aneurysm of basilar artery, uremia, heart disease, etc." (Hughes' *Practice of Medicine.*)

9. *Removal of the parathyroids* is followed by twitching and spasms of the voluntary muscles, paralysis of the legs, increased frequency of respiration, and death.

10. The *third cranial nerve* (motor oculi) arises from the inner side of the crus cerebri, in front of the pons, and from the floor of the aqueduct of Sylvius. It enters the cavernous sinus and then passes forward to enter the orbit through the sphenoidal fissure. While in the sphenoidal fissure it divides into two branches. It is the motor nerve for the following five muscles of the eyeball, and is distributed to these muscles: the superior rectus, levator palpebræ superioris, internal rectus, inferior rectus, and inferior oblique muscles.

CHEMISTRY

1. *Mercurous chloride*, Hg_2Cl_2, insoluble in water.
Mercuric chloride, $HgCl_2$, soluble in water.
Mercurous nitrate, $Hg_2(NO_3)_2$, is efflorescent.

2. *Physiological antidotes* act as such by combating one or more of the physiological actions of the poison, such as opium for belladonna.
Chemical antidotes act as such by uniting chemically with the poison and thus converting it into a harmless or insoluble compound, such as magnesium sulphate for lead poisoning.

3. *Organic chemistry* is the chemistry of the carbon compounds.
General properties of organic compounds: They may be solids, liquids, or gases; if solid, may be crystalline or amorphous; they may be volatile or non-volatile, and they are very liable to undergo change when acted upon by heat or reagents. The more complex they are, the more readily they undergo change.

4. *Fermentation* is a form of decomposition of organic matter containing only carbon, hydrogen, and oxygen.
Putrefaction is a form of decomposition of organic matter which contains nitrogen in addition to carbon, hydrogen, and oxygen.

5. *Methyl alcohol* is the hydroxyl of methyl, CH_3OH. It is a colorless liquid having an ethereal and alcoholic odor and a sharp, burning taste. It burns with a pale flame, giving less heat than that of ethyl alcohol. It mixes readily with water, alcohol and ether, and is a solvent for sulphur, phosphorus, potash, soda, and resinous substances.

MATERIA MEDICA AND THERAPEUTICS

1. *Antidiphtheritic serum* should be given to patients suffering from diphtheria, or even suspected to be suffering from that disease. It is given subcutaneously.
Antimeningococcic serum is injected into the spinal canal after the withdrawal of about 30 cc. of cerebrospinal fluid. It is administered to patients suffering from cerebrospinal meningitis.
Antistreptococcic serum is given in various diseases due to streptococcus infection (erysipelas, puerperal fever, septicemia, ulcerative endocarditis). It is given subcutaneously.

2. DIGITALIS. Fluidextract, ℥j; extract, gr. i-v; infusion, ℥ij; tincture, ℥xv.
Symptoms of cumulative effect of digitalis: Weak, dicrotic pulse, perspiration, nausea, vomiting, lowered reflexes, lowered body temperature, vertigo, muscular tremors, lassitude, delirium, stupor.
ACONITE. Fluidextract, ℥j; tincture, ℥x.
Symptoms of aconite poisoning usually manifest themselves within a few minutes; sometimes are delayed for an hour. There is numbness and tingling,

first of the mouth and fauces, later becoming general. There is a sense of dryness and of constriction in the throat. Persistent vomiting usually occurs, but is absent in some cases. There is diminished sensibility, with numbness, great muscular feebleness, giddiness, loss of speech, irregularity and failure of the heart's action. Death may result from shock if a large dose of the alkaloid be taken, but more usually it is by syncope.

3. Cocaine hydrochloride. *Physiological action:* Local anesthetic (externally); internally it is a muscular, cerebral, circulatory, and respiratory stimulant, also a mydriatic. Its *principal uses* are: As a local anesthetic; also in paralysis agitans, chorea, and alcoholic tremors.

The chief symptoms of an habitué, are:—"Emotional excitement, physical unrest, mental impairment, moral turpitude, hallucinations, mild epileptiform attacks, dilatation of the pupils, a rapid and feeble pulse, severe gastric disturbance, wasting and anemia. *Treatment*: The drug should be withdrawn rapidly but not suddenly. Treatment in a sanatorium is always advisable. Stimulants like strychnine are often useful. Hygienic and dietetic measures calculated to improve general nutrition are indicated." (Stevens' *Materia Medica.*)

4. *Diuretics are used:* To dilute the urine, to increase the flow of the urine, to remove liquids from the body (as in dropsy), to remove toxic substances from the body, and to stimulate atonic kidneys.

Diuretics are classified, as (1) Those that act as such by increasing the arterial pressure, digitalis, squills, and strophanthus are examples; (2) those that act by dilating the renal vessels, such as caffeine; (3) those that act as stimulants to the renal epithelium, such as caffeine, theobromine, scoparius, calomel; and (4) various salines which act by increasing the water in the blood, such as several of the salts of lithium and of potassium.

5. Sodium Salicylate. *Dose*, 15 grains. *Physiological action:*—Antiseptic; irritant; strongly cholagogue; antipyretic; diaphoretic; diuretic (markedly increasing the excretion of uric acid). In exceptional instances skin eruptions are caused, and in some individuals a train of symptoms analogous to those of cinchonism, and designated as *salicylism*, results from the use of salicylic preparations.

Uses:—Externally, as antiseptic and stimulating applications and for the checking of abnormal perspiration; also in parasitic and other skin diseases. Internally, rheumatic fever (in which it seems to act as a specific); gout; migraine; sciatica; diabetes; cholelithiasis. (Wilcox's *Materia Medica.*)

6. *Potassium salts:* Carbonate, gr. xv; bicarbonate, gr. xxx; acetate, gr. xxx; citrate, gr. xv; sulphate, gr. xxx; bitartrate, gr. xxx; nitrate, gr. vij; chlorate, gr. iv; permanganate, gr. j; iodide, gr. vij; bromide, gr. xv; cyanide, gr. 1/5.

The *carbonate* and *bicarbonate* are used for itching and for skin diseases; the latter is also used for dyspepsia, rheumatism, gout, jaundice, and gall stones. The *acetate* and *citrate* are used for gout, rheumatism, in dropsy, renal diseases, cardiac diseases, and in general as diuretics. The *sulphate* and *bitartrate* are used as cathartics, the latter also as a diuretic. The *nitrate* is used (by inhalations of its fumes) in asthma. The *chlorate* is used for inflammatory conditions of mouth and throat. The *permanganate* is used for wounds, sores, ulcers, erysipelas, and as a douche in gonorrhea, gleet, etc.; also as an antidote to morphine poisoning. The *bromide* is used in epilepsy, insomnia, neuralgia, migraine, delirium tremens, convulsions, nymphomania. The *iodide* is used in syphilis, asthma, chronic rheumatism. The *cyanide* is used to relieve vomiting, gastrointestinal pain, and cough.

7. *Three external antiseptics:*—For *rooms and furniture*, sulphur dioxide, generated by burning three pounds of sulphur for each 1000 cubic feet of space; for *hands of surgeon*, mercuric chloride, in solution of 1:1000; for *glassware*, dry heat at about 150° C., continued for an hour.

8. Nux Vomica. *Preparations and Doses* Extractum nucis vomicæ, gr. ¼; fluidextractum nucis vomicæ, ♏j; tinctura nucis vomicæ, ♏x; strychnine, gr. 1/64; strychinæ sulphas, gr. 1/64; strychinæ nitras, gr. 1/64. *Therapeutic indications:* As a general tonic or bitter; in indigestion, cardiac depression, impaired peristalsis, pneumonia, phthisis, amenorrhea, dysmenorrhea, impotence, some forms of paralysis, chorea, epilepsy, neuralgia, alcoholism, and urinary incontinence.

9. *Corrosive sublimate is used internally* in the treatment of diphtheria, syphilis, and as a tonic. Dose, gr. 1/100 to 1/20.

10. Opium. *Therapeutic uses:* As an anodyne, a hemostatic, in inflammations, as an expectorant, in diarrhea, in alcoholism, manias and diabetes, as an antispasmodic, in insomnia, and as a diaphoretic.

Dose: Of powdered opium, gr. j; morphine, gr. 1/5; morphine sulphate, acetate, and hydrochloride, each gr. ¼; codeine, gr. ½; codeine sulphate and phosphate, each, gr. ½.

DIAGNOSIS

1. The early manifestations of pulmonary tuberculosis are: (1) *Physical signs:* Deficient chest expansion, the phthisical chest, slight dullness or impaired resonance over one apex, fine moist rales at end of inspiration, expiration prolonged or high pitched, breathing interrupted. (2) *Symptoms:* General weakness, lassitude, dyspnea on exertion, pallor, anorexia, loss of weight, slight fever, and night sweats, hemoptysis.

2. "*Acute myocarditis* may be incident to rheumatism, pneumonia, septicemia, tuberculosis, typhoid fever, etc., and accompanies acute pericarditis and acute endocarditis. Subjective symptoms are generally absent, but the condition may be suspected when the heart begins to dilate rapidly, when the pulse becomes extremely rapid, thready, and irregular, or when the temperature suddenly rises. A systolic murmur may be heard at the apex."

"*Chronic myocarditis* results from sclerosis of the coronary arteries, but may follow acute myocarditis. The symptoms appear insidiously, and include dyspnea, palpitation, weak, rapid, and irregular pulse, anginoid pains, maniacal attacks, vomiting, etc. The area of dullness is increased. The pulmonary second sound may be accentuated if the right heart is hypertrophied, and a murmur may be heard at the apex." (*Pocket Cyclopedia of Medicine and Surgery.*)

3. *In cardiac hypertrophy* "the symptoms depend upon the amount of hypertrophy. If only sufficient to compensate for valvular defects or other circulatory disturbances there will be no symptoms. When the enlargement is disproportionate to the obstruction, it is manifested by increased and forcible cardiac action, precordial discomfort, headache, dizziness, ringing in the ears, flushes or flashes of light, dyspnea on exertion, congestion of the face and eyes, dry cough, epistaxis, and restless nights, with more or less jerking of the limbs. The arteries become full and the pulse is firm and bounding. The carotids and superficial arteries pulsate markedly, the patient frequently complaining of throbbing sensations. A sphygmographic tracing shows the line of ascent vertical and abrupt, but the apex is rounded, and the line of descent is oblique, unless there is more or less insufficiency of the valves."

In cardiac dilatation "the manifestations are referable to the enfeebled circulation and include feeble pulse, headache aggravated by the upright position, attacks of syncope, cough, dyspnea, jaundice, dyspepsia, constipation, scanty, often albuminous urine, mental dullness, vertigo, often relieved by a copious epistaxis, and finally dropsy beginning in the lower extremities. The condition terminates in death by exhaustion." (Hughes' *Practice of Medicine.*)

4. *The functional activity of each kidney* may be "determined by the intramuscular injection of 1 cc. of a 5 per cent. acqueous solution of methylene blue; the collection of the urine (from each kidney) after the lapse of one-half hour, one hour, and hourly thereafter; and noting the time of the appearance of a bluish tint to the urine, the time of maximum coloration, and the time of disappearance of the coloring. Normally a slight tint may be observed in the first specimen, certainly at the end of one hour. The maximum coloration occurs at the end of three or four hours, and the urine is free of coloring at the end of thirty-six to forty-eight or sixty hours. Delay of beginning excretion beyond one hour, and of maximum coloration beyond the fourth hour, and continuation of excretion, as may occur for five or six days, is indicative of deficient functional activity." (Kelly's *Practice of Medicine.*)

5. *Gastric ulcer* is generally caused by injury or bacteria, is most apt to occur between the ages of twenty and forty-five. After eating there is pain localized in the stomach, vomiting occurs soon after eating, hematemsis is common, there is localized tenderness over the stomach, and examination of the gastric contents shows an excess of free HCl.

In *duodenal ulcer* the pain is apt to be more to the right, and to occur at an interval of two or three hours after meals; the hemorrhages will be intestinal, and the blood will be passed by way of the bowels, and not

vomited. In many cases the symptoms are identical with those of gastric ulcer.

Cholecystitis: The pain is further to the right, and with tenderness and muscular rigidity, is referred to the region of the gall bladder; there are rise of temperature, increased pulse rate, leucocytosis, and vomiting.

6. *Hyperthyroidism* is exophthalmic goiter; the cardinal symptoms are tachycardia, exophthalmos, goiter, and tremor.

7. In *enlarged gall bladder* pain is located in the region of the liver and may radiate to the right shoulder; there may be jaundice.

In *ptosis of the right kidney* the kidney may be palpated and often replaced; the pain radiates down the ureter; chill, nausea and vomiting may be noticed; blood may be found in the urine; when the kidney is replaced all the symptoms cease.

8. *Physical signs of effusion in acute pleuritis:* There is fullness or bulging of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse; over the effusion there is little or no vocal fremitus, while above the effusion it is exaggerated; over the effusion the percussion note is dull, above the effusion it is tympanitic; the fluid changes its level with different positions of the body; on auscultation there will be heard a feeble vesicular murmur; vocal resonance is diminished or absent over the fluid and increased above the effusion.

9. *The most important sign of leucæmia* is a persistent increase in the total number of leucocytes.

10. *Early signs of acute poliomyelitis:* Fever; malaise; chilliness; tonsilitis, coryza, diarrhea; convulsions; profuse sweating; rigidity of head, neck and limbs; pain in neck and back. There may be *no early signs.*

PATHOLOGY

1. *In myelogenous leucæmia* the white cells are enormously increased, the red cells are decreased; the chief feature of the blood is the large number of myelocytes which it contains; the eosinophiles are also increased; so, too, are the basophiles or mast cells; the polymorphonuclears are absolutely increased, but relatively diminished as the myelocytes increase; the lymphocytes are not very numerous. The myelocytes are derived from the bone marrow.

2. *A hemorrhage infarct* is an infarct where the obstructed area is full of blood. Sooner or later the infarct becomes decolorized, owing to diffusion of the dissolved hemoglobin; the involved tissues degenerate and become absorbed; and scar tissue, more or less pigmented, may remain at the site of the lesion. Infarction is always accompanied by necrosis and fatty degeneration. Hemorrhagic infarct occurs but rarely in the kidney.

3. *Tubercle formation.*—"Miliary tubercles are tiny grayish nodules, and each consists of a collection of cells. The bacillus is brought to the tissues by a blood vessel. The bacilli set up changes in the tunica intima and the connective tissue around the vessel, which result in the formation of a collection of cells which are bigger than leucocytes. They are derived from connective-tissue cells and endothelial cells. One or more of these in each tubercle increase in size or coalesce to form a giant cell. The giant cell forms the center of the tubercle; it has many nuclei arranged around its periphery, and contains bacilli. Around it are arranged layers of epithelioid cells. Beyond these are collected many leucocytes, which merge through granulation tissue into the normal structures. The structure is not so typical in all cases, as giant cells may be absent. No blood vessels are present in tubercles, and the surrounding vessels are narrowed or obliterated by endarteritis."

Results.—"(1) *Caseation* is a result of progressive action of the bacilli. Two factors contribute to this: (1) The destructive action of the bacillus; (2) the defective blood supply from endarteritis. The center of each tubercle softens and becomes yellow or caseous. Neighboring tubercles after caseating coalesce, and a tuberculous abscess is formed and in its walls further miliary tubercles are found. (2) *Retrogressive changes.*—The resistance of the tissues is considerable, and if circumstances are favorable the bacilli are destroyed or their growth inhibited and retrogressive changes occur. The tubercle may be converted into fibrous tissue, and only a cicatrix remains; or the caseous matter may become encapsuled, and perhaps resume activity at some later date, if the capsule is ruptured by some injury. Sometimes calcification occurs. (3) *Diffusion* is a marked feature. This may be (1) local, by direct extension; (2) to distant viscera, by minute emboli; (3) acute general tuberculosis may occur in any case. Tubercles are scattered throughout the body, and the disease is fatal in a few weeks."—(*Aids to Surgery.*)

4. *Method of preparing vaccine.*—"(1) The causal organism (in this case the *Staphylococcus pyogenes*) is obtained from the seat of the lesion and isolated in pure culture at 37° C. on a suitable medium such as agar. (2) The culture growth is emulsified in about 5 c.c. of a 0.9 to 1.0 sodium chloride solution. (3) The bacterial emulsion is transferred to a water bath or incubator, and kept at 60° C. for from thirty to sixty minutes. (4) The number of bacteria in the emulsion is estimated. (5) The vaccine is diluted with normal saline solution until each cubic centimeter contains an appropriate number of organisms for the dose, *e.g.* 10 millions, 100 millions, 1,000 millions, etc. (6) The sterility of the emulsion is proved and a small amount of antiseptic, *e.g.* phenol 0.5 per cent. or tricresol 0.25 per cent., is added, and the vaccine is filled into sterile bulbs for use. In practice the bulb is opened, the contents are filled into a sterile syringe, preferably all glass, and the vaccine is injected subcutaneously under strict aseptic precautions."—(Bruce's *Materia Medica and Therapeutics.*)

5. The *physician* should wear a gown while with the patient, should inspect the patient's eyes, nose, and throat through a pane of glass so that the patient may not cough in his face, and should carefully wash his hands in an antiseptic solution before leaving. The *patient* should be isolated, and the nose, throat, and mouth should be washed with an antiseptic solution; diphtheria antitoxin should be administered as early as possible. The *family* should be kept away from the patient, and all infected articles should be soaked in a solution of corrosive sublimate or carbolic acid. The *community* is protected by the above procedure; but, in addition, the disease should be reported to the proper health authorities, other children from the family should not be allowed to go to school or church or other public places, strict quarantine must be observed, and there must be a thorough disinfection at the close of the case.

(*To be concluded.*)

Books Received.

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A CLASSIFICATION OF THE EPILEPSIES.

BY ELIAS C. FISCHBEIN, M.D.,

SONYEA, N. Y.

CRAIG COLONY FOR EPILEPTICS.

Nomina si nescis, perit cognitio rerum (Coke).

If you do not know their names, the knowledge of things is lost.

THERE is pressing need for a new classification of the epilepsies. The nomenclature of these disease conditions has suffered from the fact that names have been applied by various authors with no adherence to any unity of scheme: "Quot homines, tot nomina"—is almost applicable to this state of affairs, that there are nearly as many names as men to do the naming. The great majority of sypmptom complexes found in this multiphase disease have had appended to them the noun "epilepsy," presumably for the sake of clearness. Unfortunately the result has been confusion. We have psychic epilepsy, tetanoid epilepsy, matutinal epilepsy, Gelineau's epilepsy, masked epilepsy, hysteroid epilepsy, etc., a state of affairs which has led to a great deal of bother and annoyance in memorizing. Each one of these has had to be remembered separately and every person interested in the study of these conditions (in order to assist his memory) has had to make a provisional working classification of his own, the latter, however, not necessarily coinciding with that of any of his contemporaries. Hence the confusion.

Epileptic attacks have been assigned as belonging to one of three groups: Grand Mal, Petit Mal, and Psychic. The difference in the implied meaning between the first and second is that "grand" refers to the matter of importance over "petit." This is true in a very limited sense only so far as the impression made upon the onlooker of a fit; but this is not so in reality. Many observers have advanced the opinion that, insofar as relates to actual injury to the brain, more damage is done by the sensory and psychic accessions. It is admitted, however, that such sensory and psychic seizures do not *appear* as severe. It was first pointed out by Esquirol,* for instance, that "transient epileptic vertigo is more damaging to the intellect than the far more violent and formidable grand mal seizures." From this standpoint the terms "grand" and "petit" are misnomers and should be abandoned.

These two names (grand and petit mal) also carry with them the sense of *severe* and *less severe*. One can appreciate the inconsistency of applying nomenclative designations which include within themselves a sense of apparent prognostic value, to disease conditions in which the prognosis is very uncertain, to say the least.

*Traite des Maladies Mentales, tome 1, p. 288.

Epilepsy, so-called, is a polyphase disease consisting of a multitude of syndrome complexes which have been found to be very nearly related one to another. In the following pages these syndromes have been grouped in classified form, the object being to fashion a classification which might follow proper scientific observance and at the same time possess such flexibility as to allow later of tentative and inductive growth.

At the present time it would be futile to attempt to classify these symptom complexes from an etiological, a pathological, or an anatomico-pathological standpoint. Our stock of information along the above lines is as yet comparatively meager, and even this is fragmentary and (apparently) uncorrelated.

The classification here presented is constructed upon clinico-symptomatological lines, the object being as far as possible to define each group sharply, to give it a name that will refer to characteristics which are constant and peculiar to that group, so that the name will be not only designatory in a conventional sense but also descriptively correct. An endeavor has been made to correlate these names so that each one may suggest its antithesis.

It seemed to the writer that in the formation of a working classification of these diseases, it would be well to use terms which, notwithstanding that they are in Latin, might be easily understood by those not especially versed in languages other than their own; recalled with little difficulty in that they have more or less relationship with the nomenclature used up to the present time, and, memorized more easily in that the classification of terms is, so far as it was possible to make it, dichotomous.

In the following schema each term is first given in Latin form, placed in its group or class and marked as follows: A Roman numeral designates the group; a Roman capital designates the class, and Arabic numerals designate subclasses. The latter are further divided into subheadings marked by either Roman or Greek letter, as the case might be. Following the classified list of epileptic syndromes is an explanation of each item under its proper designative letter or number. Certain of the terms and their place in the classification will here be explained, while at the same time the English translation and common synonyms will be given in parentheses. Other terms, the meaning of which is self-evident, will only be mentioned.

In order that there may be no misunderstanding as to the exact meaning of terms, more or less lengthy notes have been appended. The enumeration of symptoms is as brief, however, as is compatible with a clear understanding of the term. It might be added that in the explanations I have allowed myself a certain amount of latitude, this being justified by the interest shown of late in these matters.

I. PAROXYSMI* MOTORII.
- A. Paroxysmi Motorii Majori.
  - 1. *Paroxysmi Motorii Majori Vulgares.*
    - *a.* Paroxysmi Seriales.
    - *b.* Status Epilepticus (paroxysmi continui majori).
    - *c.* Paroxysmi Innocentii.
    - *d.* Paroxysmi Alcoholici.
      - α. Paroxysmi inter Bibenda.
      - β. Paroxysmi in Alcoholophilia.
      - γ. Dipsomania Aequivalens.
    - *e.* Paroxysmus Procursivus.
    - *f.* Paroxysmi Assymetrici.
      - α. Paroxysmus Unilateralis.
      - β. Paroxysmus Hemiplegicus.
      - γ. Hemiplegia Transitoria.
  - 2. *Paroxysmus Motorius Major Purus.*
  - 3. *Paroxysmi Motorii Majori Eccentrici.*
    - *a.* Paroxysmi Infantum.
      - α. Paroxysmus Infantum Eccentricus.
      - β. Paroxysmus Infantum Verus.
      - γ. Spasmophilia.
    - *b.* Paroxysmi Parturientium.
    - *c.* Paroxysmi Uraemici.
    - *d.* Paroxysmus Tetanoideus.
- *B.* Paroxysmi Motorii Minori.
  - 1. *Paroxysmus Motorius Minor Purus.*
  - 2. *Paroxysmus Minor Motorio-sensoriallis.*
  - 3. *Myoclonus.*
    - *a.* Myoclonus intermittens.
    - *b.* Myoclonus partialis continuus (Kojewnikoff).
    - *c.* Myoclonus progressivus.
  - 4. *Pseudo-myoclonus.*
  - 5. *Tetanilla.*
  - 6. *Paroxysmus Nutans.*
  - 7. *Paroxysmus Rotatorius.*
  - 8. *Paroxysmus Partialis Jacksonii.*

II. PAROXYSMI SENSORIALES.
- *A.* Paroxysmus Sensorialis Purus.
- *B.* Paroxysmus Sensorio-Motorialis.
- *C.* Vertigo.
  - 1. *Vertigo Sensorialis.*
    - *a.* Vertigo subjectiva (gyrosa).
    - *b.* Vertigo objectiva.
  - 2. *Vertigo Psychica.*
- *D.* Hemicrania.
  - 1. *Hemicrania Simplex.*
  - 2. *Hemicrania Ophthalmica.*
  - 3. *Hemicrania Æquivalens.*
- *E.* Aura *sine* Convulsione.
- *F.* Paroxysmus Thalamicus.
- *G.* Paroxysmus Vasovagosus.
- *H.* Narcolepsia.
  - 1. *Narcolepsia Vera.*
  - 2. *Narcolepsia Hysterica.*
    - *a.* Status Catalepticus.
    - *b.* Catalepsia Hysterica.
  - 3. *Paroxysmus Somnolentus.*

III. ACCESSIONES MENTIS MANIFESTÆ.
- *A.* Accessio Mentis Minor.
  - 1. *Accessio Mentis Minor Agitata.*
  - 2. *Accessio Mentis Minor Stuporosa.*
  - 3. *Accessio Mentis Minor Migrans.*
- *B.* Accessio Mentis Major.
- *C.* Accessio Hysteroidea *post convulsione.*
- *D.* Alterationes Mentis.
  - 1. *Depravatio Mentis Epileptica.*
    - *a.* Depravatio epileptica rapida.
    - *b.* Depravatio epileptica tarda.
    - *c.* Depravatio epileptica intermittens.
    - *d.* Depravatio epileptica fulminans.
  - 2. *Dementia Epileptica Vera.*

IV. ACCESSIONES MENTIS LARVATÆ.
- *A.* Poriomania (*automatisma ambulatoria*)
  - 1. *Somniatio Morbosa.*
  - 2. *Conscientia Duplex.*
    - *a.* Conscientia duplex migrans.
    - *b.* Personalitas diversa.
  - 3. *Somnambulatio.*
  - 4. *Pavor Nocturnus.*
- *B.* Status Affectus.

V. HABITUDO MENTALIS EPILEPTICA.

*I have made free use of the noun "paroxysm" in that it expresses the meaning of a sudden recurrence of symptoms and at the same time does not necessarily imply a convulsion. It is best translated by the word "seizure." Sauvages prefers this term. He refers to epilepsy as "Morbus clonicus universalis chronicus et periodicus, cum sensuum feratione in *paroxysmo* et ante actorum oblivione."

I. MOTOR CONVULSIONS.
- *A.* Major Motor Convulsions.
  - 1. *Common major motor seizures.*
    - *a.* Serial Seizures.
    - *b.* Status Epilepticus. (Continuous major paroxysms)
    - *c.* Innocuous Convulsions.
      - α. Convulsions while Drinking ("rum fits").
      - β. Epilepsy in a Drinker.
      - γ. Dipsomania as an Equivalent.
    - *e.* Procursive Seizures.
    - *f.* Assymetric Seizures.
      - α. Unilateral Convulsion.
      - β. Convulsion followed by Hemiplegia.
      - γ. Transitory Hemiplegia.
  - 2. *Pure Major Motor Convulsion.*
  - 3. *Reflex Major Motor Convulsions.*
    - *a.* Infantile convulsions.
      - α. Reflex infantile convulsions.
      - β. True (epileptic) infantile convulsions.
      - γ. Spasmophilia.
    - *b.* Eclamptic Convulsions.
    - *c.* Uremic Convulsions.
    - *d.* Tetanoid Convulsions.
- *B.* Minor Motor Convulsions.
  - 1. *Pure Minor Motor Seizure.*
  - 2. *Minor Motor-sensory Seizure.*
  - 3. *Myoclonus.*
    - *a.* Intermittent myoclonus.
    - *b.* Localized and continuous myoclonus.
    - *c.* Progressive myoclonus.
  - 4. *Pseudo-myoclonus.*
  - 5. *Tetany.*
  - 6. *Nodding Spasm.*
  - 7. *Rotary Spasm.*
  - 8. *Jacksonian Convulsion.*

II. SENSORY SEIZURES.
- *A.* Pure Sensory Seizure.
- *B.* Sensory-Motor Seizure.
- *C.* Vertigo.
  - 1. *Sensory Vertigo.*
    - *a.* Subjective vertigo.
    - *b.* Objective vertigo.
  - 2. *Psychic Vertigo.*
- *D.* Hemicrania.
  - 1. *Simple Hemicrania.*
  - 2. *Ophthalmic Hemicrania.*
  - 3. *Hemicrania as an Equivalent.*
- *E.* The Aura Without a Convulsion.
- *F.* Thalamic Seizure.
- *G.* Vaso-vagal Attack.
- *H.* Narcolepsy.
  - 1. *True Narcolepsy* (Gelineau's).
  - 2. *Hysterical Narcolepsy.*
    - *a.* Status Catalepticus (in an epileptic).
    - *b.* Hysterical catalepsy (in a non-epileptic).
  - 3. *Somnolent Attack* (a minor sensory seizure).

III. FRANK MENTAL ACCESSIONS.
- *A.* Minor Mental Accession.
  - 1. *Minor Mental Accession with Excitement.*
  - 2. *Minor Mental Accession with Stupor.*
  - 3. *Minor Mental Accession with Wandering.*
- *B.* Major Mental Accession (*"epileptic mania"*).
- *C.* Hysteroid Convulsion *following an epileptic.*
- *D.* Mental Changes.
  - 1. *Epileptic Mental Deterioration.*
    - *a.* Rapid.
    - *b.* Slow.
    - *c.* Intermittent.
    - *d.* Fulminant.
  - 2. *Epileptic Dementia.*

IV. MASKED MENTAL ACCESSIONS.
- *A.* Poriomania (*ambulatory automatism*)
  - 1. *Dream States.*
  - 2. *Dual Consciousness.*
    - *a.* Dual consciousness, with wandering.
    - *b.* Diverse personality.
  - 3. *Somnambulism.*
  - 4. *Pavor* (night terrors).
- *B.* Status Affectus (*psychogenic epilepsy*).

V. EPILEPTIC CHARACTER.

EXPLANATION OF SCHEMA.

I. Paroxysmi Motorii (motor seizures) in which the most striking symptom is violent contraction, or series of contractions, of muscles.

A. Paroxysmus Motorius Major (major motor seizure).

1. *Paroxysmus Motorius Major Vulgaris* (ordinary major motor seizure). This is the common major motor seizure, the one which of all other attacks, occurs most frequently. This type may alternate with other forms of seizure in the same individual. Usually any given major motor seizure in an individual is an exact replica of the seizure preceding it. It must be remembered that there may be differences in onset and general characteristic in various persons, therefore a composite picture of the common major motor seizure will here be very briefly outlined:

Aura; initial cry; loss of consciousness; fall; tonic spasm; deviation of eyes and face; flexion of head toward one or other shoulder; cyanosis and engorgement of face; insensitiveness of conjunctivæ; cessation of breathing for several seconds; clonic spasm, stertorous breathing, biting of tongue; frothy, blood-stained saliva on lips; initial contraction with, later, wide dilatation of pupils, nonreactive to light; involuntary passage of urine, more rarely, of feces; post-convlusive coma and later, headache; transient weakness of one or more limbs, rarely paralyses; mental confusion for a variable length of time.

There are variations of this syndrome depending on special manifestations of symptom grouping before, after or during the seizure. The most common aside from the above will now be briefly discussed.

a. Paroxysmi Seriales (serial seizures). This term needs no explanation nor does the condition require elaboration as it is a very common occurrence.

b. Status Epilepticus (Paroxysmi Continui Majori; continuing major motor seizures). The old name is retained because usage has made it represent a typical picture. The more descriptive term "Paroxysmi Continui Majori," is, however, here suggested.

c. Paroxysmi Innocentii (innocuous convulsions). This term is here introduced, not because there is any difference in character between these and common major motor seizures, but in order to focus attention on the fact that a certain small percentage of epileptics have their attacks without apparent subsequent mental deterioriation. These individuals, however, do show a certain modicum of degenerative psychic abnormality. As to whether the latter is causative or resultant with regard to the epilepsy is an open question. In this class are included people who rank intellectually high (Napoleon, Cæsar, Mahomed, Ann Lee, etc.).

d. Paroxysmi Alcoholici (alcoholic epilepsy; alcoholic seizures). The use of the term alcoholic epilepsy has resulted in a great deal of confusion. It actually includes three types of seizures associated with alcoholic indulgence and the promiscuous application of the term to all three is the cause of much ambiguity. The three types are:

α. Paroxysmi inter bibenda (convulsions while drinking; "rum fits"). Attacks occurring *only* when the patient resorts to drinking. Seizures disappear during abstinence, and there is usually no mental deterioration. This type is in close relation with delirium tremens and approaches a psychotic condition on an alcoholic basis.

β. Paroxysmi in Alcoholophilia (convulsions occurring in a person exhibiting alcohol-desire). In other words, epilepsy occurring in a drinker. Attacks *do* occur during periods of abstinence; the case shows a progressive course, periodic moods, irritability, etc.—*i.e.* the epileptic character. This type represents a pure epilepsy occurring in an alcoholic.

γ. Dipsomania æquivalens (epileptic dipsomania). A rather rare condition in which the drinking debauches are really epileptic equivalents.

e. Paroxysmus Procursivus ("epilepsia cursiva" of Boötius; procursive epilepsy). This form exhibits peculiarity in that the epileptic will, immediately before the fit, run forward 20 or 30 feet or he may run around in a circle and then fall in the seizure. Otherwise this type is exactly similar to the common major motor attack. It is mentioned here only that it may represent the entire group of major motor seizures which approach in type the common form with the exception of one or several abnormal characteristics. I will only mention a few of these: Paroxysmus retropulsivus (with running backward before the seizure), P. gyratorius (rolling on the ground), P. uncinatus (aura of sight, smell, etc.), P. analepticus (gastric aura rising to head), etc.

f. Paroxysmi Assymetrici (assymetric seizures). The term "hemiplegic epilepsy" has been applied to various conditions. There are three distinct types, and the fact that the same term is used for all three has of necessity resulted in ambiguity. A convulsion which has unilateral distribution is called hemiplegic epilepsy (Bravais); as seen in the schema it is here termed "paroxysmus unilateralis."

There is another form of so-called hemiplegic epilepsy in which, following a convulsion, there is permanent paralysis of one side. This form is here termed "paroxysmus hemiplegicus."

A third type is that in which an individual with the Habitudo Mentalis Epileptica (epileptic mental make-up), has episodic occurrences of hemiplegia with or without the concurrence of convulsions, and in whom the hemiplegia later disappears. This form is also usually referred to as hemiplegic epilepsy. In this classification the type is called "Hemiplegia transitoria." Although this is not a paroxysm in the full sense of the word, it is here interpolated on account of its confusion with other types of assymetric epileptic attacks. (Vide "Somniatio Morbosa," group IV.)

One more type must be mentioned only to be excluded from this group, and that is Paroxysmus Partialis Jacksonii, which is often referred to as hemiplegic epilepsy, an absolute misnomer. (See B, 6.)

2. *Paroxysmus Motorius Major Purus* (pure major motor seizure; conscious epilepsy). A major motor seizure in which the sensorium is, wholly or in part, free from involvement. There is retention of consciousness in whole or in part. L. Pierce Clark has reported three cases and quotes Lemoine, Radcliffe, Tamburini, and several others who have reported this type of attack. In the Craig Colony for Epileptics there are at present two patients who show pure major motor attacks of modified form. The occurrence of this type is rare, but it serves as an excellent illustration of involvement of musculature only and exemption of the sensorium.

3. *Paroxysmi Motorii Majori Eccentrici* (reflex major motor seizures).

a. Paroxysmi Infantum (convulsions of infants; eclampsia infantum; infantile convulsions). Infantile convulsions may be of two distinct types.

α. Paroxysmus Infantum Eccentricus (reflex infantile convulsion). The infant may be of normal physical and mental make-up, but there may occur temporary reflex disturbance of the very sensitive nervous organism. Such disturbance may be caused by gastrointestinal disorder, fevers which involve the brain and its matrices, diarrhea resulting from dentition or worms, etc. On the other hand, one may see a

β. Paroxymus Infantum verus (true infantile convulsion). Occurring in an infant which *is really an epileptic*, and in which the paroxysm is only one of many which have occurred before or will occur later.

Aside from these two types we must take into consideration the type which, though not epileptic, is still affected with a certain nueropathic constitutional instability. This is manifested by hyperexcitabiiity of the peripheral nervous system, resulting in tendency to tonic and clonic spasms (chorea, laryngismus stridulus, tetany, apnea, carpopedal contractions, etc.). To this condition has been given the name "Spasmophilia" or the spasmophilic diathesis. Phenomena coming under the group of spasmophilias should be distinguished from true epileptic paroxysms, as they have not been proven to be strictly epileptic in nature.

b. Paroxysmi Parturientium (puerperal convulsions; eclampsia gravidarum). Common major motor seizures upon a uremic basis.

c. Paroxysmi Uræmici (uremic convulsions). At times these attacks cannot be distinguished symptomatically from the common major motor seizures. They occur in nephritis with its concomitant symptoms. There is usually no intial cry. The onset is sudden. Convulsions may occur every hour or two and there is deep coma between attacks. Following such seizure or series of attacks there may be coma persisting for several days or weeks. There may be amaurosis without visible retinal lesion and there may be development of mono- or diplegia.

d. Paroxysmus Tetanoideus (tetanoid epilepsy). A type of major motor seizure in which there is tonic contraction only, of muscles. The individual may lose consciousness and fall, going immediately into tonic contraction and then recovering. Sometimes the epileptic does not fall, but goes into a tonic spasm for several moments and then relaxes, recovered. A severe type of this condition which is comparatively rare has been described by Pritchard.

B. Paroxsmi Motorii Minori (minor motor seizures), as distinguished from the severer type mentioned under Class A. These types are often found associated with other forms of epileptic accessions in the same individual.

1. *Paroxysmus Motorius Minor Purus* (pure minor motor seizure; "jerks"; "starts"), characterized by twitching and jerking of muscles in groups without loss of consciousness. Of common occurrence in frank epileptics. Often seen immediately before a major motor seizure.

2. *Paroxysmus Minor Motorio-sensorialis* (minor motor-sensory seizure, in which the motor phenomena predominate. In general the individual may be said to become suddenly semi-rigid, eyes stare, pupils dilate slightly, one or other limb is flexed or extended, respiration is difficult for a moment, and then recovery. He may have an aura before the attack and there may be semi-stupor with purposeless and automatic acts following. The paroxysm itself usually lasts not more than several seconds.

3. *Myoclonus* (paramyoclonus multiplex of Friedreich; choreic tics; multiple tics; myoclonus spinalis multiplex; myokymia). This term, which is in common use, meets our needs. It so happens that myoclonus and its modified forms is one of the few syndromes properly cognomenated. Briefly the distinguishing features of this affection are lightning-like contractions of groups of muscles. The contractions may involve only one group of muscles or the whole body. Consciousness is not lost. They may occur as epiphenomena to major or minor seizures, or as an uncombined symptom complex. These contractions may also involve one group of muscles, later extending to the whole body musculature and, in certain instances, terminate in a major motor seizure. The following terms are already in use and should be adhered to: (*a*) Myoclonus intermittens, (*b*) myoclonus partialis continuus (Kojewnikoff's epilepsy), and (*c*) myoclonus progressivus (syndrome of Unverricht and Lundborg). The names are descriptively correct and self-explanatory.

4. *Pseudomyoclonus.* Single or multiple myospasmias on a hysteric or choreic basis. The name has also been applied to the sudden localized muscular contractions seen immediately before major motor seizures, but these must be regarded as part of the aura.

5. *Tetanilla* (tetany) is mentioned here only as a reminder that it occurs in relation with epilepsy and often requires diagnostic consideration. The three important clinical types are (*a*) Tetanilla gravidarum, (*b*) T. rhachitica, (*c*) T. thyreopriva.

6. *Paroxysmus nutans* (nodding spasm; salaam convulsion). A peculiar bobbing of the head forward. It is found most frequently in children. Often the child, while sitting at table, will have a seizure of this type and strike the table chin first. This form of minor motor seizure was first described by Sir Charles Clark.

7. *Paroxysmus Rotatorius* (Dervish spinning; "whirling Dervish"). A type of minor motor seizure in which the individual (usually a child), does not fall but spins about on one or othe other foot for from several seconds to several minutes. In this form consciousness is not entirely lost but considerably obtunded. This name should not be confused with Paroxysmus gyratorius (see I, A, *i.e.* P. procursivus); in the gyratory paroxysm, which is a major motor type, the individual after falling to the ground, rolls about, over and over until the tonic state reaches its height.

8. *Paroxysmus Partialis Jacksonii* (Jacksonian epilepsy; hemiplegic epilepsy; cortical epilepsy; symptomatic epilepsy). The chief characteristic of this form of convulsion is its localization to a certain set of muscles. This localization of the fit does not change. It must be remembered that a symptomatic convulsion is not necessarily a Jacksonian seizure. In a general way paroxysmus partialis Jacksonii is a type of localized convulsion limited either to one side of the body or to one set of muscles; consciousness is not lost. The convulsions are due to reflex causes, *i.e.* cerebral abscess, hemorrhage, cicatrix, or tumor. It is also seen in relation with uremia, paralytic dementia, and alcoholic excess. At times the convulsion begins as the usual

focal one, but spreads so as to involve other muscles and ends with a typical major motor seizure. There has of late years been a tendency to do away with eponyms in medical literature. While in perfect accord with this trend, the writer feels that the work of Hughlings Jackson in the field of epilepsy has been of such value that his name should be associated with the form he first described.

Up to this point we have been discussing myospasmias, *i.e.* those incidents in the epilepsies which are chracterized by spasmodic muscular contractions. We now come to several groups in which convulsions do not play a prominent rôle. The following series of syndromes are divided into sensory and mental (psychic) accessions.

II. Paroxysmi Sensoriales (sensory seizures). Those paroxysms which involve the sensorium wholly or in part, but which are sudden in onset and of short duration, with either unconsciousness or the cognition of pain, vertigo, ideas, sensations, reminiscences, etc., on the part of the individual.

A. Paroxysmus Sensorialis Purus (pure sensory seizure; "faints"; "loss"). The individual becomes suddenly pale, his eyes stare, and the seizure is over. This type may occur alone or in the form of an aura (see Aura sine convulsione, II. E.). The characteristic of this form is a periodic, transitory disturbance of consciousness.

B. Paroxysmus Sensorio-motorialis (sensory motor attack). In this a pure sensory seizure is accompanied by slight muscular spasms and contractions. A common form.

C. Vertigo (circumgyratio; giddiness; dizziness). A rather frequent episode in epilepsy characterized by a sense of instability of either the subject himself, or by apparent lack of stability of objects about him. Due to disturbance of either epicritic or protopathic sensibility on the one hand, or to disturbance of associative subconscious impulses on the other. Disease or disturbed function of the labyrinth, eyes, skin, stomach, muscles, tendons, and joints may result in erroneous mental conception as to position in space. There are two main types.

1. *Vertigo Sensorialis* (sensorial vertigo). This may be either subjective (vertigo gyrosa), or objective, and is the result of confusion of function on the part of the associative paths upon which the individual normally depends to recognize his position in space.

a. Vertigo subjectiva (gyrosa). The individual feels himself falling, floating or spinning around.

b. Vertigo objectiva. In which the surrounding objects appear to move.

2. *Vertigo Psychica* (psychic vertigo). A sensation of disturbance of equilibrium brought on by agitating thoughts, memory pictures, and emotions. These disturbing thoughts, emotions, and memories cause the same confusion in mental association as was mentioned in connection with sensory vertigo.

D. Hemicrania (megrim; migraine; cephalalgia; neuralgia cerebralis). This type of nervous disturbance occurs either in relation to a seizure, as an equivalent or unaccompanied by attacks. The headache, although termed "hemicrania," never occurs as exactly confined to one side; but it is usually *felt* as more severe on one side than on the other. Migraine resembles epilepsy in several ways. Both are hereditary. Both are periodic in point of occurrence. Both may show an aura. Migraine may be replaced by a psychic equivalent, like any epileptic attack. Both migraine and epileptic seizures are followed by somnolence. Epilepsy may exist synchronously with migraine in the same individual. Epileptic seizures may be replaced by attacks of migraine and vice versa. Three well-marked types exist.

1. *Hemicrania Simplex* (simple migraine). Attacks are periodic and followed by somnolence. They usually persist during the life of the individual.

2. *Hemicrania Ophthalmica* (ophthalmic migraine). In this form the migraine is associated with visual disturbances, spectral, and objective, *i.e.* hemianopsia, scintillating scotoma, amaurosis, ocular palsies, etc.

3. *Hemicrania Æquivalens* (h. occurring as an equivalent). This may be the only symptom for years, later to be replaced by true epileptic attacks. (In such cases to be regarded as a larvate form).

E. Aura sine Convulsione (aura without a convulsion). This form of occurrence should be regarded as a pure minor sensory attack. The subjective symptomatology of the various auræ is extremely diverse, but for the sake of explicitness several common types will be referred to.

1. *The analeptic aura*: a sensation or "feeling" which subjectively seems to start in the region of the stomach and ascends rapidly to the head.

2. *The "familiarity" type*: in which the individual has the mental impression of being in surroundings or of going through a mental conception, that seems to have been experienced at some previous time.

3. *The "strangeness" type*: a certain subconscious complex is allowed to come to the surface and produces an impression of strangeness and incongruity with the surroundings.

4. *The "visual" type*: flashes of light and color, especially blue, violet, and red. Reminiscences of scenes, animals, pictures, etc. There are many other forms; special sense auræ, auditory, olfactory, gustatory, etc. Any of the above should be regarded as sensory seizures when not accompanied by convulsions.

F. Paroxysmus Thalamicus (sensory epilepsy; thalamic epilepsy). A minor sensory episode in which there are delusions of sight, hearing, or smell and in which there are also hallucinations. Usually occurs as an equivalent to seizures. This type is thought to be due to organic involvement of the thalami.

G. Paroxysmus Vasovagosus (vagal attack; vasovagal attack). First described by Sir William Gowers. Consists of sudden and periodic attacks of headache and dyspnea followed by somnolence; sudden waking from this sleep with a sense of suffocation, wild beating of the heart, and rigor. This in turn is followed by flushing and a feeling of warmth; the attack is over. There may be absence of the period of somnolence. This condition is existent upon an epileptic basis.

H. Narcolepsia (narcolepsy). A disease condition characterized by recurring somnolence. Thought to be due to disturbance of the hormone secretion of the anterior hypophyseal lobe. This condition was first scientifically described by Gelineau and later by Friedman. Five conditions are to be taken into consideration:

1. *Narcolepsia Vera* (true narcolepsy; Gelineau's epilepsy). This form is of very rare occurrence, but epileptic in nature. A sudden onset of apparently true sleep lasting about five to ten minues, occuring at any time of day and showing periodicity

in matter of recurrence. Not followed by headache.

2. *Narcolepsia Hysterica* (hysteroid narcolepsy). This form may occur in epileptics in the form of Status Catalepticus, or in non-epileptics in the form of trance. Therefore we have

a. Status Catalepticus (catalepsy, stupor vigilans, catochus, etc.). A hysterical form of narcolepsy observed in epileptics. Hysteroid in nature and probably not dependent upon the condition causing the epilepsy. In this occurrence there is a sudden suspension of the action of the senses and of consciousness with great muscular plasticity, the limbs and trunk preserving the different positions given to them. A rather rare condition.

b. Catalepsia hysterica (trance; ectasis). A condition which is purely hysterical and not in relation with epilepsy. Consists of sleep episodes which last for days and weeks. Interpolated here for differentiation.

3. *Paroxysmus Somnolentus* (sleep attack). A true minor sensory seizure in which the only marked symptom is somnolence. This type occurs in epileptics with comparative frequency and should be sharply distinguished from narcolepsy, which is a rare condition.

We will now take into consideration the mental accessions. These may be either frank (manifest) or masked (larvate).

III. Accessiones Mentis* Manifestæ (frank mental accessions).

A. Accessio Mentis Minor (minor mental accession; intellectual Petit Mal). This form is one of the epiphenomena to seizures. It may occur before or after a seizure; it may also occur as an equivalent. There are three types:

1. *Accessio Mentis Minor Agitata* (excited minor mental accession; mental disturbance). There may be a sensory aura consisting of one of the uncinate group (smell, hallucinations of sight or hearing, unusual brightness of objects, etc.). There may be some vertigo. The individual becomes despondent, he is aware of difficulty in collecting his thoughts and of fixing his attention. Volition is lost and there are certain uncontrollable impulses, which may cause him to commit any form of violence, theft, homicide, suicide, arson, etc. Sometimes ecstatic visions or sounds are experienced in this stage (cenesthesis).

This attack is of comparatively short duration, several minutes to an hour or so. It may culminate in some act of violence following which the epileptic recovers with practically total amnesia for all the incidents which had occurred.

2. *Accessio Mentis Minor Stuporosa* (stuporous minor mental accession; "mental confusion"). This form presents a stuporous condition, sometimes even amounting to a lethargy; pupils slightly dilated, lack of orientation and insight, verbigeration of set phrases, and purposeless automatic movements. This picture of epileptic mental confusion is very common following seizures or as an equivalent to them.

3. *Accessio Mentis Minor Migrans* (wandering minor mental accession). This form may occur as an equivalent to a seizure or, more often, following an attack. The individual wanders about aimlessly and if molested resists to the point of violence. Sometimes the epileptic will have this type of accession during the night, in which case he will rise from bed and wander away, barefoot and unclothed. His wanderings end only when the period of somnolence, which forms the terminal stage of this condition, claims him. He will often be found on the street or in the fields, as the case may be, while in this somnolent state.

B. Accessio Mentis Major (major mental accession; epileptic mania; extreme mental disturbance; epilepsia furiosa). This form may be pre- or post-paroxysmal; it may also occur as an equivalent. The onset is usually sudden in which respect it resembles a major motor seizure. There are cases, however, in which the onset is preceded by extreme headache or vertigo with vomiting; there may be slight spastic movements of limbs or muscles of the face. Emotionally one sees either depression or some excitement, and often irritability. Within an hour or perhaps a few hours there is an explosion into a full blown mania. The epileptic may cry, yell, or bite and tear at his bedclothes. In some cases he talks or shouts incessantly, unintelligible jargon or stereotyped phrases. Some epileptics show evidences of hallucinations of sight or hearing which cause fear and dread. Mental episodes of this kind are very often followed by rapid and profound mental deterioration. Following the accession there is usually stupor and after recovery, total amnesia.

While discussing this subject attention might be drawn to a condition not at all uncommon and which we can for convenience term "Mania transitoria liberorum," *i.e.* transitory mania of children. Maudsley has remarked that, "In children, as well as in adults, brief attacks of violent mania, a genuine mania transitoria, may precede, or follow, or take the place of an epileptic fit; in the latter case being a masked epilepsy. Children of three or four years of age are sometimes seized with attacks of violent shrieking, desperate stubbornness, or furious rage, when they bite, tear, kick, and do all the destruction they can; these seizures, which are a sort of vicarious epilepsy, come on periodically and may either pass in the course of a few months into regular epilepsy or may alternate with it."

I put this type of epileptic episode under the heading of major mental accessions in order that it may be more easily remembered. It might, with reason, however, be put with the Affect form. Occurring, as it does, in young children and of apparently psychogenetic origin, the consideration of this type brings us into the domain of "Mutterleibtrieb" recently expounded by L. Pierce Clark in his paper on Affect Epilepsy.*

C. Accessio Hysteroidea Post Convulsione (hysteroid attack following an epileptic convulsion). Usually occurs after minor motor seizures. The result of an unstable condition of the psyche, such as is found in pure hysteria, combined with inactivity of the higher centers as the result of the effect of epileptic seizures; the lower centers are thereby released from higher inhibitory control, and the result is a convulsive episode closely resembling a major or minor motor attack.

D. Alterationes Mentis (mental changes).

1. *Depravatio Mentis Epileptica* (epileptic men-

*Considered psychologically, sensory and motor phenomena are also mental processes. The designatory term "mental" is here used in a conventional sense only.

*While one need not accept *in toto* the ideas promulgated by the Freudian disciples with regard to the relationship between sexuality and these forms, still one is forced to wonder whether there are not certain grounds for belief that there is *some* connection between sexuality and epilepsy. I might here cite the well-known observation accredited to Hippocrates—ἡν συνουσίαν εἶναι μικρὰν ἐπιληψίαν.

tal deterioration). A retrograde change in the associative, attentive, and perceptive faculties, the result of the effects of epileptic accessions (motor, sensory, or psychic) upon the intellect (see Habitudo mentalis epileptica). Depending upon the course of deterioration, four types exist:

a. Depravatio Epileptica Rapida (rapid mental deterioration), in which there is appreciable failing of intellect in the course of from several months to a year.

b. Depravatio Epileptic Tarda (slow epileptic mental deterioration), in which the course of deterioration is prolonged over a length of time extending from one year to several years. This type usually shows gradual merging into dementia epileptica. This form of deterioration is the most common and is marked by one special feature, *i.e.* failure in the perceptive faculty. The sphere of perception shows unsettlement in one or more of three different ways: retardation and difficulty of perception, breaks in perception, and falsifying of perception.

α. Retardation and difficult of perception: results in restriction of thought association and therefore poverty, narrowing and slowness of ideation; prolonged reaction time. This in turn leads to stereoptypy, perseveration, and circumstantiality.

β. Breaks in perception: lead to twilight states, fugues, absences, etc.

γ. Falsifying of perception: leads to impulsiveness, delusions and hallucinations.

c. Depravatio Epileptica Intermittens (intermittent epileptic deterioration), in which there is a certain amount of mental failure for a length of time followed by standstill as regards deterioration. Later there is a continuation of mental failure.

d. Depravatio Epileptica Fulminans (fulminant epileptic deterioration). A rare type. Within the short period of three or four days, more or less, the individual's mental condition changes from perhaps fair intelligence to that of low grade dementia. This phenomenon may be comitial to seizures or may occur aside from attacks.

2. *Dementia Epileptica Vera* (true epileptic dementia). This form must be distinguished from paralytic and senile dementia, from dementia præcox, idiocy, imbecility, and the epiphenomena to seizures. The affection is slow and progressive. It is seen in a comparatively large number of epileptics, especially so in those in whom the onset of the disease occurs late in life. Judgment and reason are lost wholly or in part. Attention becomes poor and memory is weakened. Orientation is poor in all respects. Mental confusion is more or less constant; delusions are common. There may be changes in the voice as to modulation, inflection, clearness of articulation and pitch. These voice changes in the form of "plateau speech" collectively form a syndrome often found in those showing epileptic affectivity. The dementia is multiform as to symptoms and there are different types which assume special character depending on the course (slow, rapid, or intermittent), or on the accompanying complications (paralyses, contractures, pseudo-paralyses, etc.

IV. Accessiones Mentis Larvatæ (masked mental accessions; "psychic epilepsy"; masked epilepsy).

A. Poriomania (ambulatory automatism).

1. *Somniatio Morbosa* (disease dream; dream state; twilight state; "absence"; Dämmerzustand; "fugue"; crepuscular state). This type of mental accession occurs as an equivalent to seizures in the frank forms of epilepsy or, more commonly, as a periodically recurring mental episode in the larvate forms. The condition is polyphase in its manifestations. The "dream state" may recur in exact duplicature or vary as to character of events in the same individual. The condition comes on suddenly and ends suddenly with either return to the usual condition or with somnolence and headache. Many citations might here be given of these conditions, but as I am endeavoring to make these explanations of terms as briefly definitive as possible, two types only will be briefly mentioned (taken from A. V. Goss):

a. Partial Aphasia coming on suddenly after nervous strain. Unconsciousness for an hour or two. Existence for ten days with partial loss of memory for past events and persons; sudden recovery with complete restoration of memory for everything, but complete amnesia for occurrences during the ten days.

b. A condition allied to somnambulism as well as to "Hemiplegia transitoria." The patient falls asleep and in ten to twenty seconds he awakens to find himself paralyzed in one or more limbs. A few seconds later the paralysis passes off, the episode is over.

It must be remembered that the above two episodes are not *typical* of dream states, as each individual experiences heterologous arrangement of mental concepts and events peculiar to himself.

2. *Conscienta Duplex* (double personality; dual consciousness; dissociated personality). There are at least two well-defined types:

a. Conscienta Duplex Migrans (dual consciousness with wandering). The type of occurrence in which the individual will, without external manifestation of mental aberration, wander away from his home and town, spend days, weeks or months in a new environment. He conducts himself either peaceably or not as the case may be. Later he returns to his original personality with total amnesia for the entire period just gone through.

b. Personalitas Diversa (diverse personality; heterogeneous personality). An individual, let us call him "A," suddenly changes his state of conscious being to that of an individual having an entirely different mental make-up. From a person, let us say, of studious, serious, introspective character, there is evolved a personality shallow-minded, bright, cheerful, and care-free. We will call this latter "B." The last personality may obtrude itself on the first at periodic intervals, without warning and at any untimely moment. These invasions on one personality by another are therefore seen to partake of the character of an epileptic attack. This form of accession may occur in a frank epileptic as an equivalent to a seizure. Usually it is a larvated accession in an individual who shows no other marked symptoms of epilepsy, but who may later show up as a masked type. Cases are on record in which there have been obtrusions of two or even three personalities upon the so-called normal one. One more point should be noted in the discussion of this type; that while these episodes occur in persons who are neuropathically tainted and who may later develop epilepsy, still they may occur in people *who are not epileptics.*

Under the heading of disease dream (somniatio morbosa) the following two conditions must also be considered:

3. *Somnambulatio* (somnambulism; sleep-walk-

ing). A periodically recurring and temporary suspension of volition and consciousness, usually accompanied by automatic acts. A morbid disease entity on the borderline between epilepsy and hysteria. "Dr. Darwin was, I believe, the first to advance the idea that somnambulism is nearly related to epilepsy; incubus he also regards as related to both somnambulism and epilepsy." (Pritchard in his "Diseases of the Nervous System.")

4. *Pavor Noeturnus* (night-terror). Commonly seen in children. In a case of this kind the child awakes two or three hours after falling asleep. It screams in terror and is apparently unable to recognize anyone; during this period the child may get up from bed and run about in a frenzy of fear as though trying to escape from something which was frightening it. This form is rather serious in import, as it indicates an unstable nervous constitution and may be the forerunner of a subsequent epilepsy.

B. Status Affectus (psychogenic epilepsy; affect epilepsy; emotional epilepsy; masked epilepsy). One often finds a mixture of the classic form of major motor seizure with psychoneurotic episodes. These latter may be found in a frank epileptic as equivalents. When, however, they occur in an individual who *does not* have epileptic seizures, these episodes combined with a peculiar constitutionally neuropsychopathic mental make-up form the condition which has been termed the "affect" or psychic form of epilepsy by Bratz and Leubuscher.

Without somatic reason, and in individuals who are really hereditary neuropathic and psychopathic degenerates and who, we have reason to believe, are highly reactionary to environmental psychic stimuli, occur periodic attacks of dizziness, "fainting spells," temporary losses of consciousness, auditory and visual hallucinations, maniacal seizures, delusions and suicidal attemps. There also occur disorientations which last variable lengths of time. Often one sees attacks simulating those of true epileptic type, somewhat less severe perhaps, and usually brought on by external excitation or insult. There is no, or very little, deterioration in these cases. They do not go into status and very rarely do they have series of seizures; when they do, however, the number of convulsions is small. They do not as a rule injure themselves in attacks, and death in a seizure does not occur.

V. Habitudo Mentalis Epileptica (epileptic mental make-up; epileptic character). A peculiar mental state, the result of exogenous stress upon a mind ontogenetically and phylogenetically abnormal. There are found perversions of emotion, judgment and memory, also certain contraventions of normal conduct as the result of egocentricity, religiosity, and disordered moral criteria. In order that these inversions may be better remembered I will here put them down in classified form.

1. *Emotional Sphere.*—Shows marked instability, irritability, and hypersensitiveness.

a. Instability—leading to lack of inhibition; capriciousness in moods with changes that are instantaneous; *i.e.* alternation of despondency with elation, obstinacy with docility, taciturnity and loquaciousness, defiance and obsequiousness, etc. Hysteria may also be a complicating factor.

b. Irritability—leading to sudden, passionate and impulsive transports of rage and violence, or to excesses in venery or alcoholism.

c. Hypersensitiveness—leading to optimism, affection, pessimism, hatred, suspicion and jealousy.

2. *Judgment.*—As a class epileptics show one form of judgment almost exclusively (and that in modified form), namely, *esthetic judgment.* This form is characterized by appeal to the emotional side of consciousness and cannot be defined in terms that might be apprehended by the intellect. This, as opposed to *scientific esthetics* in which the ideal or standard may be described, analyzed and defined in terms of its factors. An epileptic of everyday type who shows a little deterioration only, forms opinions by "feeling," *i.e.* emotion. As regards his conceptive determinations, there is not necessarily any inference or ideal standard, of either excellence or deficiency. Therefore, decisions made by him are often erroneous. This accounts for his poor ability to adapt himself to his environment, either topographical or social.

3. Memory.—Primary identification (involving the senses) is fairly good as a rule. Secondary identification (involving reminiscences, images, mental concepts, etc.) is usually quite poor. Amnesias and paramnesias are of frequent occurrence. Another peculiarity of epileptics is, that matters of general information are easily forgotten, but those things which relate to personal affairs and interests are well retained, *i.e.* ipsocentric memory sphere.

4. *Egocentricity.*—One finds two marked factors:

a. Unsociality—as evinced by quarrelsomeness uncontrollable temper, moroseness, obstinacy, arrogance, conceit and boasting.

b. Self-consciousness—of high degree, as shown by egocentric narrowing of the sphere of interest and thought, magnification of his own importance, self-assuredness; also a combination of the "know-it-all" attitude with, at the same time, self-depreciation.

5. *Religiosity.*—Bible-reading and piety which is often hypocritical; religiousness in contrast to depraved ethical standards in the same individual.

6. *Moral Sphere.*—Stigmatized by various degrees of fabrication, subterfuge, truculence, malice, coprolalia and sexual perversions, as opposed to piety and beneficence in the same person.

One often hears the statement, in referring to a patient's seizures, "He has grand mal attacks." The presumption is that by this remark is meant, that the individual in question is having major motor attacks. A glance at the classification shows that there are sixteen different kinds of major seizures. Such a remark is therefore seen to lack preciseness. The classification also takes into consideration ten minor motor types, fourteen sensory types, seven manifest psychic, and seven larvate psychic incidents. These fifty-four types represent the most important forms of epileptic episodes. There are modifications of many of these, but any such modification can easily be put in its proper place in the schema.

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THE CLINICAL MANIFESTATIONS OF ANIMAL PROTEIN POISONING.

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We might divide all the diseases to which mankind is subject, as Herbert Spencer does his philosophy, into the known and the unknown.

Of the known diseases the principal ones are those due to infection. Of these the causes are well understood, and a suitable prophylaxis may be provided. It is of those diseases of obscure origin, of which many causes have been suggested, but none accepted that I am going to speak.

Much has been written about the cause of gout, but there is only one thing in regard to gout of which we are certain, and that is, if we give a gouty person an excess of protein food the nitrogen excretion does not rise abruptly and fall abruptly, as in a normal person, but it rises slowly and falls slowly, that is, the metabolism is delayed.

I have found by experience on myself and others that certain gouty manifestations such as headache, neuralgia, myalgia, arthritis and certain skin and mucus membrane manifestations can be brought on by eating meat, meat soup, eggs, and cheese.

Typical gout is but an episode in the life of a gouty person; indeed, a man may suffer all his life from gouty manifestations and never have an attack of true gout. As the gouty manifestations are much more important than gout itself, and as the word gout gives no idea of its etiology, I am going to call these manifestations those of protein poisoning. I will illustrate my meaning by the following animal experiment. Horsely and Schiff have shown that if the thyroids of sheep or goats are removed they, being herbivorous animals, are not affected, but if thyroidectomy is performed on dogs they will die. If they are fed on bread and milk or boiled meat, they will live for some time, but if they are fed on roasted meat or meat juice death in convulsions ensues. It seems only logical to assume that the meat contains a poison. Complete thyroidectomy in the human being is fatal to life. I wish, therefore, to advance the following hypotheses:

The animal protein of our food contains a poison, for which the human body has certain defensive agents, which neutralize it and render it harmless. If the protein is given in excess, or is given to an individual who is especially susceptible by having been born into a gouty family, certain manifestations are produced.

In this way the whole question of metabolism may be ignored. When we come to consider the various manifestations of protein poisoning it will be found that most of the diseases not due to infection, namely those in the unknown class, are due to this poison. Although I use the name protein poisoning for lack of a better, it must be borne in mind that the extract of the meat contains more of the poison than the boiled meat and that the poison is probably an extractive of animal protein. My contention is that animal protein contains a soluble poison. From my own experience and that of others in whom manifestations can be produced in a very short time by eating an excess of animal protein, I believe that the poison is directly absorbed and is not a product of intestinal digestion as believed by Combe of Lausanne or a product of metabolism as claimed by Haig of London.

The poison not alone affects every tissue in the body, but can also affect the function of an organ, as, for example, it can cause periodic polyuria, which is a frequent symptom of protein poisoning.

As I seem at first to state dogmatically that certain affections are caused by animal protein, I will explain that in a study of a very large number of cases, over two hundred, I found these manifestations so closely associated with manifestations that can be proved to be due to animal protein in the diet that it seems only logical to assume that they are due to the same cause. In the second place these affections occur only in patients who have a history of other protein poisoning manifestations and in whose family manifestations of protein poisoning are common. In the third place these affections can be very much relieved or cured entirely by the withdrawal from the diet of animal protein.

That the ductless glands should often be affected is not strange, for they are, probably, the chief agents in neutralizing the poison. They are liable to hypertrophy from increased exertion, and if they are called upon for a great excess of secretion, the body itself may suffer from the effects of that oversecretion. Simple goiter, exophthalmic goiter, and the diseases due to hypertrophy and oversecretion of the pituitary body are thus explained. Oversecretion of the adrenals may lead to arteriosclerosis and its results. I have found goiter and exophthalmic goiter very common among those having other manifestations of protein poisoning. The simple hypertrophy of the gland in young women at puberity occurs frequently in gouty families and is some times associated with menorrhagia. The simple goiter of pregnancy is probably explained by the increased work the gland is called upon to perform. Exophthalmic goiter occurs frequently, and less evident signs of hyperthyroidism are very common in patients having other signs of protein poisoning, such as purpura, hay fever, nasal turgescence bronchial asthma, migraine, gouty pains, and the various skin lesions.

Headache is probably the most frequent symptom of protein poisoning; it may take the form of migraine of neuralgia or pain in the insertions of the muscles. Headache that is not due to eyestrain or sinus trouble is usually due to protein poisoning.

There are various neuralgias, myalgias, and pains in the joints which can be experimentally produced in a susceptible subject by taking an excessive amount of animal protein. By a susceptible subject, I mean one who has either consumed a large

amount of animal protein during his own life and so become susceptible, or who has inherited (and this is most always the case) the susceptibility from his ancestors who were also subject to protein poison manifestations.

Periodic turgescence of the nasal mucous membrane is a very common manifestation of protein poisoning; this can also be experimentally produced in a susceptible subject by taking an excessive amount of animal protein. This affection is very important, for it often leads to secondary infection of the sinuses and is the primary cause of sinus trouble. It is often treated by cauterization and removal of the turbinates, the primary cause being overlooked. These patients are subject to hay fever. Hay fever is itself a manifestation of protein poisoning, and occurs only in families with a gouty history, and sufferers from hay fever usually have other manifestations, as for example migraine, purpura, bronchial asthma, or gouty pains. Periodic sore throats which may become chronic, bronchial asthma, and chronic bronchitis are also manifestations of protein poisoning. Susceptible patients are very liable to frequent coryzas. Follicular tonsillitis is very common in patients having protein manifestations; this of course is an infection, yet it is quite probable that, as the germs are always present on the tonsil, the poison eliminated causes an irritation which is followed by secondary infection.

In the digestive tract the most common affection that I have noticed is hyperacidity. Almost all sufferers from protein poison have digestive troubles of which hyperacidity and its accompanying constipation are very frequent. In one case of very obstinate cankers of the mouth of over a year's duration, I found that the cankers disappeared in a very short time with the withdrawal from the diet of all animal protein. This made me think of ulcers in other parts of the digestive tract. Much to my surprise I found that all my patients who had ulcer of the stomach or ulcer of the duodenum had other symptoms of protein poisoning and had also gouty family histories. The irritation caused by the elimination of the poison is very likely the primary cause of ulcer of the stomach. Another common manifestation is periodic intestinal colic. This is often mistaken, especially in children, in whom this manifestation is quite frequent, for appendicitis. Periodic diarrhea without apparent cause is common, this is a condition that is much influenced by atmospheric conditions. Some patients suffer from morning diarrhea which seems to act as a safety valve for their other manifestations. Mucous colitis is another manifestation. In the secretions of mucous colitis eosinophiles are found, as in the secretions of bronchial asthma. Eosinophilia in the blood and in the secretions is a characteristic symptom of protein-poisoning manifestations, especially of the skin and mucous membranes.

There are many protein poisoning manifestations in the skin, such as urticaria, angioneurotic edema, eczema, ichthyosis, and psoriasis. Urticaria frequently follows an excess of protein in the diet and certain individuals seem especially susceptible to special proteins such as fish, white of egg, etc. Angioneurotic edema often occurs in connection with other protein poisoning manifestations. The sydrome that Professor Osler speaks of is an example. Eczema occurs both in the old and young. The children of gouty parents often have eczema which can be cured by the withdrawal of animal protein from the diet.

Ichthyosis is often seen in several members of a family and is hereditary. I have a family in which, besides the ichthyosis that three members have, one has arthritis deformans, two others have periodic attacks of intestinal colic, and one has a goiter. It is well known that the thyroid extract has considerable effect on ichthyosis. Schamburg has shown the effect of the withdrawal of protein from the diet on psoriasis. Acne is an example of a skin affection, when the infection is secondary to the irritation caused by the elimination of the protein poison. Acne is found almost entirely in gouty families and in connection with it one can also find other evidences of protein poisoning. In my own case I found that the acne which I had always had on my back would disappear entirely on my abstaining from animal protein. In a case of exophthalmic goiter which I have treated recently, the patient had a decided gouty history and his face was covered with pimples. Upon withdrawing the protein and giving a suitable eliminative treatment his symptoms of hyperthyroidism as well as his acne disappeared very quickly.

Periodic outbreaks of purpuric spots in women are far more common than are generally supposed and will often be found if looked for. They are in my experience found only in families whose members present other evidences of protein poisoning and are, I believe, an evidence itself of protein poisoning. Hemorrhage from the mucous membranes is a very common manifestation of protein poisoning, for example, nosebleed and menorrhagia. Pupura hæmorrhagica is a syndrome in which several manifestations of protein poisoning are combined, such as intestinal colic, hemorrhage from mucous membranes, hemorrhage into the skin, and sometimes fever. I have one very interesting case of pupura hæmorrhagica of the intermittent type. The patient is subject to gouty pains and headache, and is a sufferer from hay fever. One brother has gout, another bronchial asthma, her daughter suffers from nasal turgescence, has a goiter and is afflicted with acne. This patient has also with her purpuric attacks, bleeding from the bladder and rectum, renal and abdominal colic, and nasal turgescence, and the attacks are often followed by furunculosis.

In the joints we may have gouty pains, inflammation, or chronic conditions such as Heberden's nodes and arthritis deformans. In the muscles are the various myalgias, lumbago, stiff neck, etc. In the nerves, supraorbital neuralgia is very common, also sciatica and other forms of neuritis. These can be said to be due to protein poisoning only when there are other manifestations such as nasal turgescence, asthma, enlargement of the thyroid; but if careful examination is made this will almost always be found to be the case.

In making a diagnosis of protein poisoning the family history is of extreme importance, for perhaps the most important and most interesting characteristic of protein poisoning is the inherited susceptibility. I can show among my cases, four and five generations of inherited susceptibility. For instance, in one family there were five generations of purpura (all in females) several of the children in the fifth generation had goiters, and one had an exophthalmic goiter; many in this family were subject to migraine and various sorts of gouty pains in muscles, nerves, and joints.

The multiplicity of the manifestations in the same individual is characteristic. A patient will have Heberden's nodes in the fingers, will be subject to periodic turgescence of the nasal mucous membrane, have purpuric spots, hyperacidity, and be subject to neuritis. Another patient will have a slight enlargement of the thyroid, have attacks of bronchial asthma, migraine and mucous colitis, besides various myalgias.

The variability of the symptoms in parent and child is characteristic. A father may have gouty pains and chronic bronchitis with a tendency to asthma, and one child have very bad acne, another bronchial asthma, and another a goiter, all the children having other manifestations in addition. The grandchildren will, when young, be subject to acidosis with symptoms in either the respiratory or digestive tract as well as in the skin.

The periodicity of the attacks is characteristic, as for example migraine, bronchial asthma, periodic nasal turgescence and sore throat.

The cessation of one set of symptoms with the onset of another is most peculiar. A man will have a violent urticaria which will stop with the onset of asthma. When the asthma stops the urticaria will commence again. A patient having been operated on for floating flidney which was really renal colic will be cured of her hyperacidity also, but will be troubled with nasal turgescence after being treated for so-called sinus trouble, that will stop and she will suffer from bronchial asthma, that will get better, and then she will have lumbago and intercostal neuralgia which she and perhaps her physician calls pleurisy. I have such a case that was treated by fourteen different physicians before I made a diagnosis of protein poisoning. She was a very heavy meat eater. She had been treated for tuberculosis, floating kidney, sinus trouble, pleurisy, etc.

Atmospheric conditions and climate have considerable influence on the manifestations of protein poisoning. Damp weather will often bring on an attack of migraine, bronchial asthma, pains in the joints, nerves, or muscles, or an attack of mucous colitis. Some of the conditions are wonderfully improved by a change of climate, for example asthma or chronic bronchitis.

The eosinophilis are often much increased in certain lesions of the skin and mucous membrane in poisoning by animal portein, for example urticaria and bronchial asthma. In mucous colitis and bronchial asthma the eosinophilis are found in excess in the secretions. Acetone is often present during attacks and is present in excess in a subject even when free from attacks.

The acidosis in children is really a protein poisoning, and it may show itself in a great variety of symptoms. In children considerable fever is often present when the respiratory mucous membrane or the mucous membrane of the digestive tract is involved. Sore throats and intestinal colic are very common. The intestinal colic is often mistaken for appendicitis.

I have one patient who has had three major operations for severe abdominal pain which we know now was due to protein poisoning, her kidney was found normal, her gall-bladder also, and at another time her appendix was removed though normal. She had other gouty manifestations, she was of a gouty family; she had a high percentage of eosinophiles during attacks and acetone in the urine.

In some cases the condition is mistaken for tuberculosis. I will cite a few cases in my practice.

Case I.—About six years ago I examined a young woman who had a cough, some rales, and a persistent evening rise of temperature. There was an old tuberculous lesion at one apex, and signs of an old pleurisy. At the time I examined the blood every day for a week and found that the percentage of eosinophiles was constantly very high, over fifteen per cent., which I thought at the time might be due to an intestinal parasite. I made a diagnosis of active tuberculosis and the woman passed several years in various sanitoriums. There never was much sputum, and no bacilli were ever found. Although the *x*-ray showed the old lesions, no one was ever able to locate the active lesion, the only symptom of which was the persistent slight temperature. Recently I was called to see her and found her suffering from an active nasal turgescence, there was acetone in the urine, and eosinophiles were again increased. I then remembered that I had once treated her for goiter. Then it all flashed upon me that she had been suffering all the time with protein poisoning. She had a well marked gouty family history.

Case II.—My assistant at the Children's Free Hospital dispensary wished me to look at a case in which he had made a provisional diagnosis of acute miliary tuberculosis. I noticed on examination that the breathing was labored and that the child had a goiter. There were rales all over the chest. The mother and three other children, who were present, had goiters, the mother had gouty fingers and eczema on her hands, one child had an active urticaria. The mother said she fed the children principally on meat, meat soup, and eggs. The patient was suffering from bronchitis with asthma, and was a victim of protein poison.

We have found on reconsidering our diagnosis at the South Side Dispensary for Tuberculosis that there are probably dozens of children in whom we have made a diagnosis of tuberculosis, because they had a persistant temperature who really had protein poisoning. This is a typical history of a boy in which a diagnosis of tuberculosis had been made on account of occasional rales and a persistant temperature; he is robust and seems perfectly well now.

Case III.—Edward P., age eight years, had eczema when an infant, the eczema will appear now at times; he gives a history of attacks of shortness of breath. The present attack has lasted eight weeks, he is now suffering from polyuria, and has a persistent rise in temperature. The mother of the patient has gouty pains in he arms, especially in damp weather, she has acid dyspepsia and frequent outbreaks of ache on her back. She is troubled with a planter wart. Her father had rheumatism and asthma. One sister has gouty pains and frequent headaches and suffers from hay fever.

I have pointed out how animal protein poisoning may resemble tuberculosis. It also in some cases produces symptoms that resemble typhoid fever or meningitis.

Case IV.—I have a case now under observation in which a diagnosis of typhoid was at first made. There has been a continued fever with daily remissions for over six weeks. Repeated blood examinations fail to reveal the typhoid bacillus or give a Widal reaction. Eosinophiles could be found in the blood, as is not the case in typhoid. Acetone was present in excess at first, but with the withdrawal of all animal protein and the giving of sodium bicarbonate that has disappeared. The patient looks perfectly well and feels so, except that she has a fever which looks as if it would continue for some time.

Case V.—We have a case at the Milwaukee Children's Hospital of a boy eight years of age. He had convulsions and a temperature of 105 deg. on entrance with the head symptoms of meningitis. His breath had a fruity odor and acetone was in excess in his urine. Repeated lumbar puncture showed only a clean fluid and his reflexes were normal. There was a considerable leucocytosis. After about six weeks of fever he completely recovered.

I believe many a case of bilious fever is due to

protein poisoning and many a case of recovery from meningitis is really a recovery from protein poisoning.

There are often nervous symptoms connected with protein poisoning. Periodic fits of nervous depression or the blues are very common. One also meets with real neurasthenia which will clear up remarkably with a proper regulation of the diet and eliminative treatment.

I have by no means exhausted the number of protein poisoning manifestations. Probably the whole of the lithemic diathesis of Bouchard should be included as nephritis, the uremias and eclampsias arteriosclerosis, gallstones, renal colic, etc.

Diabetes is very common in the family history of protein poison manifestation. Indeed, as pointed out by many authors, there is a distinct relation between gout and diabetes.

It is possible that the defensive and metabolic agents are so occupied with the protein poison that there comes a time when their ability properly to metabolize the carbohydrates fails.

It is quite possible that protein poisoning has to do with the formation of tumors. I have found fibroids in women and enlarged prostates in men very common, and one can always find in those conditions other manifestations of protein poisoning.

The most interesting condition I have noticed is the history of warts. Of course warts are very common, but those afflicted with plantar warts consult a physician on account of the discomfort.

I have yet to find a case of plantar warts in which there was not some other manifestation of protein poisoning. This leads one to think of carcinoma. According to the French school, carcinoma is usually if not always found in gouty families. A line of research with the idea of protein poisoning being a factor in the cause of cancer should certainly be instituted. Of the cases of cancer of my knowledge, all had some manifestation of protein poisoning.

Although the diagnosis is very easy when the manifestations are borne in mind there is probably no diagnosis so often overlooked. Turbinates are removed, good teeth extracted, and abdominal operations performed when the trouble is simply a manifestation of protein poisoning. I could quote dozens of such cases. If a careful questioning of the patient shows he is subject to hay fever, headache, or neuritis one's suspicions should be aroused. Another patient may have a goiter, purpuric spots, be subject to nosebleed, polyuria, etc.

Another may have acne, warts, hyperacidity, and be subject to muscular rheumatism. Another may have bronchial asthma, periodic asthma, periodic intestinal or renal colic. In all these cases a careful examination of the family history will confirm the diagnosis.

The most important cases are those in which a differential diagnosis must be made between protein poisoning and tuberculosis, typhoid fever, and meningitis, but usually a diagnosis can be made by the presence of acetone and eosinophilia and the absence of the cardinal symptoms of the more serious diseases.

As the manifestations are so various, a consideration of the treatment in detail is out of the question, but certainly no treatment is of much avail without the withdrawal from the diet of meat, meat soup, eggs, and cheese for a time at least.

That considerable improvement in protein poisoning follows the withdrawal of the carbohydrates is probably due to the fact that the defensive and metabolic agents are thereby given more opportunity to dispose of the real offending agent which is the protein.

An eliminative treatment of Carlsbad salts in the morning and acetyl salicylate three times a day is indicated. Bicarbonate of soda and an addition to the diet of plenty of fruit are useful therapeutic measures. I have found in certain cases, especially in neuritis, good results from injections of cacodylate of soda.

The proper administration of the animal extracts is especially useful in purpura, in hemorrhage, and in affections of the ductless glands; also in affections of the respiratory mucous membrane and in other protein poisoning manifestations. Atmospheric conditions (which influence the elimination through the skin and respiratory mucous membrane) have such a strong influence that a change of climate is sometimes of great benefit.

On the whole the treatment is very satisfactory and it is surprising to see how many patients, who have all the sources of focal infection removed without benefit, except the temporary relief due to postoperative starvation, become free from their complaints when animal protein is withdrawn and suitable eliminative treatment advised.

It is unnecessary for me to quote further from the large number of cases I have collected, for I am sure any physician will find dozens of cases in his own practice which will support my contention that animal protein is the cause of almost all disease not due to infection and that these diseases are merely manifestations of damage done to the various tissues of the body through the inability of the natural defenses of the body, of which the ductless glands are among the principal ones, to neutralize and render harmless a poison which is in animal protein.

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SOME CLINICAL ASPECTS OF RADIUM THERAPY.*

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For many years my practice has been, and still is, to operate on all operable large malignant growths, but want of confidence in the ability of myself and more skillful operators to prevent frequent recurrence, has convinced me that operative surgery has about reached the limits of effectiveness, and that perforce we must look to some other supplemental remedy. For ten years it has been my custom to make use of postoperative prophylactic radiation.

As preliminary, reference is made to a few fundamental propositions:

(1) In its incipency cancer is always a single local lesion. (2) Every case of cancer has a developmental period, when early cure is possible, save for anatomical reasons, or coincidental disease. (3) Cure of cancer depends upon removal or destruction of all malignant cells. (4) There are three principal features in the practical application of radium, viz., the amount of radium used, the time of its application, and the tissue resistance of the individual patient. This gives emphasis, that the law of

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radium therapy must be studied in every individual case. (5) The resisting powers of normal structures is much greater than that of tumor growths, and affords a conservative margin of safety, a most important clinical factor. (6) It should also be remembered the younger the patient the more grave the malignancy and vice versa.

The results of radium treatment are palliative and curative. The palliative influence of radium is fourfold: (1) analgesic; (2) inhibition or arrest of malignant or benign growths in varying degrees and for varying periods of time; (3) its property of diminishing or destroying offensive odors in local ulceration, malignant or non-malignant; (4) its efficacy as a hemostatic in uterine hemorrhage. In these several applications of its therapeutic influence are opened fields of knowledge little known and less appreciated, often offering a boon to the discouraged—the only barrier against utter hopelessness.

Postoperative Prophylactic Radiation. — When operative surgery with its unnumbered victories in the cure of cancer, with its perfected technique, guided by the tact and skill of the accomplished operator, does its best in the hope this will effect a cure, the period of suspense and anxiety remains until three to eight years have passed if the patient survives so long. This anxious solicitude arises from fear that areas of malignant cells, of unknown and unknowable location, have not been removed by the scalpel, and may remain as a ménace of renewed lawless proliferation, the essential and pathognomonic feature of malignancy. It is this persistency of recurrence which leads an increasing number of operators to resort to postoperative radiation. This has been my practice for ten or twelve years until I have come to believe the last prohibitive and possibly curative step has not been taken until radium has been used. Briefly, but in no exhaustive way, I shall quote from authorities who resort to radiation in postoperative cases. It is here that surgery and radium find ample opportunity of reciprocity, without infringing on the rights of either, a precedure which offers ample encouragement for general adoption.

Miller[1] says prophylactic raying after operation is now fairly well established on a rational basis. In six utterly hopeless cases, from a surgical standpoint, of recurrent carcinoma, following hysterectomy, four yielded to radium treatment, but final results cannot yet be known. Two other cases were only temporarily benefited. One point in favor of radium which should not be overlooked in the final analysis is that the present statistics will be based on material that had passed beyond surgical relief before radium is used.

Nahmmacher[2] deduces that operable tumors must be operated upon unless the operation is refused, and the operation must be followed by prophylactic radium treatment. Inoperable tumors must be rayed immediately.

Foveau de Courmelles[3] states that radium and *x*-ray should not be regarded as antagonistic to surgery, but as accessory means. All operations for cancer should be followed by prophylactic radium.

Schmitz[4] says that radium therapy is indicated (1) In inoperable cancers of the uterus, vulva, and vagina; (2) in operable cases where operation is refused or is otherwise impossible. The results of radium therapy in the London Radium Institute,[5] presided over by men of worldwide reputation (Teeves, Brunton, Ramsey, French, Tate, Pierce, Pinch, and others), are worthy of particular notice; more so as it is the rule of this institute to use radium only in inoperable cases, with a few exceptions. In this annual report they say: "During the year 1914 the number of patients was 841. There were no selected cases, and radium was never used but in inoperable cases, excepting those who refused operation, or where radium was used as a last resort. Since the opening of the institute in 1911, numerous patients who have undergone operations for malignant diseases have received postoperative prophylactic radiation. It would be exceedingly difficult, if not impossible, to make any statement as to the precise value of radium treatment in preventing or minimizing the danger of recurrence, but as the majority of these cases have suffered from severe and extensive and rapid progressive malignant disease, and the operators had expressed grave doubts as to the possibility of remaining free from the disease for more than a few months, the relatively slight proportion of recurrences so far recorded (19 per cent. does much to justify routine postoperative radiation. It should prove of special service in those malignant growths in which it is found impossible to operate well beyond the appreciable area of the disease."

If since August, 1911, the time this Institute was opened, such results have followed in cases regarded as almost hopeless, the operator who carries his effort to the extreme limit of surgical possibility, can feel one other opportunity remains of palliation, if not of cure, sufficient to keep the fire of hope burning in the most unfortunate of mortals. What operator for the most favorable cases of malignant growths can produce reliable statistics so favorable —only 19 per cent. of recurrences—in cases almost hopeless, for a similar period of time? It should require no argument to establish the efficacy of radium thus applied. It is of supreme importance that postoperative radiation be applied soon, when granulations are well established, and that one should not wait for recurrence, when the chances of control are greatly minimized. When it is remembered that the traumatism of operation is a potent factor in rekindling the fires of malignancy, precious time will not be lost in waiting for such developments.

It is encouraging to note the surgical world is awakening to the value of and necessity for postoperative prophylactic radiation. This is evidenced by a growing desire among operators in this country for its early application. It is already appreciated and used in the great European centers. It is particularly gratifying it is being used for such a purpose in the great clinic at Rochester, Minn. These facts give impetus to the prospect that such a procedure may in the near future become an established routine surgical necessity. The period of time intervening between radical operation for cancer and postoperative prophylactic radiation—often months or years—is a serious barrier to the best results radium offers. At this time a patient under my care who was operated on two years since by a surgeon of distinguished ability, dosages of 600 mgm. of radium offers faint hope of benefit.

A common procedure—that of taking a section of cancer growth for diagnosis, independent of preparation for immediate laboratory diagnosis at the time of operation, is a step fraught with grave risk to the patient, by stimulating, as just referred to a more rapid development. Make your Wassermann, differentiate rational and physical signs, but rather

trust to clinical diagnosis than risk such a procedure. Exceptions to this rule are found in making sections for deep-seated growths, the diagnosis of which could not otherwise be formulated. The time, the period of its use, are matters which demand experience obtained only by close observation and seasoned judgment.

Preoperative radiation has a place in cancer therapy. In cases where the surgeon is in doubt as regards removal of large growths, on account of tumefaction and pronounced fixation, it is found the gamma rays will promote absorption of effusion, often non-malignant, by its decongestive influence, diminishing infiltration, and glandular enlargement, whereby mobility is increased, and the size of the tumor and its relations determined.

Schmitz[4] says, "In fact, an inoperable uterine cancer may be made operable within about three or four weeks by the use of 3000 or 4000 mgm. hours of radium. The objective changes are restoration to its former shape and disappearance of the infiltration of the perimetrium and recurrence of former mobility—while the subjective changes are a cessation of hemorrhage and cachexia, and improvement in the general condition of the patient." It requires no prescience to appreciate how greatly improved the chances of the patient are—say, in mammary cancer—when operation is preceded by absorption or destruction of structures, which were barriers to accurate dissection and primary union. It may, and often does, determine the great question whether to operate or otherwise.

The following cases illustrate the value of radium in relieving pain and arresting hemorrhage:

Case I.—H. W. C., male, age 56, came under my care January, 1914, suffering from inoperable cancer of the throat and tongue. He was weak, mildly cachectic, suffering nagging pains which yielded to radium treatment, amounting in all to 700 mgm. hours up to June 30. At this time the pain was so abated all opiates were discontinued, and he was free from pain up to Aug. 30, the time of his death.

Case II.—Mrs. W., age 44, married, multipara, a patient of Dr. Stevens, of this city. Seen October 30, 1915, suffering from cervical cancer, with metastasis, too late for radical operation. Two thermocautery operations were done during the continuation of the illness to lessen the areas of carcinomatous growth on the cervix and vagina, with marked benefit. After the second thermocautery operation both hemorrhage and odor were corrected by the occasional use of radium. During the earlier three months of treatment, radium was applied at intervals aggregating 700 mgm. hours. During the last three months and up to the time of her death, no anodynes were required.

Case III.[5]—Mrs. K., of Jersey City, multipara, aged 32, first seen September 1, 1914. Advanced inoperable carcinoma of entire uterus, suffering hemorrhage, cachexia, and great exhaustion, taking opiates. Commencing September, 1914, radium was used twice a week. In less than a month pain was almost absent, hemorrhage controlled, appetite and strength much increased. From this time on until three weeks before her death in January, 1915, she was almost without pain. The potency of radium as a hemostatic and as an analgesic was well illustrated in this case.

Case IV.[5]—Mrs. L., aged 70, widow, mother of four children. Came under my care February, 1911, with cervical cancer of the cauliflower variety. She was weak, cachectic, with a prospect of living six or eight months. She had three thermocautery operations, each followed by the use of radium; after the second operation almost complete healing took place. Recurrence followed and radium was again used with partial healing. She remained free from hemorrhage and pain, though in declining health until January, 1915, the time of her death. It is quite safe to affirm that three years of comfortable existence were afforded to her by thermocautery operations and radium.

Case V.—Mrs. A., aged 57. Menopause about seven years previous. Some eight months past, after a fall, striking on upper portion of sacrum with contusion of the abdominal wall over the right ovary, her physician feared malignancy. Her health failed and ordinary activities were almost suspended on account of localized pain in the lower right segment of the pelvic cavity; the right ovary was painful and tender, and there was pain in the region of distribution of the sacral nerve, attended with occasional loss of blood. Four applications of radium were made in August, 1915, in vagina and crossfire from lower abdominal wall. Pain abated, the uterine hemorrhage was arrested, and she recovered average health.

A physician of this city reported to me recently an advanced case of cancer of the stomach and pancreas in a woman aged seventy, where pain was only mitigated by opiates. Immediately following an intravenous injection of 100 micrograms of radium salt, there was complete relief of pain up to the time of her death, six weeks later. This case, with others, gives confidence in the belief that this newer method will prove valuable. If radium possessed only the single property of palliation it would justify the enormous expense incident to its production. It is stated as a general procedure that uterine cancer, cervical or corporeal, without metastasis should be removed by panhysterectomy, except when coincident conditions make it impracticable.

Uterine Hemorrhage.—Perhaps no field of radium therapy at the present moment is attracting so much attention as its influence in uterine hemorrhage, of diverse pathogenesis. This applicability embraces the hemorrhage due to uterine fibroma, chronic polypoid endometritis, hemorrhagia metropathica (with slight findings), in the bleeding of young girls, and to degenerative and vascular changes at the menopause. Kelley[8] recommends thorough dilatation and curettage with applications of radium made to the uterine cavity. These results may be augumented by cross-fire of radium in the vagina, rectum, and over the abdominal wall. Very serious bleeding occurs in uteri so small as to make intrauterine application of radium impracticable or impossible. Here radium cross-fire affords opportunity for ample gamma-ray influence.

Three months since a woman of forty-eight—at the menopause—was suffering from metrorrhagia due to diffuse uterine fibroma. The size of the uterus, which was symmetrically enlarged, was that of two and one-half months' pregnancy. Intrauterine use of radium in a single dose of 800 mgm. hours was administered. The uterus diminished 25 to 30 per cent. in size, and the hemorrhage was to a large degree controlled so that she may not require further treatment.

Case VI.—Mrs. M., aged 61, weight 235 pounds, apparently in robust health. Passed the menopause eight years since. For five years has flowed occasionally following unusual exercise. First seen September 15, 1915, with her physician and another consultant. There was an edematous condition of the cervix and uterine body and portions of the vagina; depth of the uterine cavity three inches. Suspicious of corporeal malignancy, curettage for diagnostic purposes was advised and declined. Between September 15 and October 13, three hundred and fifty-two mgm. hours of radium were applied with cross-fire at intervals. No recurrence of hemorrhage until December 18, when it became profuse. Curettage was done and radium applied to the uterine cavity for five hours. Three times radium was used up to March 2 for slight hemorrhage. On May 5, over two months from last use, a more active hemorrhage appeared and 800 mgm. hours of radium were applied in the uterine cavity, since which date there has been no hemorrhage; health good and she goes about as usual. While recovery is not anticipated, there is reason to hope her life may be considerably prolonged. Her age, the low type of malignancy, her susceptibility to radium, as already demonstrated, combine to strengthen the possibility.

Case VII.[9]—Mrs. J. M., aged 30. Compiled from the official reports of my work during July, August, and September, 1915, at the Norwegian Hospital, in the service of Drs. Delatour, Skelton, and Graham. This patient has serious metrorrhagia; she is very pale, complains of weakness, headache, and backache. Admitted to Norwegian Hospital July 20, 1915. History shows she has been bleeding for one year and four months, the flow being practically constant. On admission she was markedly exsanguinated, heart sounds weak, respiration 25, pulse 80 to 90, hemoglobin 40 per cent. Pelvic examination revealed a moderately prolapsed uterus and first-degree retroversion. Diagnosis polypoid endometritis. July 21 to 24, serious uterine hemorrhage, so marked as to require vaginal packing to control it. July 25 packing removed, and Dr. Chase introduced 25 mgms. of radium into the uterine canal, which was removed after thirty-three minutes. July 26, considerable bloody discharge. July 31, enough discharge to cause spotting. August 1 and 2, no bleeding. August 22, slight discharge. August 23, bleeding stopped. August 24, discharged, to return for observation by request. General condition improved, hemoglobin 70 per cent. The patient began to feel better and increased in strength from the very date she was given radium. Up to October 7 she had not returned.

The extreme weakness of this patient forbade any heroic measures, and even curettage (much more hysterectomy) was contraindicated. At the time the radium was used she passed into a condition of syncope, and the extreme weakness forbade any effort at cervical dilatation. Recent inquiry early in May gives the belief that the woman is in comfortable health and is employed as a janitress.

Case VIII.—Official report of radium treatment at the Methodist Hospital, service of Drs. Spence and Graham. Mrs. E. S., aged 47, multipara. Complains of bleeding from vagina; health has always been excellent. Menstrual history shows she was regular until June, 1914; duration of flow five to six days; no dysmenorrhea. Did not menstruate from June, 1914, until March, 1915; was not pregnant. This period was one of normal duration. Did not menstruate again until September, 1915, and continued to flow until October 30. Began latter part of September with scant bloody discharge, which later became profuse, with no membranes. Since she came to the hospital she has had very little bleeding, but she bled some November 5. The next day radium treatment was applied by Dr. Chase, and she has had no bleeding since. The cervix was found to be apparently normal but the uterus was very small, about the size of an English walnut. Radium was used but once and then by cross-fire in the vagina. Information received June last confirms the belief she is in fairly good health.

Case IX.—*Bone Carcinoma.*—Miss L., of Buffalo, aged 20, was seen by me April, 1915. She had been an invalid for seven years from involvement of the left hip and later the left ilium. Her first physician regarded the case as rheumatism, and treated it accordingly. Later another physician diagnosticated it tuberculous, and she wore plaster casts at the hip without relief. At this juncture an *x*-ray picture was taken showing enlargement of the upper portion of the femur and ilium. A portion of bone was removed from the great troachanter and the laboratory diagnosis established the presence of carcinoma. She entered my service at Bethany Deaconess Hospital in this city May 30, 1915, and remained until July. During this period radium was applied twenty-five times at varying intervals, amounting in the aggregate to 2650 mgm. hours. Once it was buried behind the trochanter major and once over the ilium above Poupart's ligament for a period of twelve hours. Her health was improved and she returned to her home. There has been some fluctuation in her condition since that period, but under date of May 30, 1916, she reports herself very greatly improved. Is able to go down stairs, sit in hammock, and quite satisfied to remain as well as she is. This patient should have more radium.

Case X.[10]—*Sarcoma.*—Mr. H., aged 52, came under my care at Trinity Hospital December, 1914, for radium treatment, after removal by Dr. Campbell of a melanotic sarcoma the size of a hickory nut at middle third dorsal aspect of right arm, which refused to heal. Radium was applied three times, healing promptly followed, and at this date there is no recurrence.

Briefly I refer to two other cases of sarcoma occurring in the joint experience of Dr. Bissell and myself in St. Vincent's Hospital two years since. One patient, C. V.,[8] in whom hip and thigh were extensively involved from violent traumatism, became so much worse that death seemed imminent, but recovered after three applications of radium buried in the thigh, so as to resume laborious work for a year or eighteen months. This case has attracted much notice from various sources, and is mentioned by Coley in his article on Sarcoma of Long Bones in the *Annals of Surgery*, 1914. He has suffered relapse—has drifted about to different hospitals. At present he is recovering from a radium burn, but apparently will be able to resume work when healed. The other case,[6] one of recurrent sarcoma over the scapula, healed promptly. The patient removed West, and has not been heard from since.

Epithelioma is more easily mastered than most forms of cancer, particularly the basal cell variety. If the ulcer occurs near or after middle life, particularly if it is of the cutaneous variety, and not of too long standing, or not consisting of old and well differentiated cells occurring on mucous surfaces, they are more refractory, but with wise management cases are recoverable. The use of needles containing radium plunged into the tumor, whether in the throat, tongue, or tonsils, and in many external large growths, has brought about improvement. This form of using radium is only in its infancy, but promises advantages over other methods, in properly selected cases, and we are constantly demonstrating its utility in the Radium Sanatorium of New York City.

Mammary epithelioma,[5] if seen and attacked before metastasis, yields results often satisfactory. I reported such a case in a woman aged 80 having cancer of the right breast, who was altogether relieved in 1914, and remained in perfect health since.

I have experienced great satisfaction in observing recently the results of radium in large cutaenous epitheliomata of the face disappearing under one, two, or three treatments. During the past year a physician of this city was treated by me for epithelioma of the hand. Healing was complete after three applications. Another case, an Italian fish monger, had epithelioma of the face, so offensive that patrons refused to deal with him. It disappeared entirely after three radiations. A physician of this city[6] suffered from pronounced hyperkeratosis of the hand due to *x*-ray burns, a tumor the size of a chestnut forming between the second and middle fingers on the dorsal aspect. There was no healing after operation, but recovery followed almost without scar after three applications of radium. This case illustrates, paradoxical though it may appear, what is amply confirmed by authoritative observation, that *x*-ray cancer is curable by radium. Tousey[11] gives personal experience to the usefulness of radium in combating hyperkeratosis resulting from *x*-ray exposure.

The field of radium therapy is so broad that only points can be considered here and there. My experience in treating inoperable cancer of the rectum is not altogether discouraging, particularly if it is seen early, and is of the annular variety. When radium does not effect a temporary cure, it often inhibits growth and diminishes pain. About two years since,[7] a woman, aged 50, came under my care after operation for carcinomatous degeneration of a rectal polypus. Six applications of radium of fifty to one hundred mgms. each were made within a

month. The growth was two and one-half inches from the anus and involved three-fourths of the circumference of the gut and was of the annular variety. She remains in good health. Last August another similar case, not yet reported, appeared in a woman 45, who, at the time, was suffering from what was feared to be malignant ulceration of the stomach; she was confined to her bed and greatly exhausted. Radium was used as in the former case. Amelioration of the general condition followed and with it relief of the gastric symptoms. At the end of a month the growth had disappeared and with it other coexisting troubles. Recently she is in good health.

Another inoperable case of rectal cancer[4] was relieved and life prolonged which is worthy of mention.

The possibility of intravenous injections of radium salt and the use of radium water holding in solution radium salt, or emanation, in chronic rheumatoid arthritis, arthritis deformans, chronic rheumatism, arterio-sclerosis with high blood pressure, with or without renal or hepatic complication, and neuritis with faulty metabolism and inadequate excretion, might occupy this whole evening. Perhaps in the whole field of radium therapy the results are nowhere more surprising and startling than in this class of cases. Coincident with the use of radium in this manner are evidenced an increase in red blood corpuscles and hemoglobin, and augmentation of nervous and muscular vigor, in many cases wholly outside of ordinary experience. Few unprejudiced observers can reach any other conclusions. Evidence is not wanting[12] that it is possible to reduce the blood pressure not only temporarily but in a proportion of cases permanently.

It may be noted[10] that a practical field for the use of radium is found in tuberculous glands in which the cosmetic results are most satisfactory. The same results are frequently seen in goiter.[11]

The demand for larger practical knowledge of radium and its uses, forces itself on our consideration, as the subject expands in breadth and interest. Among the multiple questions propounded, not yet elucidated, is the problem how to apply radium so as to secure the maximum of good results. Up to this time the matter of screening without large and cumbersome covers has been an embarrassment in securing ideal results. Apparently this problem is now receiving a satisfactory solution in the Radium Sanatorium in New York City. Here we use hollow needles, holding smaller or larger quantities of radium effectively screened which can be plunged directly into benign and malignant growths, large or small. Particularly is this applicable in applying radium to the tongue, tonsils, and pharynx, owing to difficulty experienced in keeping the applicators in proper position. In large growths, needles of varying length can be introduced at regular distances and varying depths, so as to maintain an effective cross-fire, not only, but to reach large areas at greater depths thereby affording adequate gamma radiation.

When massive quantities of radium are applied externally for deep penetration of the liver, spleen, pancreas, and other intraperitoneal viscera, this method has an effectiveness hitherto impossible.

In the present state of our knowledge the outlook for the mastery of cancer by one method has not been realized. The surgeon with his scalpel, the use of radium and *x*-ray, the application of cold and heat, and the destruction of tissue by chemical agents are all curative in their own sphere, but leave more to be desired than has been accomplished.

I have in this paper shown how one or more of these agents could follow each other with advantage and effectively, but until hearty co-operation and reciprocity are established, the highest ideals now possible in the treatment of cancer will lack accomplishment. For such co-operation my appeal is made to this body of influential and distinguished members, and to the entire medical profession, until such time as research work, ably and persistently carried forward, reveals a positive antidote.

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ECLAMPSIA, A PREVENTABLE DISEASE.*

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IN order for this to be a preventable disease there must be hearty cooperation between physician and patient. It is the duty of a pregnant woman to herself, as soon as she becomes pregnant, to present herself to her physician for a thorough examination; and it is the duty of the obstetrician to his patient to make himself thoroughly acquainted with her physical condition.

The time has passed when a woman, because of modesty, should take for granted that she can manage her own affairs when pregnant, until the time for labor, and the obstetrician is grossly unfair who consoles his patient with the idea that everything will go along smoothly without first knowing her physical condition.

The physician who does good obstetrics to-day must have recourse to the blood-pressure test, as it ranks ahead of uranalysis, and it is on this point, which is often neglected, that I wish mostly to dwell.

Von Basch, in 1881, was the first to use the sphygmomanometer for the clinical study of blood pressure. Flint, in 1886; Delafield, in 1891; Stengel, in 1899.

The first reports of observations on human blood pressure were made in 1903, by Richard C. Cabot, and a more detailed report in 1904. Janeway first contributed to the literature of the subject in 1906. The October, 1915, number of the *Johns Hopkins Hospital Bulletin* contains an up-to-date contribution to the subject by Janeway.

With the stethoscope over the brachial artery, the pressure is increased around the arm until all sound stops, when it is gradually reduced until a sharp tap is first heard, which marks approximately the

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systolic pressure. The pressure is still further lowered until all sound disappears, when it is again gradually raised to the point where the first tap is audible, and this marks approximately the diastolic pressure. The difference between the two is called the pulse pressure.

Diastolic pressure is more constant than systolic, and, as it measures the peripheral resistance, it would seem to be a more accurate index of either high or low tension.

In high arterial tension, a large pulse pressure occurs which seems to be compensatory, while a low pulse pressure is the sign of a failing heart. A pulse pressure below 30 mm. is low, and one above 50 mm. is high.

It is important then to know all three pressures in a beginning pregnancy. As the distance between the systolic and diastolic widens as the pressure goes up, it would seem safer to trust to the systolic in pregnancy until more observations are made with the diastolic.

The systolic pressure ascertained by palpation is from 5 to 10 mm. lower than that by auscultation, and this is the method most used to find it, and the one referred to in this paper.

Early toxemia is indicated by a rise in blood pressure, and any departure from a normal metabolism is shown, and shown before any physical sign or any noticeable change in the urine.

Blood pressure should be taken from the first, in the pregnant woman, so as to know the pressure normal to the individual and to be able to watch any change.

As soon as pregnancy is established the urine should be examined and the blood pressure taken, and continued every two weeks until the last month and a half, and then at least once a week. A record should be kept, and signs of danger should shorten the intervals of examination.

John C. Hirst, in a report of 100 cases, found the average systolic pressure 118 mm. up to 7½ months, after which there was normally a rise of 8 or 10 points. According to H. C. Baily, individual readings vary to the extent of 30 mm. without having any significance. Blood pressure during labor, in normal cases, averages a rise to 140 and 150 mm.

John C. Hirst says that a high and constantly rising blood pressure always precedes albuminuria and all the constitutional signs of an impending eclamptic attack.

Baily says that convulsions may occur and the blood pressure be no higher than 155 mm. Hirst says that 192 mm. is the highest blood pressure he ever saw without eclampsia, and that the highest in eclampsia was 320 mm. Both Hirst and Baily say that blood pressure in the early toxemias (persistent vomiting) is often low.

As far as it is possible to lay down any definite rule, we may say that a pressure below 125 mm. can be disregarded; a pressure from 125 to 150 mm. needs careful watching and moderate treatment; a pressure of 150 mm. which was at the beginning 100 mm. is more serious than one that was 130 mm. at the start. A pressure above 150 mm. needs, usually, active eliminative treatment, and if it persists in climbing higher it will, in all probability, require the induction of premature labor.

F. C. Irving reports that the blood pressure in 5,000 cases ranged from 80 to 225 mm.; 400 of this series were never below 100 mm. or above 130 mm. F. S. Newell found from 100 to 130 mm. a normal range in his cases. Haussling puts the average from 100 mm. to 135 mm. Irving says a lower pressure than 100 mm. occurred in 9 per cent. of his cases, and that it has little significance, but is an individual peculiarity. All of the cases he classes as toxemia had, at some time, both albumin and elevated blood pressure, and he applies the term toxemia to those cases having at some time both manifestations, with the addition of one or more of the following signs or symptoms: Headache, disturbance of vision, persistent vomiting, epigastric pain, antepartum bleeding, and edema.

The specific gravity of the urine varies with the intake of water, but, if studied, is of the utmost importance, a persistently low reading in a pregnant woman being a dangerous sign. Irving found albuminuria and toxemia most frequently in women under 20, and high pressure in them a more serious sign than later in life. In elderly women, a high pressure was more common, with seemingly less importance as an evidence of toxemia. Between 20 and 30, he found that elevated blood pressure and toxemia were least common, making this decade the safest for child-bearing.

Albuminuria occurs oftener than elevated pressure, but is at times of no significance. Whenever albumin is found the urine should be centrifuged, and examined under the microscope to determine the cause.

Irving also finds elevated blood pressure is often the first sign of toxemia. The majority of his patients showed albumin and high blood pressure at the same time. Elevated blood pressure preceded albuminuria in 50 of his cases, accompanied it in 113 cases, and followed it in 24 cases. One patient in 32 with a blood pressure of 130 to 140 mm. had toxemia, and one in 11 with pressure 140 to 150 mm. had it. Between 150 and 160 mm. the frequency of toxemia suddenly rose to more than one in three; while one-half of all between 160 and 180 mm. had toxemia, all above 180 mm. had toxemia. The abrupt rise in albuminuria and toxemia above 150 mm. shows that the danger point lies near here.

A rising blood-pressure curve is a better copy of the toxemia tracing than the albuminuria line, and it is fair to say that elevated pressure is more commonly an index of toxemia than albuminuria, and is apt to be an earlier sign. Newell emphasizes the fact that a rapid rise from a low level is more dangerous than a high stationary pressure.

Irving, in his report of 5,000 cases, found 64 patients suffering from toxemia, but only three who faithfully followed directions had eclampsia. All patients showing albuminuria, or a blood pressure above 130, were at once put on a meat-free diet, with restricted salt and increased amount of fluid, and was directed to take large doses of magnesium sulphate and return to the clinic in a few days. Should evidences of toxemia develop, the woman is admitted to hospital and put to bed, and the same treatment is more vigorously carried out. Should she fail to improve, and the condition grow worse, labor should be terminated.

The eliminative treatment was successful in 29 cases, and in 11 labor was induced. Nine patients out of 4,472, the number actually delivered in Irving's series, developed eclampsia, which is one in 497. Five were in primiparæ and four in multiparæ.

Six of the nine did not report at the clinic for one month before onset of seizures, and two of these died. Three eclampsia cases in all died. Only one had convulsions with a pressure less than 160 mm.;

her highest point was 140 mm., and the last reading of this patient was only 110 mm. This case again shows that a rising pressure from a low level, even though it does not pass the arbitrary danger point, may be a sign of impending danger. Eight had both albumin and increased pressure.

Irving's statistics show that only one of every 1,591 pregnant women died with eclampsia.

The death reports of the city of Norfolk show that in the last five years we have had 46 deaths from eclampsia, while 7,159 births are all that have been reported. It is claimed that one-third more births occur than are reported, the discrepancy being the fault of midwives, mostly, and some careless physicians. This would run our birth rate to 10,000, while the deaths from eclampsia would be the same (46).

As reports stand, we are credited with one death from eclampsia in every 156 births, and this is approximately about ten times as much as it should be. If we are given credit for the full number of births that actually do occur, then we have one death from eclampsia in every 218 cases, which is seven times as high as hospital cases show. In this city there are a large number of midwives; here I think lies the cause of this high death rate, as they pay no attention to anything except tying the cord, and filth. The physician is called only in time to sign the death certificate. These figures show that if they in any way benefit mankind they also kill a lot of women. It is plain, also, that it is every physician's privilege, as well as his duty, to report every birth.

Reports of two cases in my practice in last six months in which premature labor was induced are as follows:

Case I.—Mrs. C., age 28—one child, boy, twelve years ago—abortion three years before, due to patient using dirty catheter, causing violent infection and rupture of right tube with local peritonitis. Abdominal section was performed by the author, removing right tube and ovary, also appendix which was involved by exudate, and free drainage was instituted. The incomplete abortion was completed and the uterus was packed with iodine gauze.

The early part of the pregnancy was accompanied by some pain and dragging in the lower abdomen and nausea with vomiting for several months. A sister died in an eclamptic attack. Her blood pressure up to 7½ months was 125 to 130 mm., and a urine entirely free from albumin and casts. At this time the ankles began to swell and the patient had slight headache, with slight trace of albumin in the urine, the blood pressure was 140 mm. Diet, forced fluid, and salts with patient in bed, caused improvement, but in the course of two weeks the symptoms returned and persisted in spite of eliminative treatment, and the pressure ran up. I had seen this patient nearly dead once and did not propose to take another chance, so I dilated the cervix by the Harris method six different times, once under ether and three times with chloroform. The patient delivered herself three days after the first dilatation was started. The time between dilatations was about six hours, and chloroform was substituted for ether, as we could not get her to sleep with the first. Delivery at home of patient.

This woman did not have a single vaginal douch, and there was not a trace of infection. The child was born 20 days ahead of time, with no harm to either mother or child. Eclampsia might not have occurred, but no harm was done, and it is better to be on the safe side.

A woman who has the degenerative changes of eclampsia, even though she escape the convulsions, is not a well woman for a long time, if ever the same.

Case II.—Mrs. M., age 35—two children, 8 and 10. No other history. Early pregnancy was accompanied by only slight nausea. The woman took everything her so-called friends suggested to bring about an abortion. Everything progressed normally, however, up to nearly the ninth month, when suddenly she became edematous and the blood pressure, in spite of eliminative treatment, climbed rapidly to 170. There was no albuminuria, but the specific gravity of the urine dropped to 1008 and the twenty-four-hour amount was small.

The patient was taken to hospital and the cervix was dilated every three hours by the Harris method, five times in all, the first three times without an anesthetic and last two with ether. Patient delivered herself twenty-four hours after beginning induction; morphine ⅛ gr. with hyosine 1/200 gr. was given six hours before delivery. The child was born with the cord around its neck, which was slipped over the head. The baby very much cyanosed and refused to breathe for thirty minutes. Artificial respiration and breathing into and out of lungs through gauze finally started the breathing. No vaginal douches were used and an intrauterine swab on the third day, because of high temperature, proved the track to be absolutely sterile both by smear and culture.

This woman was delivered 30 days before time, but made an uneventful recovery, and the child is perfectly normal.

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PELLAGRA: ITS ETIOLOGY AND TREATMENT *

By J. F. YARBROUGH, M.D.,

COLUMBIA, ALA.

On April 10, 1916, the writer published in the *Southern Medical Journal* an article on Pellagra, in which the etiology and treatment of the disease were discussed at length. In this paper I said: "Pellagra is an autointoxication, the result of a carbohydrate diet in which there is practically no protein. This carbohydrate or alcoholic material, when taken into the stomach, is quickly converted by the normal heat of the body into what distillers call 'sour mash.' The production of this 'sour mash' three times daily, for weeks and months, finally so cripples the metabolic activity as to permit this fermented material to be taken into the circulation without the necessary chemical changes. As a result, the victim's metabolic function is practically destroyed by eating alcohol, and the result is the varied and complex symptoms we call pellagra." After a more thorough study, and an intimate hospital acquaintance with the disease, and after many clinical experiments conducted in the hospital, I am thoroughly convinced that the correct etiology of the disease has been discovered.

The symptoms of pellagra are so familiar that it is unnecessary to enumerate them here; however, it might be well to call your attention to the fact that cases occur in which no dermatitis appears, and they may be easily overlooked, and the direst consequences follow.

The treatment of pellagra may be considered un-

*Read by invitation before the State Medical Association at Mobile, Ala., April 19, 1916.

der two heads—dietetic and medicinal. Too much stress cannot be placed upon the necessity of immediately eliminating all carbohydrate or alcoholic material from the diet. I wish to insist with all the earnestness at my command that the carbohydrates must be eliminated if recovery is to be expected. All treatment will prove futile so long as small quantities are allowed. I do not believe pellagra will ever be successfully treated by the general practitioner, because the diet cannot be controlled in the home. Contrary to the opinion of physicians in whom great confidence may be placed, diet alone is not sufficient to bring relief to these sufferers. A mild case of recent origin may be relieved in this way, but many of our patients would have gone promptly to their rewards if the diet had been the only means employed. The Gibraltar on which we mainly rely is dilute nitric acid, twenty to thirty drops in a glass of water, one hour before meals, or as nearly on an empty stomach as possible. Dr. Goldberger, in the *Journal of the American Medical Association*, February 12, 1916, throws out this challenge: "Hereafter, the clinician who would attribute therapeutic value to any drug or other remedy in the treatment of pellagra, should be prepared to show, what has not heretofore been done, that the curative effect claimed cannot be attributed to the diet."

I accept the challenge, and submit the following evidence:

Case I.—Mr. S. J., white, age 47, height six feet, weight one hundred and twelve pounds. Admitted September 15, 1915, exhibiting the following symptoms: Oral cavity typically pellagrous; ulcers covered inner surface of lips and under the tongue, fissures in the corners of the mouth, salivation. Characteristic dermatitis on the dorsal surface of the hands, forearms, face and neck. Severe burning of the hands, feet, and stomach. Profuse diarrhea, stool by count every forty minutes; diarrhea of more or less severity had persisted for the past three years. Arthritis of both ankles; at intervals, alarming dyspnea, and insomnia. Systolic pressure 180. Patient very weak, and could talk but little with great effort. Profoundly anemic—not a trace of pink shown anywhere. This man, not from choice but from necessity, had been living for the past six months on protein, raw eggs and sweet milk, as an ulcerated mouth would not tolerate solid food. On entering the hospital he was given two raw eggs and eight ounces of sweet milk every three hours, and at midnight, simply continuing his former diet. Medicinally he was given thirty drops of dilute nitric acid in a glass of water three times daily, on as nearly an empty stomach as possible. After the third day his stools were never more than two in twenty-four hours so long as he remained in the hospital. By the end of the first week, ulcers and salivation had disappeared. At this time the tips of his ears, nose, lips, and nails were distinctly pink,—the anemia disappeared as if by magic. He was dismissed at the end of the fifth week, seemingly well, having gained thirty-two pounds. Ninety days from the date of his dismissal he weighed one hundred and seventy-five pounds, and is now doing hard work in the field every day.

Case II.—Mrs. G. L., white, age 27, height five feet two inches, weight ninety pounds. Admitted December 1, 1915. Physical examination showed oral cavity typically pellagrous. Characteristic dermatitis on dorsal surface of the hands, forearms, and face. Constipation, insomnia, melancholia, and profound anemia. This patient was in the hands of a competent physician, who, seeing tne result of Dr. Goldberger's experiment with the convicts of Mississippi, placed this patient on a strictly protein diet, and she remained thereon until her life was despaired of. On entering the hospital the diet was continued, and the acid given, with the result within one week her ears, nose, lips and nails were distinctly pink. She was dismissed seemingly well December 25, having gained fifteen pounds, anemia gone—in fact exhibiting every symptom of health.

Case III.—Miss M. R.——, white, age eighteen, height five feet, weight ninety pounds. When taken ill in the Fall of 1913, she weighed one hundred and sixty pounds. This patient, during January and February, 1916, was treated in one of the best hospitals in the South, in a distant State. She remained there on diet treatment until her condition was regarded as hopeless, and sent home to die. On entering the hospital March 18, 1916, she presented the following symptoms: Characteristic dermatitis on hands, forearms, face, and dorsal surface of feet and lower limbs; oral cavity pellagrous, with ulcerations. Diarrhea, frequent fetid stools. Profound melancholia. Systolic pressure 90, very anemic, with a pulse of 40, almost moribund. She was put on the diet of raw eggs, milk, and orange juice. Thirty drops of dilute nitric acid in a glass of water was administered three times daily, and at midnight. Since the second day, her stools have not been more than two in twenty-four hours. At the end of the first week her mental condition had wonderfully improved, with nails, ears, nose, and lips showing pink. She is now in the hospital gaining more than half a pound every day.

Case IV.—Mrs. J. T.——, white, age thirty, presented herself for treatment December 15, 1915, exhibiting the following symptoms. Oral cavity pellagrous. Characteristic dermatitis on dorsal surface of hands and forearms. Diarrhea; nervous and irritable; very weak and anemic. This being an intelligent woman and living only a block from me, it was considered an ideal case on which to test the diet treatment. December 15, 1915, she was put on a strictly protein diet—milk, butter, eggs, beef, peas, bean bread, and vegetables. April 12, 1916, she presented the following symptoms: Oral cavity improved, tongue still had slick glazed appearance; constipation, no gain in weight, nervous symptoms improved; still weak and anemic.

Diet certainly did not relieve these patients, nor do I believe any quantity of the richest proteins the earth affords will alone produce such results as we have obtained in Cases I, II, and III. If time allowed, we could produce a great mass of additional evidence in support of our contention.

Of the more than one hundred cases treated in the hospital it has never required more than four weeks to seemingly relieve our uncomplicated cases. They regain their flesh, the anemia disappears, and they return to their several vocations. Dr. Deeks had a similar experience in the treatment of pellagra while in charge of the Ancon Hospital, in the Canal Zone.

If Dr. Goldberger's theory is correct, diet could not have been responsible for the rapid recovery of these patients, because he says in the article referred to: "Such observation as I have been able to make strongly suggest that the real recovery from an uncomplicated attack may not take place until after a minimum of about three or four months of full feeding of fresh animal proteins and legumes." Dr. Goldberger here admits that it requires a minimum of three to four months to obtain definite results from the diet treatment. If by the addition of nitric acid we obtain the same results in one-fourth of the time, it seems clear that this drug is a valuable adjunct in the treatment of the disease.

The following is abstracted from the article referred to in the *Southern Medical Journal:* "Probably the most important reason why this drug should be employed is the fact that the blood is found to be acid. The hemoglobin of an acid blood carries but little oxygen, hence the acute progressive anemia that quickly follows an attack of pellagra. The administration of nitric acid renders the blood quickly and positively alkaline. At once it assumes its normal function of carrying oxygen, and the anemia disappears as if by magic."

To prevent the possible conveyance of an erroneous impression, it might be well to explain what is meant by an acid blood. We all know that a great departure from its normal alkalinity would prove quickly fatal. However, there are conditions in which the blood very nearly, if not quite, reaches a

faint acidity. And I refer to this condition when speaking of an acid blood. Dr. George W. Crile recognized this condition in an article entitled, "The Kinetic Drive," recently published in the *Journal of the American Medical Association*, in which he says: "Oxygen is supplied by the lungs. If the blood be acid, oxygen cannot be carried by the hemoglobin. Energy transformation depends, therefore, on the maintenance of the alkalinity of the blood."

In an editorial article in the same journal, on "Alveolar Air and Acidosis," the condition of the blood I have tried to describe as found in pellagra is recognized, for the writer says: "Finally, however, the reserve supply of bases in the tissue is exhausted, and the increased acidity of the blood stimulates the respiratory center, causing increased aeration and a decrease in the carbon dioxide tension of the blood. The chief variations depend largely on the consumption of carbohydrate, which raises the amount. By virtue of the strong automatic regulation of the blood reaction, and the increased aeration of the blood resulting from the respiratory stimulation, the increased amount of non-volatile acid in the blood tends, therefore, to decrease the amount of carbon dioxide in the blood, and hence in the alveolar air. This is the condition called acidosis, and it is characterized clinically by air hunger, or dyspnea, stupor, delirium, vomiting, convulsions, and finally coma." The writer here describes the exact symptoms we find in many fatal cases. He also says that the consumption of the carbohydrates increases the acidity of the blood. This is the proposition for which we are now contending, and have contended for a long time.

Blood, deprived of its normal supply of oxygen, must of necessity deteriorate rapidly, and with it all of the normal functions of the body, particularly that of digestion. Alkalinity restored, the intake of oxygen quickly restores the sick and dying corpuscles. They spring into new life, giving tone and vigor to the entire body. Metabolic activity is regained, and the anemia rapidly disappears.

I frankly admit that I do not understand by what process nitric acid transforms an acid into an alkaline blood. One of America's foremost biological chemists is now bending his efforts to solve the problem. However ignorant we may be of how this transformation is accomplished, it does not alter the fact that it is done. The departure of the blood from its normal alkalinity in this disease is, I believe, the most important discovery made in the study of pellagra, because I am thoroughly convinced the carbohydrate diathesis referred to in my former article is the common parent of a number of allied disorders: Pellagra, muscular and articular rheumatism (other than gonorrheal or specific), nephritis, neuritis, cystitis, vaginitis (other than gonorrheal), leucorrhea, acne, eczema, and all allied conditions, are, I believe, the result of a carbohydrate diet. Nitric acid, together with proper food, is the golden key that opens wide the door to health and happiness.

Causes and Treatment of Perthes's Disease.—F. C. Kidner urges that osteochondritis deformans juveniles is really a mild infection of hematogenous origin, of the neck of the femur at the epiphyseal line; that the logical treatment to hasten recovery and limit destruction is the clearing out of this focus, and that mechanical treatment, which precludes weight-bearing should be faithfully carried out until the normal structure of the tissues of the head and neck of the femur has been completely restored, in order that deformity may be avoided.—*American Journal of Orthopedic Surgery.*

THE WASSERMANN REACTION IN TWO HUNDRED AND FIFTY-ONE TUBERCULOUS DISPENSARY CASES.

By W. RAY JONES, A.B., M.D.,

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THESE were unselected cases coming to the public tuberculosis clinic of the city of Seattle with a ready-made diagnosis of tuberculosis. Seventy-three gave a positive reaction and one hundred and seventy-eight a negative one. The percentages by sexes were approximately the same in both the positive and negative reactions; *i.e.* 70 per cent. male and 30 per cent. female. The degree of the reaction in either sex is shown in the following table, + + + denoting complete inhibition of hemolysis.

	+	++	+++
Male	17	12	24
Female	4	3	13
Total	21	15	37

This gives 14 per cent. of all cases a + + + reaction, 20 per cent. a + + or stronger, and 29 per cent. a + or stronger.

The cases were divided into two classes; 189 coming from the public sanatorium where a Wassermann is a part of the routine examination, and the other 62 from the outpatient department where blood was taken to clarify the diagnosis. Among these 62; 30 were proven non-tuberculous, and of this 30; 19 or 7.6 per cent. of the total 251 were not tuberculous, but frank syphilitics masking as tuberculous. If these non-tuberculous and the incomplete cases from the outpatient department are eliminated and only the 189 routine cases counted; the figures drop to 11 per cent. + + + positive, 17 per cent. + + or stronger, and 25 per cent. + or stronger.

Two cases showed a hilus involvement only; a characteristic sign of pulmonary syphilis; but both of these had bacilli in the sputum as well as a positive Wassermann. Two of the positives were diagnosed tuberculosis on the physical findings and general symptoms, in spite of repeated negative sputum examinations, and one was treated as presumptive tuberculosis though the presence of this disease could not be substantiated even by physical findings. This 1 per cent. of the total gave more than a suggestion of lung syphilis or mediastinitis.

Ages varied from a sixteen-year-old girl giving a single + reaction who had signs of congenital lues, to a man of seventy with a + + blood and absolutely no symptomatic signs. The average age was 33 years.

Old scars, nerve signs, and symptoms, and the like were strangely absent, or could be directly attributed to the tuberculosis. Palpable post-cervical and epitrochlear glands, our most constant sign of syphilis, were almost invariably present in both positives and negatives, probably due to the emaciation, as all cases gave a history of loss in weight.

Occupations told nothing more than the occupations of a like number in the general charity dispensary.

Histories were absolutely worthless, as the women denied everything with vigor, and the men fearful of being refused treatment, admitted chancres in only a few cases. Those admitting a

probable infection were most often the weakly positive or negative reactions. One point in the family history might be considered, in that most of the positive married females were living separated from their husbands. Family difficulties had an amazing frequency among the positive married men also. This leaves a question as to what relation domestic discord and syphilis have to each other.

By nationality 66 per cent. of the negatives were American born and 44 per cent. foreign. The positives gave practically the same figures, and no one nationality showed a preponderance towards either positive or negative.

All blood examinations were made in the city bacteriological laboratory and after the original Wassermann technique. The cases were taken from the files of the tuberculosis division of the city health department, and due credit is given to the officials in that department for permission to consult the records and assistance in compiling these statistics.

No attempt is made at the present time to give the reason for such a high percentage of positives, nor to determine whether the weaker reactions were due to syphilis, or as some claim to the tuberculosis.

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Medicolegal Notes.

Malpractice, Insufficient Evidence of. — Action was brought for malpractice by injuring the neck of the plaintiff's femur by negligently manipulating her leg, causing it to be shortened about two inches and to turn outward. The plaintiff had been suffering from chronic sciatica for about three months, during which time she had only been visited twice by a doctor to administer a necessary narcotic. The plaintiff was called in to operate, which he did by manipulating the leg and flexing the joints in order to break up the adhesions at the hip and knee joints and along the sciatic nerve. All the physicians who testified in the case stated that the condition of the plaintiff's leg was the result of a tubercular condition of the upper end of the femur, which destroyed a portion of the bone, permitting the muscles of the leg and hip to shorten the leg to the extent that the bone was destroyed by the tuberculosis. There was no evidence that the operation was not the proper one, or of any negligence in the way in which it was performed, so that, unless the doctrine of *res ipsa loquitur* could be applied, there was no evidence of negligence to go to the jury. Even the medical expert for the plaintiff testified that if there had been a fracture at the neck of the femur at the time of the operation it would have been evidenced by an immediate shortening of the leg and eversion of the foot, but that the latter would also have resulted from a breaking up of the adhesions, and that the rotation of the foot outward alone after the operation did not indicate a fracture any more than a reduction of the adhesions. There was no evidence of an immediate shortening of the leg; so that upon the only theory advanced by the plaintiff that could have indicated a fracture in the operation, the evidence sustained but one of the two necessary elements. The doctrine of *res ipsa loquitur* has no place in a case like this. The court quoted from Ewing vs. Goode (C. C.), 78 Fed. 442, where Judge Taft said: "A physician is not a warrantor of cures. If the maxim *res ipsa loquitur* were applicable to a case like this, and a failure to cure were held to be evidence, however slight, of negligence on the part of the physician or surgeon causing the bad result, few would be courageous enough to practise the healing art; for they would have to assume financial liability for nearly all the 'ills that flesh is heir to.'"

The defendant was employed for one trip only to perform the operation. The plaintiff lived at a distance of ten miles away. An agreement was made as to what his fee should be in case other visits were necessary, and he told the plaintiff and her husband to notify him if he should be needed. He was never called subsequently. It was held that his services were concluded by assent when the operation was performed, and the case did not come within the rule that a doctor may not, after accepting an employment, abandon a patient without reasonable opportunity to procure another physician.—Miller vs. Blackburn, Kentucky Court of Appeals, 185 S. W. 864.

Compensation for Services — Failure to Take Blood Test.—In an action by a surgeon to recover for professional services it appeared that the patient was suffering from exophthalmic goiter, and upon consulting the plaintiff was advised by him to go to certain specialists for treatment. Not desiring to do so, the patient and her husband requested the plaintiff to perform the necessary operation. The patient was thereupon sent to the hospital, and in a day or two the operation was undertaken. It progressed until about half the goiter had been removed, when the patient died. The defendant, over objection, was allowed to introduce evidence that no blood test was taken prior to the operation, and that such a test was usual to determine the oxygen-carrying power of the blood, which if below a given point renders an operation of this kind extra-hazardous. On appeal this was held an error, as there was no evidence that the blood of the patient was below the required oxygen test, nor was there any attempt to show that the failure to take the blood test contributed to any extent to the patient's death. Before a charge of negligence can be sustained against a physician or surgeon there must be some evidence that the failure to use proper skill, either in the thing done or in the thing left undone, was the proximate cause of injury to the patient. In other words, there must be some connection between the act and the result complained of. Here there was none. It did not appear that it was the custom in that locality to take blood tests. A physician or surgeon does not guarantee to cure his patient, or that his treatment will be successful. And the plaintiff's remark, after he had urged her to go to the specialists and she had refused, "Well, if you are willing to take a chance with me I will take a chance with you," did not show that the plaintiff agreed to demand compensation only in the event of a successful operation. Judgment for the defendant was reversed. —Harvey vs. Richardson, Washington Supreme Court, 157 Pac. 674.

Privileged Communications.—The Washington statute prohibits a physician from testifying without the patient's consent to any information acquired in attending such patient which was necessary to enable him to treat such patient. In an action for personal injuries it appeared that the plaintiff's physician visited him, expecting to prescribe. The defendant asked him on the witness stand whether the plaintiff was up and dressed; whether he was moving about; whether he was staggering, walking in a hesitating manner, reeling, or showing any signs of nausea or dizziness. The defendant attempted to justify the questions because the plaintiff had previously related that he took from this doctor a draught of medicine which put him to sleep. It was held that this did not justify the admission of the physician's testimony, as what the plaintiff said was not an attempt to describe the doctor's treatment or theory of the disease or to quote the doctor while shutting his mouth.—Wesseler vs. Great Northern R. Co., Washington Supreme Court, 157 Pac. 461.

Proof of Value of Services Rendered. — Action was brought by a physician upon an account rendered by him as a licensed physician, and also upon an account assigned to him which covered services as a pathologist rendered by the assignor. The defendant had verbally agreed to pay the claims of both the physician and the pathologist for services to her son when in the State of California. It was held that the agreement was not void under the statute of frauds, though not in writing. There was no dispute about the services having been rendered by the physician, that he charged the plaintiff $300 therefor, that the services were worth that sum, that he was paid on his individual account $125, leaving a balance unpaid of $175. For this he was held entitled to recover. But there was no proof of the value of the services rendered by the pathologist. In the absence of an express agreement, one who brings to such a service as was rendered by him due care and skill can recover the reasonable and customary price therefor, but such reasonable and customary fee must be shown by competent evidence. Proof of the price charged without any proof of the value of the service performed was not sufficient, and did not meet the test. —Johnson vs. Jones, Ind. Appellate Court, 112 N. E. 830.

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TWO LITTLE-KNOWN FACTS ABOUT MORPHINE.

EVERY practising physician passes through two phases in his daily dealings with certain drugs, especially those remedies known as specifics and those which act upon some particular symptom, as morphine does upon pain. The first phase is the gradual increase of faith in the medicine in question until he comes to accept it as practically infallible. And then sooner or later come unaccountable instances of failure and his divine confidence is rudely shaken.

This is true of morphine. This powerful drug is duly hedged about with restrictions in the mind of the young practitioner so that he hesitates to use it except it be absolutely necessary. But now and then it becomes a *dernier ressort* and after a number of experiences of its speedy and effective analgesic action he comes to hold it in reserve as the ace of trumps. Among the cases which now and then require opium are the worst ones of migraine. Theoretically, of course, we do not use opium in migraine and practically, thanks to the anilin derivatives, it is indeed rarely necessary. Once in a while, however, it is necessary to resort to this drug, and very rarely it is not effectual. It is probably a conservative statement that every physician who has practised more than ten years has met with cases of migraine which did not yield to morphine.

Now as to the explanation. Adler[1] says that these cases are neurotic and the migraine is entirely psychic in origin. The affliction ministers to the neurotic's desire to dominate his environment by making all his family and friends anxious to wait on him and he does not readily yield this advantage. If this is the true analysis of such a migraine we can readily see why drugs, even morphine, are ineffectual. The only way to handle the situation is to educate the neurotic to perceive that he undergoes his suffering merely to subjugate others and that these are far more effectual and socially useful ways of maximating his ego-consciousness (as Adler puts it) than by making every one around him miserable.

So much for a psychical aspect of morphine. A physiological peculiarity connected with the drug has been recently reported by Drs. McGuire and Lichtenstein,[2] who have observed approximately 12,000 cases of drug addiction in the Tombs prison during the past twelve years. They claim that many of the women opium habitués present a wonderful growth of hair. Not only is it long, but thick and oily. It is common, say these physicians, to see female addicts with hair reaching to the ground. They explain this as being a purely nutritive process; opium and its derivatives stimulate the numerous sweat glands distributed to the scalp and the roots of the hair, increase the moisture of the scalp, and thus cause a growth of hair.

[1] "The Neurotic Constitution," by A. Adler, New York: Moffat, Yard and Co., 1916.

CARBON MONOXIDE POISONING.

CARBON monoxide gas is the most frequent cause of poisoning as noted in the cases brought to our hospitals, and yet its action and, in consequence, the treatment of the poisoned patient, have been subject to a great number of misconceptions which have doubtless resulted in the loss of a good many lives. These facts are well brought out in an article by Yandell Henderson in the *Journal of the American Medical Association*, August 19, 1916. It is a very general belief that the compound formed by the union of carbon monoxide and hemoglobin is such a stable one that it is useless to attempt to break it up by the usual therapeutic means. As a result of this belief it has been the accepted mode of treatment to bleed the patient in order to remove the toxic compound from the circulation and to replace the blood thus removed by saline solution or the blood from a healthy person.

Henderson details experiments which show that carbon monoxide-hemoglobin is not the stable compound that it has been thought to be, but that the carbon monoxide may be displaced by subjecting the blood to a large mass of good air or air enriched by oxygen. Furthermore, he found that persons who had been poisoned with illuminating gas (the poisonous constituent being carbon monoxide) when removed to an atmosphere of fresh air, purified their blood of the toxic gas within half an hour at most. "Practically all of the carbon monoxide is thus eliminated, and the hemoglobin fully restored in three or four hours." He emphasizes the conclusion that phlebotomy is therefore an illogical and possibly dangerous procedure, especially as it is almost always performed more than an hour after the patient is removed from the influence of the gas. His observations also explain why it is generally so difficult satisfactorily to demonstrate the presence of carbon monoxide-hemoglobin in the blood obtained by such phlebotomy. According to this author the symptoms are due to the effect upon the central nervous system of the deprivation of oxyhemoglobin during the period when the poisonous gas was present. The harmlessness of temporary "gasing" was demonstrated in the Pike's Peak expedition of which the author was a member. The carbon monoxide method for the estimation of blood volume was used, and although the members of the party repeatedly inhaled sufficient of this gas to

[2] "The Drug Habit," by Frank A. McGuire, and Perry M. Lichenstein, MEDICAL RECORD, July 29, 1916

combine with about 20 per cent. of their hemoglobin, no ill effects were manifest.

The treatment then is quite simple. Henderson says: "Thus it appears that about all that can be done in cases of carbon monoxide poisoning is to administer artificial respiration when the patient's own breathing has failed or is feeble, to administer oxygen for half an hour (longer is useless), to keep them warm if their temperature has fallen, to supply water to the system, preferably by a Murphy drip, and otherwise to give them good nursing and such symptomatic treatment as may be called for." He also suggests that the coma may be allied to that found in acidosis and that the intravenous administration of sodium bicarbonate may be of value. Thus it seems that the prognosis is fixed at the moment the patient is removed from the influence of the gas and that the best results are to be obtained, as in so many other pathological conditions, by abstaining from too active interference.

ATRIOVENTRICULAR DISSOCIATION.

Atrioventricular dissociation is by no means the same as the Stokes-Adams syndrome, although in the majority of cases the latter belongs to the former, or, in other words, such dissociation is the principal cause of the syndrome. Dissociation often occurs in the absence of the nervous crisis held to characterize heart-block. Again, while the pulse in dissociation may be as low as 30 to 40, this condition must not be confused with bradycardia. Routier (review in *La Riforma Medica*, July 10) recognizes three degrees of atrioventricular dissociation, viz., (1) Simple blocking from arrest of the stimulus of contraction in the auricle; the response of the ventricular contraction is then wanting. (2) Complete dissociation, in which auricle and ventricle act independently of each other, from separate stimuli. (3) Incomplete dissociation which is simple blocking with the addition of occasional autonomous contractions of the ventricle. Dissociation may be due to some anomaly of conduction or to some disturbance of excitability. The principal cause under the former head is organic disease involving the bundle of His. This state of affairs, being progressive, tends to cause complete dissociation. In the second place certain poisons exert a selective action on the bundle of His (muscarine, physostigmine, digitalin, aconitine). Asphyia suspends the function of the same structures. Finally the fibers of His are rendered refractory by too rapid and frequent stimulation of the auricle, and we see arrhythmia develop as in auricular flutter and tachysystole. Under the head of disorders of excitability come hyperexcitability of the autonomous centers, of the ventricle, as in the case of atropine poisoning, and an opposed state of autonomous slowing of the ventricle. In certain cases the ventricle remains refractory to this over-stimulation. Other disorders of excitability are seen in the failure of extrasystole of auricular origin, and also in the compensatory repose of the ventricle after an extrasystole. Routier does not recognize dissociation of purely vagus origin, but vagal hypertonia may act in connection with other factors in causing complete dissociation.

We are still in ignorance of the part played in dissociation by the sympathetic fibers—the plexuses of which are scattered throughout the myocardium and about the coronary arteries. Holding the view that adrenalin acts selectively upon these fibers Routier has been able to demonstrate an action by them upon the phenomenon of dissociation. An acceleration is due to the action of adrenalin on the terminals of the coronary plexuses, but the block can be overcome only by an action of the sympathetic fibers in His's bundles, which can respond only when enough muscle remains for a contraction wave. Routier is satisfied that a purely muscular lesion of the His bundle cannot lead to dissociation and that the latter is in the main of nervous pathology.

LATE OPERATIONS FOLLOWING MEDICAL TREATMENT IN GUNSHOT WOUNDS OF THE ABDOMEN.

After a careful study of the results obtained with and without operation in penetrating wounds of the abdomen, referred to in the Medical Record of March 11, 1916, Quénu made out a strong case for early operation and apparently showed that when the projectile actually entered the abdominal cavity it was very probable that the individual who survived under medical treatment would come to operation sooner or later because of complications of one sort or another. In another communication on this subject to the Société de Chirurgie of Paris (*Revue de Chirurgie*, February, 1916), Quénu says, that, as a result of further study, he has become still more convinced of the correctness of his earlier conclusions.

In connection with this contention that in medically treated cases with recovery operation may be only deferred, a case reported by A. Chalier (*Le Progrès Médical*, July 5, 1916) in which a rifle bullet had to be removed after having been encysted in the omentum for 18 months is of considerable interest, particularly as Chalier states that somewhat similar cases have been reported by Walther, Goullioud, and Quénu. In Chalier's case there had been vomiting and marked meteorism for the first two days after receipt of the injury but these subsided under the influence of rest and proper diet. No operation was done during the three and one-half months the patient was in the hospital. On various occasions since then he had had colicky pains and symptoms of subtotal obstruction and he entered Chalier's service complaining of these symptoms, pains in the lower extremities, and difficulty in walking. Radioscopic examination showed that the projectile was fixed in the abdominal cavity a little in front and to the right of the promontory of the sacrum, not embedded in the bone. Upon operation the bullet was found encysted in the omentum, which latter was strongly adherent to the posterior parietal peritoneum. The cystic pouch, containing the bullet and a quantity of reddish fluid, was resected and convalescence was uneventful. Chalier considers it strange that the bullet had been tolerated for 18 months without grave consequences; yet as he says, fusion of the omentum

to the posterior abdominal wall gave rise to intermittent mechanical troubles which might have been so suddenly increased at any time as to have required emergency operation.

The Tobacco Habits of Schoolchildren.

An illuminating glimpse into the possible diversions of our boys and girls while away from sight at school is afforded by a recent report* which contains the results of an investigation by Drs. Stiles and Richards of the Public Health Service. To be sure the children in question were largely drawn from a rather low stratum of society, but in the present democratic arrangement of our public schools the girl from a refined surrounding is so apt to rub elbows with the hooligan from Goat Alley that the fear is rather that she will absorb the mannerisms of the gutter from him than that he will improve by her example. Drs. Stiles and Richards examined 2,215 pupils, ranging in age from 4 to 20 years. They were divided into two groups, those who had toilet facilities in the house being known as the sewerage, or for short the "S" group, and those who had an outside privy only, the "P" group, this grouping being considered roughly indicative of the cultural level obtaining in the household. It was found that no girls chewed or smoked tobacco. About one-half of 1 per cent. in the S group dipped snuff and slightly less than that in the P group. Only one boy in the 1,043 examined took snuff and it was not ascertained whether or not his home had plumbing. About 1½ per cent. of the boys in the S group chewed and 3 per cent. in the P group, but 6.5 per cent. of the S group smoked, while only 5 per cent. of the P group indulged themselves thus. The tender age of some of these devotees of nicotine is surprising. Thus there were three boys of 11 years who chewed, two of 10 years, two of 9 years, and one of only 8 years. There were six 10-year-old boys who smoked, three 9-year-old ones, one of 8, and one of 6 years! Moreover, two boys had begun the habit at 6 years and one at the age of 3. This last prodigy will probably shatter the retro-barn-door record of all of us, no matter how precocious. There was one 12-year-old girl who dipped snuff, one 11-year-old one, and a boy and a girl of 9 who indulged. One girl had begun this habit at the age of 4 and two at the age of 3. Of course, the inception of habits such as the above at the early age quoted can only mean gross neglect of parental duties, but the fact remains that if the conditions found in the city studied may be considered as at all typical the profession must change its attitude in regard to the tobacco habit and not arbitrarily rule out any age as too young in considering the possibility of its influence in a given case.

Points of Attack of Tuberculosis.

In the nation-wide battle against tuberculosis any information from authentic sources about this plague is of value, therefore we welcome an article, contributed by Dr. George M. Kober to a recent Public Health Report, dealing with the routes by which the bacillus may enter the body. Infection by inhalation is the most frequent method, according to Kober. The germs may be propelled into the atmosphere by talking, coughing, or sneezing. The dangerous zone about a patient with tuberculosis extends 3 feet in every direction, Flügge says. The next most frequent way is to take them in through the digestive tract. Eating utensils may be the media of transmission; milk and meat are frequently infected. Analyses of a number of samples of milk from dairies in Washington, D. C., showed that 6.72 per cent. of them harbor germs. This, of course, brings up the question of bovine and human tubercle bacilli. It has recently been said that the former may be changed into the latter by a prolonged residence in the human body. Among the things which Kober indicts are allowing babies to creep on a dirty floor, long skirts, and insanitary dwellings. Apropos of the latter he quotes the famous "lung blocks' of Biggs of New York and Flick of Philadelphia. Flies are also a frequent source of infection, to add another argument to the scores against this insect. Dust is a favorite habitat of the germ—in the United States and Germany just twice as much of the disease has been found among workmen whose trades were dusty in nature, although in this case the dust acts chiefly as an irritant, thus preparing the soil for growth of the bacillus. On the other hand, damp soils and houses predispose to tuberculosis. Kober also calls attention to the amazing prevalence of the germ. Thus recent autopsies by Hamburger and Monti in Vienna have shown that 95 per cent. of children actually have the germ in their systems by the time they are twelve or thirteen. According to Nagels 97 per cent. of all people have foci of tuberculosis at one time or another in their lives. City dwellers should remember that the greater the park space in their communities the less will be the tuberculosis, and they should encourage the city fathers to increase these breathing spaces rather than diminish them. It is gratifying to note that the death rate has dropped from 326 per 100,000 in 1880 to 147.6 in 1913. Dr. Kober optimistically believes that we are on the way to stamp out the disease altogether.

The Elastometer.

Our methods for recognizing the degree of edema have heretofore been crude. Changes in the body weight have been utilized to some extent, especially in connection with degrees not palpable to the finger. Roughly speaking a gain in weight in the absence of nutritive factors may imply a condition of waterlogging. Widal claimed that a gain of over 15 pounds meant a state of edema. In ordinary palpation the milder degrees cannot be perceived, and Schade's elastometer therefore is regarded as an improvement in the diagnosis of edema. According to an article by Schwartz in *La Riforma Medica* for July 10, this consists of a disk which when sunk into the skin and subcutaneous tissue registers the changes in elasticity by means of a lever acting on a recording cylinder. Several similar disks are used in the vicinity of the first and other readings obtained. The first disk is weighted, while the control disks are not. If normal elasticity is present the skin when compressed returns quickly to the normal, as shown in the curve registered on the cylinder; but if the disk is weighted the curve is replaced by a horizontal line and when the weight is removed there is a perpendicular fall. In edematous tissues with loss of elasticity the curve ascends after the use of the weight, but more slowly; when the weight is removed the curve descends, but not as in normal tissues is its original base.

* "Tobacco and Snuff. Their Use by White School Children in the City of X," by C. W. Stiles and D. N. Richards, M.D.

News of the Week

Poliomyelitis on the Decline.—A considerable reduction in the number of cases of poliomyelitis in all the boroughs of New York City has been evident during the last few days, and it is believed that the worst of the epidemic is over. The total number of cases up to August 29 was 7,908, with 1,889 deaths. For the week ending August 26, 753 cases were reported in all boroughs, as compared with 912 during the week ending August 19, and 1,151 in that ending August 12. The decrease has been especially noticeable in Brooklyn, where the epidemic started. Outside of New York City there were reported in the State up to August 26, 1,802 cases with 199 deaths. The State Department of Health now has sixteen diagnosticians and sixteen sanitary supervisors in the field, and is sending specially employed consultants for inspection and visitation to seventeen hospitals scattered throughout the State. In New Jersey 2,241 cases were reported up to August 26. The date of opening the public schools in New York has not yet been determined, and the question of deferring the opening of Columbia University is under consideration.

City Death Rate.—The New York City Department of Health points out that in spite of the severe epidemic of infantile paralysis this summer the death rate of the city for the first thirty-four weeks of the year was but very slightly in excess of that for the same period of last year, the respective figures being 14.57 and 14.53 per 1,000 of population. This increase represents only four deaths per 100,000. In every age group except that of children under five years of age there was a decrease in the death rate, proving that the general sanitary condition of the city is better this year than last.

Dr. Louis Livingston Seaman, president of the British War Relief Association, sailed from New York on August 26 for London. He will supervise the work of the association in England, France, and Belgium.

Dr. Murphy's Estate.—It is reported that the estate left by the late Dr. J. B. Murphy of Chicago will total 1,125,000, of which $1,000,000 is in real estate.

Death of an Old Indian.—Ayoushakatsagom, a veteran Cayuse Indian, died at Pendleton, Ore., on August 23, at the reputed age of 120 years. His memory went back to events which occurred during the war of 1812.

Plattsburg Medical Camp.—Three sessions of the Medico-Military Instruction Camp at Plattsburg, N. Y., will be held this summer, each lasting two weeks. The first began on August 10, the second, on August 24, and the third will open on September 8. The course for each session covers military surgery in the field. Lieutenant-Colonel Henry Page and Major P. W. Huntington are the officers in charge.

The Sanest Fourth.—For the fourteenth year the *Journal of the American Medical Association* has collected and published statistics of the accidents occurring in the United States as a result of the Fourth of July celebration. The report shows most strikingly the good effects of the campaign for a safe and sane fourth which has been carried on for some years. In 1903, the year in which the first collection of statistics was made, 466 deaths were reported as due to fireworks; in 1916 only 30 deaths were so reported. In the former year the injuries numbered 4,449, and in 1908 the number rose to 5,623, while in 1916 the total casualties were only 850. The deaths due to lockjaw declined from 406 in 1903 to none in 1916, and not one case of blinding was reported.

Five Babies in Seven Months.—Mrs. Julius Cojenski of Greenwich, Conn., is reported to have established a record in having given birth to triplets and seven months later to twins. None of the children have survived. Although only twenty-seven years old, the woman is said to have been the mother of thirteen children, of whom only five are living.

Association of Railway Surgeons.—The twenty-sixth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York, on Wednesday, October 18, 1916. A very interesting and attractive programme has been arranged. Dr. William S. Bainbridge will deliver the address in Surgery, taking for his subject the Cancer Problem. Railway surgeons, attorneys, and officials, and all members of the medical profession are cordially invited to attend. Dr. D. H. Lake of Kingston, Pa., is the president of the association, and Dr. George Chaffee of Little Meadows, Pa., is the corresponding secretary.

American Association for Clinical Research.—The eighth annual meeting of this association will be held at the Hotel Majestic, New York, on September 28 to 30, 1916, under the presidency of Dr. Daniel E. S. Coleman, New York. An interesting programme has been prepared, and clinics will be held daily at the Flower and Metropolitan Hospitals. Further details may be obtained on application to the permanent secretary, Dr. James Krauss, 419 Boylston Street, Boston, Mass.

Caledonia County (Vt.) Medical Society.—At the annual meeting of the society held at St. Albans on August 11, the following officers were elected: *President*, Dr. Frank E. Farmer, St. Johnsbury; *Vice-President*, Dr. David E. Brown, Lyndonville; *Secretary-Treasurer*, Dr. Hugh H. Miltimore, St. Johnsbury.

Gifts to Hospitals.—St. Mary's Hospital, Philadelphia, has received from Mr. George Nevil a gift of $5,000 for the endowment of a free bed.

By the will of the late Mr. Hall Engles of Philadelphia the following bequests are made to institutions in that city: To the Pennsylvania Hospital, the Protestant Episcopal Hospital, the Presbyterian Hospital, the Polyclinic Hospital, the Jefferson Hospital, and the Samaritan Hospital, $10,000 each; to the Philadelphia Home for Incurables, the Jewish Hospital Association, and the Medico-Chirurgical Hospital, $5,000 each.

Convention of Colored Nurses.—The ninth annual convention of the National Association of Colored Nurses was held in New York on August 15 to 17, with 160 delegates in attendance.

Study of Malaria.—The International Health Board of the Rockefeller Foundation has announced that it is conducting two sets of experiments to determine how effectively malaria may be controlled in a temperate climate under conditions prevailing in typical farming communities of the Southern States. The first of these experiments, to test the practicability of malaria control by detecting carriers and freeing them of the parasites, is being carried on at Bolivar, Miss., under the direction of the Mississippi Board of Health. The second set is being conducted in Arkansas in cooperation with

the United States Public Health Service, and has for its object the testing of the practicability of malaria control by a combination of relief measures. In neither case will the experiments include the extermination of mosquitos by major drainage operations.

Hospital Ship to Moros.—With the cooperation of the Philippine Government, the Rockefeller Foundation is preparing to send a hospital ship to the Sulu Archipelago for the treatment of the Moros and members of allied tribes, many of whom have been found to be suffering from skin diseases, malaria, hookworm, dysentery, and other ills. In Mindanao and Jolo, it is said, the Moros have been reached to some extent by the dispensaries, but the great bulk of the population still stands in need of medical service. The ship, which is now being equipped, will be sent out for a five years' cruise.

Red Cross Unit Sails.—Consisting of ten surgeons and twelve nurses in charge of Dr. Daniel Fiske Jones of Boston, the third Harvard Red Cross unit sailed from New York on August 17 for Liverpool. The party will be sent direct to the British Expeditionary Base Hospital No. 22 on the French front, and will relieve the first and second units, whose terms of service have expired.

Obituary Notes.—Dr. Ezra Bradway Sharp of Camden, N. J., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1888, died at his home on August 24, aged 55 years.

Dr. Wilbur Lee Pepper of Philadelphia, a graduate of the Jefferson Medical College, Philadelphia, in 1892, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Philadelphia County Medical Society, died at Reheboth Beach, Del., on August 18, aged 46 years.

Dr. Andrew L. Van Patten of Los Angeles, Cal., a graduate of the Hahnemann Medical College and Hospital, Chicago, Ill., in 1876, died at his home, after several months' illness, on August 3, aged 71 years.

Dr. John M. Eager of the American Sanitary Office, Naples, Italy, died at his station on August 17, aged 52 years. Dr. Eager was graduated from the College of Physicians and Surgeons, New York, in 1888, and was appointed to the United States Public Health Service, in which, at the time of his death, he held the rank of surgeon, in 1892. He was a member of the American Medical Association.

Dr. Carl V. Cole of Lake City, Minn., a graduate of the University of Minnesota, College of Homeopathic Medicine and Surgery, Minneapolis, in 1904, was killed in an automobile accident on August 7, aged 39 years.

Dr. Ozias Willard Peck of Oneonta, N. Y., a graduate of the Yale University School of Medicine, New Haven, in 1857, consulting physician to the Aurelia Osborne Fox Memorial Hospital, Oneonta, a surgeon in the United States Army during the Civil War, health officer of Oneonta for twenty-six years, and a member of the New York State and Otsego County Medical societies, died at his home on August 4, aged 81 years.

Dr. John M. Crawford of Cincinnati, Ohio, a graduate of the Pulte Medical College, Cincinnati, in 1879, consul general to Russia during President Harrison's administration, and a former president of the Western Academy of Medicine, died at his home on August 13, aged 72 years.

Dr. Harry D. Barnitz of San Antonio, Tex., a graduate of the Georgtown University School of Medicine, Washington, in 1880, former president of the Board of Health of San Antonio, and a member of the State Medical Association of Texas and the Bexar County Medical Society, died at his home, after a short illness, on August 6, aged 63 years.

Dr. Ulysses G. Grigsby of Perry, Iowa, a graduate of the Eclectic Medical College, Cincinnati, Ohio, in 1896, died as the result of injuries received in an automobile accident, on July 27, aged 48 years.

Dr. Horace W. Coombs of Cave City, Ky., a graduate of the Eclectic Medical College, Cincinnati, Ohio, in 1870, died at his home, after a long illness, from cancer of the stomach, on August 3, aged 69 years.

Dr. Frank Hammett Holt, superintendent of the Michael Reese Hospital, Chicago, since 1915, a graduate of the Harvard University Medical School in 1899, a member of the American Medical Association, the Illinois State Medical Society, the Chicago Medical Society, and the Massachusetts Medical Society, and formerly superintendent of the Boston City Hospital, died at his home after a short illness, on August 3, aged 47 years.

Dr. Lyman Beecher Shehan of Superior, Wis., a graduate of the Medical School of Maine, Portland, in 1884, died at his home, after a long illness, on July 28, aged 61 years.

Dr. James D. Weaver of Eatonton, Ga., a graduate of the College of Physicians and Surgeons, Baltimore, in 1882, and a member of the Medical Association of Georgia and the Putnam County Medical Society, died at his home as the result of injuries received in an automobile accident, on August 5.

Dr. Kenneth D. Wise of Los Angeles, Cal., a graduate of Jefferson Medical College, Philadelphia, in 1865, died at his home after a lingering illness, on July 31.

Dr. Clinton De Witt Van Dyck of New York, a graduate of the Albany Medical College, Albany, N. Y., in 1879, a member of the New York State and County Medical societies, and for twenty-six years a medical supervisor of the Metropolitan Life Insurance Company, died suddenly from apoplexy, at Atlantic City, N. J., on August 10, aged 61 years.

Dr. Edward Kerschner of Hagerstown, Md., a graduate of the New York University Medical College, New York, in 1861, and since that time a member of the medical service of the United States Navy, serving through the Civil War and retiring a few years ago with the rank of Medical Inspector, emeritus professor of naval, military, and state hygiene in the New York Post-Graduate Medical School, New York, died at his home, after a brief illness, on August 20, aged 77 years.

Dr. Thomas Powell of Los Angeles, Cal., a graduate of the New York Medical College, New York, in 1858, and a member of the American Public Health Association, and the American Association for the Study and Prevention of Infant Mortality, died at his home, suddenly, on August 18, aged 78 years.

Dr. William Jefferson Rowe of Buford, Ga., a graduate of the Medical College of Georgia, Augusta, in 1887, died, suddenly, at the home of his daughter in Flowery Branch, Ga., on August 12, aged 60 years.

Dr. Wooster Beach of Westchester, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1854, and a founder and first president of the Medico-Legal Society of New York, died at his home on August 6, aged 83 years.

Correspondence.

ADRENALIN IN POLIOMYELITIS.

To the Editor of the Medical Record:

Sir:—During the course of an epidemic of a disease the therapeusis of which is still unsettled, it would appear wise to report cases upon which the newer procedures were tried, that the apparent results of such procedures may stimulate or discourage further application.

The following three consecutive cases of infantile paralysis were seen in consultation. The treatment consisted of adrenalin administered intraspinally, after the withdrawal of cerebrospinal fluid and in one case by the use of immune serum in addition.

Case I.—Boy, 6 years (bulbar type); ill three days, temp. 105°, glands enlarged at angle of jaws; supposed to be suffering from nasopharyngitis. The symptoms were vomiting, inability to swallow, irregular respiration, involuntary evacuation of urine and feces. The child was in coma, there was retraction of head, the occiput resting upon spine, the sclera only showing; respiration of the Biot type, Macewen, Brudzinski and Kernig signs present. Knee jerks absent, temp. 105°, pulse 120, respiration varying from 1 to 30 per minute, condition growing constantly worse. Spinal puncture performed and 70 c.c. clear fluid withdrawn, 6 c.c. 1:1000 adrenalin administered by gravity, convulsive twitching followed procedure for several hours. Six hours later condition was no worse than when puncture was done; a second puncture was made, and was a dry tap, although repeated attempts were made to withdraw fluid; no adrenalin was administered at this time. The condition continued to improve. After 12 hours there was a short period of consciousness; the child was able to swallow teaspoonful doses of water; respiration was less irregular. Eighteen hours after the withdrawal of fluid and administration of adrenalin the child was conscious, rigidity was almost absent, he swallowed well, respiration was regular, temp. 99°, and except for weakness of all muscles the boy was apparently not very ill. Three weeks after onset he was entirely normal except for slight weakness in the lower extremities, which is growing less daily, and which does not interfere with walking.

Case II.—Boy, 4½ years (bulbar type); symptoms similar to those in Case I except that respiration was not so seriously affected. An intraspinal adrenalin injection was given 48 hours after onset of acute symptoms, and repeated four times. Immune serum was once administered intraspinally. Recovery from severe symptoms required 4 days. Two weeks later the boy was entirely normal except for slight weakness of the external recti muscles of both eyes.

Case III.—Boy, 2½ years (spinal type); paresthesia marked; ill 5 days with irregular temperature and symptoms. There was slight rigidity of the neck; Brudzinski and Kernig signs present, knee jerks absent. Paralysis of all extremities and muscles of chest; involuntary evacuation of urine and feces. Temp. 103°, pulse 130, respiration regular but difficult. Spinal puncture was performed 24 hours after acute symptoms appeared—60 c.c. clear fluid withdrawn, and adrenalin administered as above; this was repeated once. Temperature normal after 72 hours. Fourteen days after the first puncture there was complete restoration of the upper and left lower extremities, with partial restoration of the muscular activity of the right lower extremity.

The foregoing cases are briefly reported, not as showing results of treatment, but to place on record the experience with a procedure which is apparently harmless and full of promise. The only untoward result of this therapeutic measure was a rather severe urticaria appearing within twenty-four hours in Cases I and III.

In contrast with the results in the foregoing cases are five cases of this disease seen prior to them in which no intraspinal injections were given. Two died of respiratory paralysis. One had a spastic paraplegia of both lower extremities after six weeks. One has a flaccid paralysis of both lower extremities after eight weeks. One has made a complete recovery. It would appear that the ideal treatment in the light of present knowledge and experience consists of: (1) Early puncture and withdrawal of cerebrospinal fluid; (2) Administration of adrenalin intraspinally; (3) Followed immediately with the introduction of immune serum or, in its absence, normal serum.

Sidney V. Haas, M.D.

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OUR LONDON LETTER.

(From Our Regular Correspondent.)

HEART DISEASE IN THE EXPEDITIONARY FORCE IN FRANCE—VALVULAR CASES—DR. PARKINSON'S SUMMARY OF FORTY CASES OF DISORDERED ACTION OF THE HEART—"HEART STRAIN" AND "SOLDIER'S HEART."

London, August 5, 1916.

Dr. John Parkinson, temporary captain R. A. M. C., attached to the military hospital for heart cases, and the cardiac department of the London Hospital, has recorded the result of his inquiry into the conditions leading men on active service to report sick, with symptoms suggestive of heart disease. He based his inquiry on 90 cases passing through the casualty clearing station with the Expeditionary Force in France. Every patient sent to his wards from a field ambulance with a diagnosis of heart disease, from March, 1915, to January, 1916, is included in the inquiry without either selection or rejection, so that the series is consecutive. But the number seen gives no indication of the frequency of the cases or their proportion to the total sick. Absence of special means of investigation and the brief period of observation—usually 2 or 3 days—were disadvantages in the inquiry, but there was an advantage in that the men were seen very shortly after reporting sick. A detailed history of each patient was first obtained; notes on infections, recent or remote, followed by a statement of his capability of exertion at school and at work. The effects of training and campaigning were next noted and then the immediate cause for reporting sick. About an hour would be required to secure a satisfactory history, for the most part in the patient's own words, without leading questions. His general condition and temperament were first noted; then the position of the apex beat in the recumbent position, which served as some guide to the size of the heart; for its functional efficiency a fixed amount of exertion served as a test. In the 90 cases there were 22 in which other diseases were present. Of these 2 had acute and 3 chronic nephritis, 1 acute and 1 chronic bronchitis; one had enlarged thyroid and tachycardia; one had goiter without symptoms of thyroidism though complaining of a choking sensation when marching; three were for disordered heart action on account of syncope and 3 others for an unusual degree of sinus arrhythmia; the 7 others were considered examples of tuberculosis (pulmonary), arteriosclerosis, chronic alcoholism, immaturity, debility, epistaxis and lymphatic leukemia.

Among the 90 cases there was valvular disease in 28; 8 of these had mitral incompetence, 4 mitral stenosis, 8 aortic incompetence, 1 aortic stenosis, 2 acquired pulmonary stenosis (with rheumatic history, thrill over pulmonary area), 1 had aortic and

mitral incompetence and there were 2 patients with doubtful mitral stenosis. A case of thoracic aneurysm and one of dextrocardia are for convenience included in this series of 28.

In 16 cases there was a history of acute rheumatism; in 18 the chief symptom was shortness of breath; in 8 it was pain, but these had dyspnea as well. There was palpitation in half the cases; of 8 patients, 6 having aortic incompetence, complained of giddiness or faint feelings. Syncope had occurred in 1 case of aortic incompetence and in 1 of pulmonary stenosis. Great exhaustion on the march, with weakness of the legs on exertion, was complained of, in many cases before enlistment. A man of 40 had a two-and-fro (bellows) murmur without displacement of apex beat, and had served 16 months, including 6 at trench work; he had no symptoms and the incompetence was discovered at a chance examination.

The so-called soldiers' heart was present in 40 cases. These were men complaining of heart symptoms, especially breathlessness and precordial pain but in whom physical signs could not be found. In the army service they are classified as D. A. H. (disordered action of heart); in general medical literature they are often referred to as "soldier's heart." They are also at times spoken of as "irritable heart" and "heart strain," but the terms have little to recommend them. Captain Dr. Parkinson gives a careful summary of 40 cases, from which important conclusions can be deduced. Thus among soldiers in training or on active service a number come on the sick list for cardiac symptoms on exertion, but who have no physical signs of heart disease. They are the subjects of a cardiac disability which is manifested on the exertion required of a soldier, but this is not a specific disease and requires no such name as "soldiers' heart"; in fact it had in about half the cases been perceived before enlistment. The inefficiency may be a sequel of acute rheumatism, influenza or some other infection; so it may be due to myocardial changes due to age, especially in soldiers of 40 or more; or again to functional nervous disorder; or to limited cardiac efficiency, the patient having always been "short-winded"—maybe from an unrecognized infection in earlier years or defective physical training. A simple exertion test, as climbing a few steps, reproduces the symptoms and so gives information on the efficiency of the heart's function. Some degree of myocardial disease is present in numerous cases as seen in the persistence of the disability and the reaction to simple exertion tests. From this Dr. Parkinson concludes that the absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the army if, under training or on active service, he shows breathlessness and precordial pain whenever he undergoes exertion which is well borne by his fellows.

Gonorrhea in Women.—F. McCann states that when a man becomes infected with the gonococcus he soon becomes aware of its presence. A woman, accustomed to having a leucorrheal discharge of varying severity and various premenstrual and menstrual pains, may never be aware of the acute stage of a gonococcal infection. Moreover, a woman infected by a man with chronic gonorrhea usually has a subacute infection. Salpingitis, although occurring some weeks or even months after infection, may be met with quite early in the disease and cause symptoms suggesting an acute peritonitis.—*Practitioner.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 17, 1916.

1. Tubercular Infection in Infancy and Childhood. Vanderpoel Adriance.
2. Fractures of the Lower End of the Humerus. W. E. Ladd.
3. The Massachusetts Tuberculosis Dispensaries and Their Relation to the Practising Physician. John S. Hitchcock.
4. A Year's Work of a Local Tuberculosis Hospital. Albert C. Getchell.
5. A Suggestion as to the Prevention of Infantile Paralysis. W. Stewart Whittemore.
6. Preoperative Roentgenological Examination in Cancer of the Breast. John W. Lane.
7. Auricular Standstill: An Unusual Effect of Digitalis on the Heart, with Special Reference to the Electrocardiogram. Paul D. White.

2. Fractures of the Lower End of the Humerus.—W. E. Ladd presents a study of 45 cases from the Children's Hospital in which the records are complete, the skiagrams satisfactory, and end results have been secured. In general, the method of treatment followed had been reduction by manipulation only and immobilization in the position of acute flexion. In a small number open operation has been resorted to, or a special variation in the position of immobilization, as indicated by the direction of the displacement of the fragments. For restoration of function, massage and passive motion have not been employed, but active motion has been relied upon entirely. There were 25 cases of supracondylar fracture which gave a total of 84 per cent. perfect results, with a probability that 92 per cent. of the cases will be eventually perfect. All of these cases in which there was slight displacement or no displacement gave perfect results. For displacements which are irreducible operative reduction is practiced immediately after the injury before swellnig has taken place or a few days later when the swelling has had time to subside. In general the practice pursued was that of Ashurst and Treves and his colleagues. After a careful study of the work of Neuhof and Wolf, the author states that he does not believe that their conclusions are correctly drawn, nor that their results justify the adoption of early passive motion and massage as valuable treatment. The results of operative treatment in a few selected cases in their series to some extent justifies its employment. It is found that from three widely separated clinics, cases treated upon general lines of similarity have yielded approximately 90 per cent. of perfect results, and hence one is justified in saying that a fracture of the lower end of the humerus in a child treated properly should result in a perfect arm in nine cases out of ten and a useful arm in practically every case.

5. A Suggestion as to the Prevention of Infantile Paralysis.—W. Stewart Whittemore refers to the work of Hektoen and Rappaport, which shows that kaolin is effective in removing bacteria from the nose and throat. His personal experience with the use of this agent in the treatment of infections of the nose and throat during the past year has been very gratifying and he suggests that it may possibly be effective in preventing the infection of children and adults with infantile paralysis. Powdered kaolin should be inflated into the nose and throat every two hours during the day. He says that only by the use of kaolin in a large number of cases in which there has been exposure to possible infection with poliomyelitis can it be determined whether it is of value or not.

6. Preoperative Roentgenological Examination in Cancer of the Breast.—John W. Lane points out that early recurrences and early postoperative deaths in cancer of the breast are often due to the performance of an efficient operation upon badly selected and already hopeless cases and that such occurrences bring the

operation into disrepute. During the past year he has made it his custom to subject every case of cancer or suspected cancer of the breast to a very complete roentgenological examination. It has been possible by this means to demonstrate metastases in the mediastinum, in the femur, pelvis, spine, and humerus; but not as yet has he been able to demonstrate to his complete satisfaction a pleural dissemination. These cases were prevented from going to the operating table and were not subjected to needless surgery. The writer advocates a thorough roentgenological examination as a routine preoperative procedure in all cases of suspected cancer of the breast.

7. **Auricular Standstill: An Unusual Effect of Digitalis, with Especial Reference to the Electrocardiogram.**—Paul D. White reviews the usual ways in which digitalis may affect the human heart and electrocardiogram and calls attention to another effect which he has not seen described. That is the removal by digitalis of all evidence of auricular activity from the electrocardiogram and from the jugular pulse tracing. There is no evidence that the auricle is contracting at all. Against the possibility of an isoelectric P in Lead II is the absence of P in Leads I and III also, and the absence of *a* in the jugular pulse. Auricular fibrillation may be excluded by the entire absence of fibrillation, oscillations of the galvanometric string, and the perfectly regular ventricular rate. The atrioventricular node is probably giving rise to ventricular complexes, because their shape is that of normal complexes of supraventricular origin and they occur regularly. No deflections appear, suggesting that the atrioventricular node is also giving rise to auricular activity. In other words, there appears to be auricular standstill. Three cases have been found at the Massachusetts General Hospital in which this digitalis effect has been seen. All three showed definite evidence of auricular action in electrocardiogram and jugular pulse tracings after the effect of the digitalis intoxication had worn off; in all three the A-V conduction showed some delay during the recovery from the digitalis. In none of the three at the time of the disappearance of auricular activity was there any evidence of auricular fibrillation, ventricular escape, or complete atrioventricular rhythm.

New York Medical Journal.

August 19, 1916.

1. The Treatment of Acute Poliomyelitis. S. J. Meltzer.
2. Autotherapy and Poliomyelitis. Charles H. Duncan.
3. The Control of Epidemics. Jacolyn Manning.
4. An Evaluation of Paraphrenia. (To be concluded.) Edward A. Strecker.
5. A Study of Drug Action. Thomas J. Mays.
6. American Medicine of the Eighteenth Century. George Wythe Cook.
7. Radiotherapy in Chronic Arthritis. Ernest Zueblin.
8. Toluol. Leverett Dale Bristol.
9. Abnormal Labor. Solomon Wiener.

2. **Autotherapy in Poliomyelitis.**—Charles H. Duncan advises a trial of autotherapy in the treatment of poliomyelitis based on a personal experience with twelve cases in which this method of treatment seemed to influence the prognosis favorably. His suggestion is to withdraw a considerable amount of spinal fluid and inject a small portion of it into the muscles of the back. Autotherapy has proved effective in cerebrospinal meningitis and other toxic neuritides, and it is logical to conclude that it may be applicable to poliomyelitis. The writer also suggests that tests be made in treating tetanus and other toxic neuritides by the autotherapeutic method.

3. **The Control of Epidemics.**—Jacolyn Manning discusses the problem "What should be done in invasions like the present one of infantile paralysis?" and suggests that a competent pathologist and diagnostician should investigate the cause of death and the contributory cause of death in every case, and state these on the death certificate during the period of the plague. Where there is the slightest doubt of the cause of death a postmortem examination should be made of the central nervous system, brain, midbrain, and spinal cord, since this is the only way of determining with accuracy whether or not any person has been a victim of poliomyelitis. The list of diseases terminating in sudden death which may simulate poliomyelitis is quite extensive, including, in very young infants, gastroenteritis, bronchopneumonia, measles, and diphtheria; in adults, ptomaine poisoning, lockjaw, cerebral apoplexy, and heat stroke. A missed diagnosis and faulty death certificate in a fatal case of epidemic poliomyelitis endangers the community more than a frank case of paralysis. A point of value in handling an epidemic which kills by the thousands and cripples when it does not kill would be the interdiction of all public funerals in any city during the progress of an epidemic. There were 188 deaths of children under 5 years of age from diarrheal disease reported for the week ending August 5, 1916, in New York City. It would be interesting and might prove instructive to hold postmortem examinations for one week, with microscopic examinations in all fatal cases in which the death certificate stated gastroenteritis to be the cause of death.

5. **A Study of Drug Action.**—Thomas J. Mays states that sound is a force like heat, light, and electricity, and possesses the fundamental physical properties of motion, action, and reaction with which other physical forces are endowed and is amenable to the same therapeutic laws which obtain among the substances that he has considered in previous papers on drug action. In other words, he considers music a force, the elective action of which is confined to the field of the human emotions, and that it exerts a stimulant as well as a depressant action. He points out how these properties may be made available in the field of therapeutics. Generally speaking, the stimulant action of music lies within the bounds of the various major keys, which may be said to move in harmony with the various bodily forces; its depressant action, while not having an intense antagonism to the normal movement of the bodily forces, nevertheless sets up a sufficient interference with the latter to occasion a state of mental despondency. Major music is a tonic to the emotions which may be compared to a stimulant dose of strychnine or quinine, while minor music depresses emotional activity in a manner comparable to bromide or a sleeping potion. The apparent objections to this theory are discussed and the opinion expressed that music as an agent in the treatment of consumption has probably a stronger claim on the scientific attention of the medical profession than many of the remedies that are in use at the present time. Keeping in mind the undercurrent of tribulation and oppression that is nearly always present in the minds of those suffering from consumption, it would seem probable that by far the larger number of cases would receive benefit from various forms of major music.

7. **Radiotherapy in Chronic Arthritis.**—Ernest Zueblin reports a number of cases in which the ordinary antirheumatic remedies did not produce the desired therapeutic effects and in which radioactive substances, such as mesothorium, locally applied to the diseased joints produced a remarkable change in the subjective and objective symptoms of acute and chronic deforming arthritis. Not only is pain relieved by the local application of the radiating energy, but also the infiltration of the articular and periarticular structures becomes less noticeable, and a reduction of the synovial fluid and a gain in the active and passive motility are no-

ticed. The danger of ankylosis resulting from the immobility of the joints engendered by the pain can and should be overcome by radioactive treatment whenever the ordinary internal medication proves unsatisfactory. Between radium, mesothorium, and magnesium sulphate there seems to exist a physical similarity which appears to be one of quantity rather than quality, and which may help to explain the similar therapeutic results obtained by the latter, though the rapid and more lasting effect must be expected from the more radioactive and fresh preparations.

8. **Toluol.**—Leverett Dale Bristol discusses the value of heat and various chemicals in the sterilization of vaccines made from nonsporogenous Gram negative bacteria, and emphasizes the fact that if enzymes and toxins are to retain their full strength to stimulate the formation of antienzymes and antitoxins the heat must be used very carefully or not at all in killing bacteria for vaccines. He suggests the following method of sterilizing vaccines by toluol: When a sufficient growth of a pure culture of bacteria has taken place upon the slant surface of plain agar medium, the toluol is run into the tube so that the entire surface of the medium containing the bacteria is covered. As a rule most of the Gram negative nonsporogenous bacteria will be killed in twenty-four hours. The toluol is then poured off to be used on other cultures, and the agar slants containing the killed cultures are replaced in the incubator for a short time to complete the evaporation of the toluol. Subcultures are then made to control the sterility of the vaccines, after which sterile salt solution is added and the dead culture carefully scraped off the medium into suspension in salt solution. If the toluol has not had too long an influence the bacteria retain their size, shape, and staining qualities.

Journal of the American Medical Association.

August 19, 1916.

1. The Teaching of Dermatology. Howard Morrow
2. Some Observations on the Teaching of Surgery. John Allan Wyeth.
3. Hospital Internship. J. M. Baldy
4. Thoracic Diseases: The Status of Surgical. Samuel Robinson.
5. The Use of Chloroform in the First Stages of Labor. Isadore Hill.
6. The Influence of Diet on the Development and Health of the Teeth. Jay I. Durand.
7. A Plea for the Prevention of Deformities in the Healing of Burns. Charles A. Parker.
8. Sheet Rubber Superior to Gauze Sponges in Abdominal Operations. John W. Keefe.
9. Localized Osteospondylitis. Willis C. Campbell.
10. The Value of the Wassermann Test in Pregnancy. Frederick Howard Falls and Josiah J. Moore.
11. A Study of an Epidemic of Fourteen Cases of Trichinosis with Cures by Serum Therapy: Preliminary Communication. Benjamin F. Salzer.
12. Carbon Monoxide Poisoning. Yandell Henderson.
13. A Note on the Serum Treatment of Poliomyelitis (Infantile Paralysis). Simon Flexner.

1. **The Teaching of Dermatology.**—Howard Morrow comments on the tendency in a number of medical schools to place dermatology in the elective group of the curriculum and in others the tendency to decrease the number of required hours, thus conforming too closely to the minimum amount of time allotted by the schedule of the Association of American Medical Colleges, namely, forty-five hours. He says that if the student intends to become a general practitioner, to confine his interest to special branches, or to enter public health work, a course in dermatology and syphilography extending over at least sixty hours is absolutely essential. It is certainly unwise to graduate a student who cannot differentiate syphilitic lesions from those of a similar type, and who cannot recognize the mild form of variola and other exanthems. General practitioners should be able to recognize and treat ordinary impetigo and typical scabies. In the teaching of dermatology, lantern slides, colored photographs microscopy, and clinical demonstrations should be utilized. The advantage of having a serologic department connected with the department of dermatology cannot be overestimated. Modern investigation and research in dermatology indicate that there are many dermatoses associated with internal pathological conditions. This fact emphasizes the importance of treating patients with obscure cutaneous eruptions in a hospital where they can be studied from all phases by many physicians and observed by advanced students. By this method, cases in which the etiology cannot be ascertained will have the advantage of study by the dermatologist, pathologist, chemist, and the physician doing internal medicine, and in this collaboration rests the future in the study and development and teaching of dermatology.

2. **Some Observations on the Teaching of Surgery.**—John Allan Wyeth. (See MEDICAL RECORD, June 17, 1916, page 1112.)

4. **Thoracic Diseases.**—Samuel Robinson. (See MEDICAL RECORD, July 1, 1916, page 32.)

5. **The Use of Chloroform in the First Stages of Labor.**—Isadore Hill. (See MEDICAL RECORD, July 8, 1916, page 85.)

6. **The Influence of Diet in the Development and Health of the Teeth.**—Jay I. Durand. (See MEDICAL RECORD, June 24, 1916, page 1163.)

7. **A Plea for the Prevention of Deformities in the Healing of Burns.** — Charles A. Parker recommends a treatment for burns of the so-called third degree and holds that however extensive such burns may be, so long as they are compatible with life, healing may and should be obtained without deformity and with good function. The treatment consists in the application of movable plaster casts in the early stages of healing, before contractures occur, over the proper dressing of the burn. The elbow, wrist, and fingers should be kept extended. The hip and knee should be extended with the foot at right angles to the axis of the limb, and the toes extended. For burns of the axillary region the arm should be maintained in an abducted position. In burns of the front and sides of the neck the chin must be kept high. The cast can be removed daily, the wounds dressed, and the cast immediately replaced during the whole process of healing. In dressing the wound after all sloughs have separated, ribbons of adhesive plaster are applied directly on the wound and extending some distance beyond the margins for attachment to the normal skin. The ribbons are usually placed at the margins of the burned area first and then laid on in parallel strips slightly overlapping each other until the whole region is covered. The adhesive plaster is changed two or three times a week, or whenever it becomes loosened from the healthy skin. Owing to its permeability it furnishes an ideal condition for healing and is much more efficient than a scab over large areas. Over the adhesive plaster a dressing of dry gauze is placed, which is usually changed daily. The changing of both the adhesive plaster and the gauze is painless.

8. **Sheet Rubber Superior to Gauze Sponges in Abdominal Operations.** — John W. Keefe. (See MEDICAL RECORD, July 8, 1916, page 86.)

9. **Localized Osteospondylitis.** — Willis C. Campbell reports four cases in which certain local changes were found in the vertebra which appeared to be analogous to nonarticular osteoarthritis and for which he has employed the term osteospondylitis. This process, of which he finds no accurate description in the literature, is decidedly local and seems to be an affection of one intervertebral disk. The roentgenogram shows crescent-shaped lamellæ of bone which are thrown from the

body of one vertebra to its adjacent fellow and may completely encapsulate the disk, producing solid external fixation of two vertebræ or only a part of the circumference may be involved. In some, the bony ridge may be incomplete and connected by only one extremity to the vertebral body, and at times there may be no apparent union of either extremity to the bodies. Similar anomalies may be seen in other spinal affections, especially spondylitis deformans, but always multiple and often involving the entire spine. In all four of the cases reported the affection was in the lumbar region. The etiology is probably the same as in monoarticular osteoarthritis. Three of the cases were relieved by simple orthopedic procedures, as no focal infections could be found. These cases are reported because the differential diagnosis of spinal lesions by the roentgenogram is very meagerly considered in the literature, few text-books mentioning local manifestations aside from those due to traumatism or tuberculosis.

10. **The Value of the Wassermann Test in Pregnancy.**—Frederick Howard Falls and Josiah J. Moore. (See MEDICAL RECORD, June 17, 1916, page 1114.)

11. **A Study of an Epidemic of Fourteen Cases of Trichinosis with Cures by Serum Therapy.**—Benjamin F. Salzer makes this preliminary communication, based on a study of 14 cases of trichinosis, in which the patients were admitted to the wards of St. Joseph's Hospital, Far Rockaway, N. Y. In the course of these studies he has confirmed the following findings of others: 1. The Kernig reaction was present in all the cases. 2. Edema of the face occurred in all the cases. 3. Edema of the lower extremities occurred in six cases. 4. The reflexes in the lower extremities were abolished in all the cases and are still absent now (six months having elapsed since the cases first came under observation). 5. Trichinæ were found in the blood in nine cases of the fourteen. 6. Trichinæ were readily found in the cerebrospinal fluid in eight of the fourteen cases. In addition to these observations he has found that the diazo reaction was in direct proportion to the degree of eosinophilia. The leucocytosis diminished as the eosinophilia increased. The blood coagulation time is markedly prolonged in trichinosis. In one case of trichinosis in a child three years of age trichinæ were still found in the cerebrospinal fluid three months after the clinical recovery. Trichinæ were not found in the urine in any case. They were not found in the uterus but were abundantly present in the placenta. They were present in large numbers in the milk of a nursing woman and were found in the piece of mammary gland excised. In two cases the duodenal tube was passed under control of the fluoroscope; in one of these, trichinæ were abundantly found. This patient was now suffering from cholecystitis. The feces were clay colored throughout the disease in every case; this was probably due to the reduction of bilirubin by living trichinæ. Trichinæ were present in the stools of all the cases throughout the disease and in three cases in which studies were carried on after recovery. The author relates a number of observations made on animals and states that the use of serum from human patients who recovered removed the eosinophilia persisting after recovery in man or animals within forty-eight hours. The injection of normal serum had no therapeutic value in trichinosis in man or animals; the same is true of salvarsanized serum and salt solution. In animals the injection of convalescent serum gives an almost complete prophylactic result. In two cases of trichinosis in the very active stage of the disease the use of immune serum proved to be of remarkable curative value. In twenty-four rabbits suffering from the disease, experimentally produced, the immune serum had a curative effect within twenty-four hours.

13. **A Note on the Serum Treatment of Poliomyelitis.**—Simon Flexner reviews the experiments on monkeys which have formed the basis for the serum treatment of poliomyelitis, refers to Netter's results with the serum treatment in a series of 35 cases of the disease, and says the serum injections are usually given subdurally as early after the appearance and recognition of the symptoms of poliomyelitis as possible. The dose of the serum must be sterile, not necessarily activated, and should be determined by the age of the patient and the amount of serum available. Probably doses ranging from 5 to 20 c.c. will be suitable, the injections to be repeated several times at twenty-four hour intervals, according to clinical conditions and indications. Since the immune substances have been found to persist in the blood for many years, it is probable that persons who have passed through an attack of poliomyelitis many years earlier may be utilized as sources of the serum; reasoning from analogy it would probably be advantageous to prefer persons whose attack was less remote, so as to insure as high concentration of the immune bodies as possible. The conditions surrounding the injection of the serum into the meninges are identical with those observed in the analogous case of epidemic meningitis. The effects of the immune serum should be sought in the prevention or minimization of the paralysis when employed in the preparalytic stages, and the arrest of its extension when used in progressing paralytic conditions.

The Lancet.

July 29, 1916.

1. Observations on Fifty Laparotomies Performed for Gunshot Wounds of the Abdomen. G. H. Stevenson and C. Mackenzie.
2. On the Advantages of Using a Broth Containing a Trypsin in Making Blood Cultures. S. R. Douglas and L. Colebrook.
3. Treatment of Carriers of Amebic Dysentery. Note on the Use of the Double Iodide of Emetine and Bismuth. H. H. Dale.
4. A Note on the Necessity for Prolonged Treatment in Cases of Infantile Paralysis. Francis Hernaman-Johnson.
5. Six Cases of Wounds of the Buttock with Perforation of the Intestine. R. B. Blair.
6. A Serious Defect in Some of the Registered Hospitals for the Insane. Henry Rayner.

1. **Observations on Fifty Laparotomies Performed for Gunshot Wounds of the Abdomen.**—G. H. Stevenson and C. Mackenzie present a synopsis of these 50 cases, of which 17 recovered and 33 died. The cause of death in the fatal cases was as follows: general peritonitis, 10 cases; hemorrhage and shock, 19; lung conditions, 2 cases, and secondary hemorrhage from the kidney in one case and sloughing of the gut in one case. Since the beginning of the war the opinion with reference to the expectant treatment of abdominal wounds has undergone a change and completely altered the outlook in such cases. Patients are operated on as quickly as possible. It is wrong to wait, no matter how bad the patient may appear, as so often in such cases hemorrhage and infection are progressing. Even though no pulse can be felt, an operation is not thereby contraindicated, as it gives the last possible chance of recovery. Many of the patients in this series were operated on within five or six hours of their being wounded, though many others did not reach the hospital for twelve to twenty-four hours. Regarding the question of whether a man will stand an operation or not, they took the view that, if intraperitoneal perforation of the gut is present he will almost certainly die if not operated upon, and that it is right to give him the chance, even though it be only one in a thousand. The technique used in these operations differs little from

that in the similar operations of civil practice, end to end anastomosis being the usual method when resection is necessary, except when several feet of the gut have to be removed, when the lateral anastomosis is employed, as this is undoubtedly stronger. Where suture is possible, suture in the transverse axis is preferable to the longitudinal in lesions of the small intestine. The writers have found pituitrin a most valuable drug in the after-treatment of abdominal cases. In a recent article it is stated that it is not so usual in gunshot wounds of the bowel for the gut to be completely divided; in the present series this is a comparatively common occurrence.

2. On the Advantage of Using Broth Containing Trypsin in Making Blood Cultures.—S. R. Douglas and L. Colebrook have confirmed the findings of Wright and his fellow workers, which showed that when, by mixture with trypsin, the antitryptic power of the blood is neutralized, the blood loses its power of clotting and also its bactericidal properties. They state that these are precisely the changes which it is desirable to bring about when attempting to cultivate pathogenic microorganisms from the circulating blood. A series of blood cultures performed in duplicate with trypsin broth and simple broth has shown that the employment of trypsin in that procedure is clearly advantageous, the organisms having been in some cases recovered only in the trypsin tubes, while in other cases they were recovered earlier and more frequently in these than in the control tubes. It is probable that this method favors the cultivation of any microbe that may be present in the blood, and not especially one particular organism or group of organisms, as is the case with bile media; staphylococci, streptococci, paratyphoid bacilli, and anthrax bacilli, were readily isolated from blood by the use of trypsin broth. In order to be sure of neutralizing the antitryptic power of the inoculated blood it is recommended to employ broth containing not less than 5 per cent. of trypsin solution (compound solution of trypsin, Allen and Hanbury's) and to add not more than 1 c.c. of blood to each 5 c.c. tube of such broth. When blood has to be sent by post to a laboratory, undiluted trypsin solution may be added to the specimen of blood immediately on its withdrawal from the vein, in the proportion of 1 of trypsin to 4 of blood.

3. Treatment of Carriers of Amebic Dysentery.—H. H. Dale states that the problem in the treatment of entamebiasis in England during the past year has been that of freeing the chronic "carriers" from their infection. While experience in Egypt has led to the conclusion that a full course of 10 or 12 grains of emetine hydrochloride, given hypodermically, will practically always eradicate the infection, experience has shown that there is a not inconsiderable proportion of cases in which such a course of emetine treatment has led only to a temporary absence of cysts from the feces. Ten cases regarded as hopeless when treated by this method have been given a course of treatment with double iodide of emetine and bismuth with the result that six of these patients have shown six weeks' absence of cysts with daily examinations. Thirty to 36 grains of the double iodide of emetine and bismuth, equivalent to about 10 to 12 grains of emetine hydrochloride, has been regarded as a full course, and the daily dose has varied from 2 to 4 grains, given in capsules. The frequency of vomiting under this treatment is in no way comparable to that seen with the ipecacuanha treatment, and there is no need to adopt the precautionary measures to avoid vomiting which the latter treatment entails.

4. A Note on the Necessity for Prolonged Treatment in Cases of Infantile Paralysis.—Francis Hernaman-Johnson believes that much of our treatment of the weakness and deformity which may result from an attack of infantile paralysis fails owing to lack of proper following-up. He reports an illustrative case that showed no improvement for over two years and then under careful orthopedic treatment and supervision a very marked improvement ensued. He states that the therapeutic lessons which have been learned in connection with infantile paralysis are of special interest because they are equally applicable in dealing with war injuries to nerves and muscles. The following three lessons should always be kept in mind: 1. A muscle which is chronically overstretched cannot recover. It must be relaxed by means of a suitable splint. This principle was insisted on by Robert Jones many years ago, and its importance cannot be over-emphasized. 2. When such a muscle responds moderately well to faradism—or, in more modern terms, to the small or medium capacities of the Lewis Jones instrument—its recovery will be greatly hastened (and in some cases even determined) by daily rhythmical electrical stimulation. The relaxed position must, however, be maintained throughout. 3. Exercise, whether voluntary or electrically provoked, must never be carried to the point of fatigue. The contraction of a muscle should be not less vigorous—with the same stimulus—at the end of a sitting than at its commencement. It is better that recovery should be delayed by over-caution than that it should be made impossible by excess of zeal.

British Medical Journal.

July 29, 1916.

1. Two Hundred Consecutive Hysterectomies for Fibroids Attended with Recovery. John Bland-Sutton.
2. Some Notes on Trench Fever. T. Stretthill Wright.
3. Pathogenicity of Giardia (Lamblia) Intestinalis to Men and to Experimental Animals. H. B. Fantham and Annie Porter.
4. Bacillary Dysentery (Shiga) Contracted in England. P. L. Sutherland.
5. On the Curve of the Epidemic. (Supplementary Note.) John Brownlee.
6. On the Importance of Technical Details in the Preparation of a Transport Blood-Agar for the Cultivation of the Meningococcus. Dorothy Jordan Lloyd.
7. The Duration of Bilharziosis in South Africa. F. G. Cawston.

1. **Two Hundred Consecutive Hysterectomies for Fibroids Attended with Recovery.**—John Bland-Sutton has removed the uterus for fibroids in more than 2000 women. In the Middlesex Hospital, in 1892, three women had the uterus removed for troublesome fibroids; two died in consequence of the operation. In 1912, there were seventy-one abdominal hysterectomies performed in the hospital and all recovered, showing a great improvement in twenty years. Of the last 200 cases of hysterectomy for this disease that the writer has performed in this hospital all recovered. Among these 200 hysterectomies 188 were subtotal. During the period covered by these 200 cases hysterectomy has been performed in the writer's ward for adenomyoma, fibrosis uteri, cancer, septic infection, and for ovarian fibroids three times, and also four abdominal myectomies. All the patients recovered. These results have been obtained with a minimum use of antiseptics. Women with uterine fibroids who show signs of diabetes, exophthalmic goitre, cardiac disease, arterial sclerosis, and albuminuria are rarely submitted to operation. After describing the different varieties of fibroids the author ventures the following aphorisms: There are two things disquieting in diagnosis: 1. To distinguish between solid ovarian tumors and large subserous fibroids. 2. And between tubal swelling and uterine fibroids. Three foolish things are: 3. To give opinions on pelvic swellings without making a vaginal examination. 4. Or on hypogastric swellings without passing a catheter. 5. To remove fibroids without ex-

amining the woman's urine for sugar until she is comatose two or three days after the operation. Four things useful to know: 6. When a barren woman between 35 and 45 has retention of urine, it is almost certain that she has a fibroid in her womb. 7. A fibroid that suddenly becomes painful during pregnancy is probably in a state of red degeneration. The clinical signs simulate tubal pregnancy, axial rotation of an ovarian tumor, and acute infection of the appendix. 8. Errors in the differential diagnosis of fibroids and pregnancy are usually made before the beating of the fetal heart is audible. 9. A cancerous mass in the pelvic colon, in contact with the uterus, imitates the signs of a subserous fibroid. Four things that are wise: 10. When in doubt whether a big uterus in a young woman contains a child or a fibroid, wait for a month and re-examine the patient. 11. To remember that ovarian tumors give much trouble to pregnant and lying-in women, but fibroids are more deadly, for they are liable to become septic. 12. After the removal of a fibroid in the procreative period of life a woman is more liable to grow more fibroids than to conceive successfully. 13. To remember that uterine bleeding after the menopause, in a barren woman with a fibroid, often signifies the existence of cancer within the uterus.

2. **Some Notes on Trench Fever.**—T. Strethill Wright relates that among a large number of cases that came to them from the front there were thirty cases of a new type. They were characterized by a peculiar temperature chart, which showed a series of "spikes" occurring at more or less regular intervals, and separated by afebrile periods. The onset was generally sudden, the majority of the cases showing an initial period of pyrexia of two to three days, severe headache, and pain in the legs and small of the back. The pain so far as could be determined was invariably muscular. During the febrile paroxysms the other symptoms were always worse. The fever was accompanied by loss of appetite and coated tongue. Sweating was a common accompaniment of the sharp falls in temperature. The only other common symptoms was a tendency to constipation. Attempts to discover an organism to which the infection may be attributed have not as yet been rewarded with success. The examinations of the blood, feces, and urine, in a large number of cases were all negative as to evidence of typhoid or paratyphoid infection. The evidence shows that these were not atypical cases of enteric, but genuine cases of trench fever, and it may be definitely stated that the disease has every appearance of being a distinct clinical entity.

3. **The Pathogenicity of Giardia (Lamblia) Intestinalis to Men and to Experimental Animals.**—H. B. Fantham and Annie Porter present their personal evidence based on their observations of pure cases of lambliasis in man and of some experiments with human Lamblia on animals. They state that in both human and animal lambliasis stools, as well as at post-mortem examinations, erosion, and distortion of the intestinal epithelial cells occurred, owing to direct suctorial action of the flagellate Lamblia. Giardia (Lamblia) intestinalis is pathogenic to man, and is capable of producing diarrhea, which may be persistent or recurrent. The virulence of the parasite varies, and lambliasis occurs in tropical and non-tropical countries. The Lamblia cysts can remain infective for some time. Lambliasis occurs in rodents, especially rates and mice, and can be of human origin. Lambliasis may also be produced in cats. It is possible for such animals to serve as reservoirs of lambliasis, and by contaminating the food of man by their excrement to propagate lambliasis. Sufficient atttention has not been given to this method of infection in the trenches in the fighting area.

7. **The Duration of Bilharziosis in South Africa.**—F. G. Cawston says that, judging from the number of men who were infected with bilharziosis during the South African war and the number of these who are still receiving compensation from the army authorities, a study of the duration of the South African form of this infection is of great importance. He finds that the vast majority of persons in Natal who suffered from the affection some twenty or thirty years ago have by this time entirely grown out of the symptoms, and in a large number of these microscopic examination of the urine shows no evidence of the past infection. On these grounds a life insurance company can be recommended to accept an otherwise suitable applicant at the usual rates, provided the urine has shown no sign of blood or mucus for one year and has not contained any of the eggs for six months, so far as can be judged from occasional microscopic examinations. A number of those, however, who contracted the disease twenty or thirty years ago have suffered continually from its symptoms ever since, though they may not have been sufficiently severe to require continuous medical treatment. Several cases in which the disease has persisted are cited which lead to the conclusion that even if some of the remedies employed are effective in destroying the parasites in the blood stream and in diminishing the hematuria, the escape of the spine-pointed eggs which continues is too frequently associated with bacilluria and damage to the bladder wall to enable one to pronounce such a case as cured, even though it is exceptional to hear of cases which have died or whose lives have been shortened by bilharziosis.

La Presse Médicale.

July 24, 1916.

Differential Diagnosis Between Pulmonary Tuberculosis and Chronic Affections of the Nasal Fossæ.—Rist discusses protracted cough and other symptoms of intranasal origin which simulate tuberculosis of the lungs despite inability to find the bacillus and perfectly clear *x*-ray shadows. These patients may or may not present stethoscopic alterations in the thorax. It is not enough to tell them they are not tuberculous; some explanation must be found for the cough. The cardiovascular apparatus and kidneys should be examined. Mitral stenosis has simulated phthisis, by reason of associated cough and hemoptysis. Another condition which sometimes simulates tuberculosis is gastroptosis with gastric atony. These subjects emaciate and often cough after meals. The old rule holds good that whenever you cannot make a diagnosis, suspect tuberculosis. To exclude this gastric affection an *x*-ray following a bismuth meal is sufficient. Abortive Graves's disease is a third affection which can simulate consumption, especially if the thyroid and eyeball are not prominent. However, negative sputum and *x*-ray finds readily exclude tuberculosis. But there are numerous suspects which have none of the preceding affections, especially among the troops. By the way, it is singular that in the routine examination for suspected tuberculosis, the nasal passages are seldom included. This is a great error when we consider the number and variety of lesions which are of common occurrence in the latter, and the symptoms to which they give rise, including cough and hemoptysis. It is true that subjects with narrow fossæ, spurs, etc., soon learn to adapt themselves to the disturbed respiration. The author, however, knows of a rhinologist who was believed to be in consumption who had nothing worse than chronic purulent rhinitis. Patients of this class take cold

frequently, and every morning must clear the upper respiratory tract of tenacious, often bloody mucopus which is often present in large quantities. Every Spring their conditions seem aggravated and they believe themselves affected with some serious intrathoracic infection. Other patients have atrophic rhinitis and rejoice in dry, clear passages. They "never need handkerchiefs." Yet these subjects are mouth breathers, because one or both nostrils is obstructed. All such subjects may often be recognized at a glance by the large, thin, curved nose, sometimes deflected to one side, which suggests unerringly congenital narrowness of the nasal passages. The contour of the nostrils also readily indicates the same condition. A thick root of the nose suggests hypertrophy of the middle turbinals. When these subjects speak the voice also betrays them (rhinolalia of a special type). As is well known subjects with chronic rhinitis are also hoarse. The cough may be dry or moist, and aside from sputum which is merely streaked with blood, we may see at times free blood from rupture of varicosities in the throat. Some of these patients also suffer with bronchitis with slight temperature rise which, of course, points all the more to phthisis—even to the stage of softening. How is this pseudotuberculosis produced? We have plainly to do with a nasal insufficiency with "false passage" (mouth breathing). As is well known certain authors now contend that mouth breathing by causing slight flatness at the apices from lack of inflation is the most puissant cause of clinical pseudotuberculosis in its initial stage. Lemoine holds this view in moderation, while Krönig pushes it to extremes in speaking of a sclerosing atelectasis. The author describes at great length his views of spreading infection from some focus in the nose, which slowly involves some of the sinuses, cause polypi, tonsillitis, the "closed follicles" of the pharynx (which are mistakenly cauterized by rhinologists), chronic catarrhal laryngitis, etc. In other words, a spreading infection is fastened upon a noninfectious condition—which is simply one of malformation. The original nasal insufficiency is of course greatly aggravated. A bronchitis represents a downward extension of the process. As a matter of fact but little bronchitis is primary. True primary bronchitis is simply essential asthma. To combat the entire chronic infection we must begin at the parent spot—the septal spur, hypertrophied turbinate, the chronic sinusitis. The result will often be surprising. The "tuberculous" subject is suddenly cured.

La Presse Médicale.

August 3, 1916.

Glycuronuria and Its Variations.—Gautier refers to the study of Roger and Chiray of the presence of glycuronic acid in the urine. As a product of the hepatic cell, it was investigated in connection with diabetes, hepatic cirhosis and retention icterus; also in pneumonia and cancer. The author has gone over the ground, and his results tend to confirm the claims of Roger. The test used by Grimbert and Bermier is preferred to that employed by Roger. The urine is treated mercuric acetate and the filtrate heated with naphthoresorcin and chlorhydric acid. After cooling it is shaken up with an equal volume of ether. If the result is positive a blue violet color appears. If the result is negative there is either no color change or one of yellowish brown. According to Roger, the human urine always contains a little glycurnic acid. Its percentage varies with the diet. It is relatively large in meat eaters and small in those on a vegetable or milk regimen, and after fasting. Ingestion of a little camphor will in such cases cause the percentage to rise. In hepatic insufficiency the acid disappears wholly from the urine when the prognosis is fatal, and is a good measure of hepatic efficiency, the amount dwindling with the degree of insufficiency. If there is some doubt as to the result, Roger uses an alimentary reinforcement in giving 1 gram of camphor. If the result is then negative, the liver is hopelessly compromised. The author has tested 200 subjects, including the sound and diseased. Camphor will not increase the amount present in the urine of the healthy (the tested subject must be on a standard diet). Given to those with hepatic disease variable results follow. In diabetes the result is always negative. In hepatic cirhose it may at first promote the elimination of the acid, but not in the advanced case. Roger found the maximum per cent. of acid in a case of acute lysol poisoning. On the next day no acid appeared in the urine, but this default lasted but a short time. This overproduction of acid in the presence of camphor and lysol suggests that an antitoxic activity is involved, either by combination or elimination. In absence of acid in the urine of diabetics the sugar seems to be in no wise concerned. In Laennec's cirhosis of the liver the acid which nearly vanishes in the presence of ascites increases in per cent. after tapping. In cardiac liver results were inconsistent, but the presence or absence of the acid has a marked prognostic value. In cancer of the liver suppression of acid in the urine means an early death, according to Roger, who indeed here includes cancer in all localities. The author's results are quite opposed to this teaching. In conclusion he expresses the opinion that the research into glycuronuria will yield most valuable results in diagnosis and prognosis.

La Bulletin Médical.

August 5, 1916.

Virilism and Inversion of Sexual Characters.—Blanchard considers this subject from the special viewpoint of the activities of the interstitial tissues of the generative glands. By virilism he refers of course to acquired made characteristics in the female. Hippocrates relates two cases of virilistic transformation in women named Phoetusa and Namyxia. Ambroise Paré described certain degenerate women whom he termed hommasses (viragos) who, in losing their feminine somatic characteristics, assumed those of men, becoming also robust and bold. He ascribed these changes to suppression of the menses. Apert was the first to advance a scientific explanation of acquired virilism, viz.: the presence of lesions of the suprarenal glands. It was not until later that changes in the sexual glands were held to be responsible, although these changes were alleged to be secondary to those in the suprarenals. Tuffier's celebrated case of suprarenal virilism reported in 1914 left no doubt as to the nature of at least one form of virilism. The author, who is a zöologist, states that analogous behavior is seen in certain birds. As far back as John Hunter attention was attracted to the assumption by elderly female birds of male plumage. Hunter regarded the phenomenon as teratological. The Germans have described such behavior under the term virilescence. The pheasant seems especially disposed to this affection, the transformation, however, being incomplete. The altered hens do not cease to lay. The theory advanced of ovarian origin seems to have little formation in fact. This virilescence has been noted in at least twenty-six species of bird belonging to four orders. All barnyard fowls seem to be included. Mammals are also subject to virilistic change, but the subject has received but scant attention. As in birds the changes are restricted to the tegumentary structures.

Insurance Medicine.

THE FUTURE OF INSURANCE MEDICINE.

In the issue of the Medical Record for August 12 there is a brief but very interesting article by H. E. MacDonald on the probable future evolution of insurance medicine. He shows very clearly that those who need the insurance most, those who are physically under par, are the very ones who find insurance hardest to get. The perfectly well find it easy to obtain but do not need it so much and often do not want it at all. He goes on to predict that in the future the insurance companies will accept all or nearly all risks and will base the rates in the individual case upon the prognosis offered by the examining physician. He continues: "Suppose an insurance company decide to conduct their business in this way. They will hold their examination in prognosis after the graduation of a class in a medical college. Those who pass will be appointed examiners whose duty it will be to examine insurance prospects *for a small fee or nothing* (italics ours). In doing this they will immediately have a practice, unremunerative it is true, but it will grow into a paying practice which will be along the line of preventive medicine, which will be the medicine of the future and which will be ushered in immediately by this plan of making life-insurance examinations."

It is in this part of his article that we wish to register our objection to Dr. MacDonald's plan. One of the faulty points of the insurance scheme as it is carried out at the present time is the inadequate fee which is paid, in certain sections and by certain companies, for examinations. There is nothing more true than the old saying that we get what we pay for and no more. The examination is only too often conducted in a hasty and inadequate manner so that it is the belief of many men in insurance medicine that they would do as well without physicians as with them. An experienced man, a good judge of his fellow men, and a keen observer would be able probably to pass the applicants at a glance with as good results as are obtained by the young doctor who does two or three hundred examinations a month at a dollar a head and in the interval attempts to build up his practice so that he may be able to quit the insurance business which he considers pot-boiling and of a deadly monotony. It is very generally admitted that accurate prognosis requires much more experience and keen observation than does the average diagnosis and yet it is proposed that this service be carried on by very recent graduates "for a small fee or nothing." The lure held out that "it will grow into a paying practice" is liable to prove a disappointment to those who try it. Most applicants who are already ill will have their own physicians and the young examiner will find that what little income he may be able to obtain will be eaten up in carfares while getting about to do his free examinations. It is a notorious fact that of all men, physicians do the greatest amount of work for nothing and, in consequence, their good nature is abused to a shameful degree. Let us register an earnest protest against any movement which aims to increase the amount of free work which is to be contributed by our ill-treated profession. We are happy to give of our time and labor to benefit our fellow man so far as we are able, but in return for that the least which we can expect is a living wage and such consideration as will enable us to maintain our self-respect.

Diseases of the Lungs, Liver, Pancreas, and Kidneys in Relation to Obesity.—Dr. F. Parkes Webber, in a paper read before the Assurance Medical Society in London, concerning diseases in relation to obesity, said that emphysema of the lungs with progressive dilatation of the right side of the heart and other results might be at first masked by obesity. Of great importance was the auscultation of the infrascapular regions for the more or less permanent crepitation which showed the presence of chronic catarrh or chronic edema of the base of one or both lungs. Pulmonary tuberculosis was, of course, generally associated with underweight rather than overweight, but there were exceptions, and old quiescent or obsolete pulmonary tuberculosis might, partly as a result of methods of treatment, occasionally be associated with a plethoric type of corpulence. It was a well-known trusim to say that the detection of cholelithiasis or nephrolithiasis might be rendered more difficult by the presence of obesity. Cholelithiasis was acknowledged to be relatively frequent among fat persons, rather more so in women than in men. Obesity might sometimes draw the examiner's attention away, and so in a sense, mask the presence of chronic nephritis, especially contracted granular kidneys, notably so if the urine only intermittently contained albumin, and even then in mere traces. Examination of the centrifuge sediment of the urine for tube-casts might be of some use, but it must be remembered that one or two hyaline or even granular casts might occasionally be found in the urine of practically healthy persons by the help of the centrifugal machine. Estimation of the brachial systolic blood-pressure might likewise aid in the diagnosis. Occasionally an ophthalmoscopic examination in such cases might reveal the presence of unsuspected retinal changes. In regard to the pancreas, one might remember that the subjects of acute hemorrhagic pancreatitis were not rarely corpulent individuals, or individuals who had been addicted to alcohol.

The Personal History.—Dr. W. A. Boyce says the personal history is very important, and a local examiner should never disregard a history of previous sickness. An applicant might say he had been treated by a physician in the adjoining town for "biliousness," when many times it was for syphilis, appendicitis, gallstones, or some other disease that would have quite an influence on his mortality. Inquiry should be made, and date, duration, and name and address of the attending physician should be given; also the abdomen should be palpated and other examinations made and details given of the findings.—*Texas State Journal.*

"Accidental Means."—In an action on an accident policy, it appeared that the plaintiff attended a football game on a cool day when the ground was damp, and contracted a cold, resulting in lumbago. After medical treatment and the debility resulting from a purgative, and while lying in bed, he had a paper brought, reached for it, and raised it suddenly above his head, when his strong blood pressure caused a rupture of the retina, destroying the sight of one eye. It was held he could not recover on a policy insuring him against bodily injury through "accidental means," since, while the result was not foreseen, the cause producing the result was not accidental, but an ordinary natural movement, executed as intended.—Stone v. Fidelity & Casualty Co. of New York, Tennessee Supreme Court, 182 S. W. 252.

Book Reviews.

CLEFT PALATE AND HARE LIP. By Sir W. ARBUTHNOT LANE, Bart., M.S., F.R.C.S., Senior Surgeon to Guy's Hospital, and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond Street. Third Edition, 102 pages, with 58 illustrations and diagrams. Price, $4.00. London: Adlard & Son. Chicago: Chicago Medical Book Company. 1916.

LANE'S own contribution to this work takes up about 60 pages, of which about half is devoted to a statement of his views regarding the factors that influence the growth of the nasopharynx and of the mouth and of the bones that surround those cavities. He then propounds the following questions regarding cleft palate: "What is the best age for operation? (2) What is the best method of performing the operation? (3) How and when can any complication such as harelip be met to the greatest advantage?" From Lane's answers to these questions we learn that the best time for operation upon cleft palate is the day of birth or as soon after that as possible; that the best method of performing the operation is Lane's method, which is briefly described and is illustrated by a number of rather occult diagrams and which is to be performed with instruments devised by Lane "to replace the clumsy instruments originally in use;" and that if, besides a cleft of the hard and soft palate, the lip is defective on one or both sides, two courses are open to the operator—if the closure of the cleft in the lip does not interfere with the free passage of air through the nose the clefts in the lip and palate may be closed simultaoneously, but if the cleft in the lip is very extensive and if its closure will interfere with the free passage of air through the nares the lip and hard palate may be closed in the first instance, the cleft in the soft palate being dealt with later.

Mr. Cortlandt MacMahon contributes 10 pages on Speech Training, and Mr. W. Warwick James, 30 pages on Dental Treatment of Cleft Palate.

THE CLINICS OF JOHN B. MURPHY, AT MERCY HOSPITAL, CHICAGO. Vol. V, Number I. Octavo of 194 pages, with 32 illustrations. Published bi-monthly. Price per year, cloth, $12.00; paper, $8.00. Philadelphia and London: W. B. Saunders Company. 1916.

IN this number of the Clinics we find about one-fourth of the book devoted to six clinical cases that are of interest to the general surgeon; while the other three-fourths is made up of the seemingly inevitable and unending bone and joint material. This might well be called an orthopedic number; for it is of comparatively little interest to those not specializing in bone and joint work. From the ordinary subscriber's point of view we should say that this is about the poorest number of the Clinics that has yet appeared.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. By ROBERT W. LOVETT, M.D., Boston, John B. and Buckmeister Brown Professor of Orthopedic Surgery, Harvard Medical School; Surgeon to the Children's Hospital, Boston; Surgeon-in-Chief to the Massachusetts Hospital School, Camden; Consulting Orthopedic Surgeon to the Boston Dispensary; Member of the American Orthopedic Association; Corresponding Member of the Royal Society of Physicians, Budapest; Korrespondierendes mitglied der Deutschen Gesellschaft für Orthopädische Chirurgie, Socio della Societa Italiana di Ortopedia. Third edition, revised and enlarged; with 180 illustrations. Price, $1.75. Philadelphia: P. Blakiston's Son & Co. 1916.

THE third edition of Dr. Lovett's Lateral Curvature of the Spine contains an interesting added chapter on the History of Scoliosis. The chapter on treatment has been expanded and changed where Dr. Lovett's experience has given indication. The book is an excellent one and a new edition will be welcomed.

A MANUAL OF PRACTICAL NURSERY. Prepared for the Washington University Training School for Nurses in the Barnes and St. Louis Children's Hospitals. Edited by HELEN LILLIAN BRIDGE, B.S., R.N., Assistant Superintendent and Instructor of Nurses, Washington University Training School for Nurses, St. Louis. Price, $1.00. St. Louis: C. V. Mosby Company. 1916.

MISS BRIDGE'S manual should be very helpful to nurses in training. It is not a textbook, but gives such information as the nurse must have during her actual time on the ward. Requisites for various treatments are given and after each group a note stating the length of treatment or any special warning which may be necessary. Routines on surgical, gynecological and obstetrical sources are given, typhoid routine, routine for admission of patients.

There is an inset leaf between each two pages, so that variations can be noted and the book adapted to the use of every training school. The book will help a nurse as a constant check until the details of her work have become part of herself.

VENEREAL DISEASES, A MANUAL FOR STUDENTS AND PRACTITIONERS. By JAMES R. HAYDEN, M.D., F.A.C.S., Professor of Urology at the College of Physicians and Surgeons, Columbia University, New York; Visiting Genito-Urinary Surgeon to Bellevue Hospital; Consulting Genito-Urinary Surgeon to St. Joseph's Hospital, Yonkers, New York. Fourth edition, thoroughly revised. Illustrated with 133 engravings. Philadelphia and New York: Lea and Febiger. 1916.

THE author presents his fourth edition in more attractive garb by arranging his text in chapter form, by additional illustrations and by bringing the treatment of syphilis up to date. Condensed as it must be for students' use, the treatment of gonorrhea, urethral stricture, and syphilis are clearly and carefully written. Among other praiseworthy features is the advice to use the inunction method of mercurial administration in the treatment of syphilis. In view of the fact that this book is primarily intended for senior medical students and that the teachings in this period of a medical career are most lasting, the author wisely avoids theories, debatable therapeutic procedures, and in general holds his course to "the middle of the road."

DIAGNOSE UND THERAPIE DER GONORRHOE BEIM MANNE. Von Sanitätsrat Dr. S. JESSNER, Königsberg i. Pr. Zweite verbesserte Auflage. Preis 3.50 Mk. Würzburg: Verlag von Curt Kabitzsch. 1916.

WHOEVER enjoys the recitation of facts couched in beautiful language should read this book. As a scientific treatise on a common disease, much is lacking. The author arranges his second edition in the orthodox manner, beginning with the anatomy of the region and ending with the treatment of gonorrheal sequelæ. In the course of these chapters the reviewer encounters some untenable positions and unforgivable omissions. For example, he objects to urethral dilatations with modern dilators because their use requires much practice and much time is consumed in administering the treatment, the instruments are costly and are expensive additions to the physician's armamentarium, and because he can accomplish the same results with simpler methods. Sic transit Oberlander. The operation for rapid relief and cure of acute gonorrheal epididymitis as developed by an American surgeon is not mentioned, although it is universally accepted by urologists as the most modern and most conservative treatment. The book is not typically Teutonic in thoroughness, nor does it bear the marks of a labor of love. Likewise, it is devoid of illustrations.

THE PRINCIPLES AND PRACTICE OF PERIMETRY. By LUTHER C. PETER, A.M., M.D., F.A.C.S. Associate Professor of Ophthalmology, Philadelphia Polyclinic and College for Graduates in Medicine; Ophthalmologist to the Rush Hospital for Consumption and Allied Diseases. Illustrated with 119 Engravings. Price, $2.50. Philadelphia and New York: Lea & Febiger, 1916.

THE subject of perimetry is one that should enlist the very careful consideration of every practitioner of ophthalmology. The information obtained by the intelligent and thorough study of fields of vision is of very great importance as a means of diagnosis and of prognosis. The author of this work has presented the subject in a very attractive and practical manner.

Part I is devoted to a description of the normal field of vision and the various factors that influence its extent. Part II describes the methods employed in perimetry. Part III is concerned with the anatomy and physiology of the visual tract. Part IV treats of the changes in form of the fields for form and colors due to disease. Part V is devoted to a description of the fields of vision as they are affected by special diseased conditions. Part VI describes the changes in the fields of vision due to "functional" nervous disease. An appendix treats briefly on anomalies of the fields, due to loss of parallelism in visual axes and of the defects due to the presence of foreign bodies. A bibliography and index follow. The work is well adapted to the uses of the student.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

Twentieth Annual Meeting, Held in Washington, D. C., May 8, 9, and 10, 1916.

(Special Report to the MEDICAL RECORD.)

THE PRESIDENT, DR. ROWLAND G. FREEMAN, NEW YORK CITY, IN THE CHAIR.

Presidential Address.—Dr. ROWLAND GODFREY FREEMAN of New York said there was an agent of wonderful power and value to the pediatrician, the use and action of which was little appreciated, namely, fresh air. By fresh air as a therapeutic agent he meant moving and cool out-of-door air. This stimulated the appetite, induced quiet sleep, brought color to the cheeks, and increased the resistance of the organism to infection. The claim that fresh, cool air raised materially the blood pressure had not been confirmed by subsequent investigations, and they seemed to be driven to the position that the favorable action of fresh air on the organism was due to the absence of the deteriorating effects of closed rooms. In the fresh air the body had the advantage of normal conditions. The idea that air which had been breathed by other people was unhealthy probably arose from the unpleasant odor of closed and crowded rooms, and from symptoms elicited by extremes of this sort. The symptoms produced by closed places were depression, headache, thirst and difficult breathing and the elements producing these symptoms were supposed to be a diminution of the oxygen and an increase in the carbon dioxide, with the possible appearance in such an atmosphere of a really poisonous product from the expired air. Experiments, however, for the most part discredited this theory. The amount of oxygen in crowded, closed rooms was not depleted to a danger point, nor is the amount of carbon dioxide increased to such a point. Efforts to find a poisonous element in such air had been made from time to time with negative results. In 1883, Hermans of the Hygienic Institute in Amsterdam, concluded that the discomfort of crowded places was due to the inability of the body to cool itself in a hot, moist atmosphere. These symptoms then were due to stagnant, hot, moist air surrounding the body, and would be accentuated in people wearing heavy, impervious clothing that prevented access of moving air to the skin. It was evident then that they should wear as little clothing as was consistent with comfort. The result of these elaborate experiments was in brief that fresh air was good, not because it supplied oxygen, not because it was overloaded by carbon dioxide, not because it contained no poisonous element, but because it allowed the body to exist under such circumstances that it could control its moisture and temperature. They had to combat the traditional fear of drafts and the habit of many people of living in close, hot rooms. The cold air of winter was much more stimulating and produced better results in children than the mild air of spring and autumn. The best results from fresh air were obtained by keeping the children out of doors day and night. Out-of-door sleeping porches enclosed on three sides and roofed, but open to the south, furnished the best fresh air at night, while in the day time balconies and rooms without heat and windows wide open supply the air they needed. They should see that the children were not sealed in heavy, impervious covering so that the skin was unable to rid itself of the heat and the moisture. In all the acute infectious diseases Dr. Freeman believed that there was now a general acceptance of the advantage of fresh air, excepting perhaps, in measles and scarlet fever. In tuberculosis and pneumonia there was no question of its advantage. It would seem that some explanation was due as to why, if all these statements were true, children were still housed and many adults had a panic if a breath of cold air struck the back of their necks or their bald heads, while children who were brought up without fear of cold enjoy it wherever it struck. It was sincerely to be hoped that many of the coming generation might be brought up under different ideas and might be less dependent on hot, offensive, stagnant air for the supposed comforts of life.

Recent Progress in Our Knowledge of the Physiological Action of Atmospheric Conditions.—Dr. FREDERICK S. LEE of New York (by invitation) said that recent experiments in the physiological laboratory of the Columbia School of Medicine had changed their ideas concerning the physiological action of atmospheric conditions. It had long been the custom to ascribe to chemical components of the atmosphere the bad effects of living in air that had already been breathed by human beings. They now knew that, except under very extraordinary circumstances, the harmfulness of respired air was not due to its chemical components. The harmfulness of living in confined air was found in certain physical rather than chemical features—the air was too warm, too moist, and too still; and if it had not these physical features it was not harmful. By way of a general summary it might be stated that when an existing external temperature was fairly comfortable to the individual an elevation of it, especially when such elevation was accompanied by an increase of humidity, was deleterious. This went to demonstrate that a moderately dry and cool air in motion constituted the most physiologically helpful aerial envelope of the body. In these days they heard much of "fresh" air and its merits. They had fresh air funds, fresh air schools, and fresh air babies. All were commendable, but while giving to their funds, opening their schools, and putting their babies out of doors, let them closely understand what constituted fresh air. The freshness of so-called "fresh" air laid, not in more oxygen, less carbon dioxide, less organic matter of respiratory origin, and the hypothetical presence of a hypothetically stimulating ozone, but rather in a low temperature, a low humidity, and motion.

Some Studies on the Mode of Infection in Pyelitis in Infancy.—Dr. RICHARD M. SMITH of Boston presented this paper. He said there had been two antagonistic theories to explain the mode of infection of the kidney in pyelitis of infancy; one maintained that that infection took place through the urethra, bladder and ureters; the other that the infection came by means of the blood and lymphatics. The disease was much more common in the female than in the male, the proportion being nearly 3 to 1. The organism most frequently causing the disease was the colon bacillus. Directly against the ascending theory of infection were the facts that colon bacilli had never been shown to pass up the normal unobstructed ureter and that the colon and tubercle bacilli had been introduced repeatedly into the bladder, and in the presence of a normal mucous membrane and were excreted without causing damage of any kind. Ascending infections occurred only in the presence of obstruction to the outflow of urine and would not occur if the sphincter of the ureter was normal. The theory of infection of the kidney by the blood and lymphatics rested upon much surer ground. Dr. Smith said that he had made seventy-one cultures from the vagina, vulva and urethra of forty infants and young children. One infant six hours old and all over eighteen hours, except one child who was six days old, showed growth from the vaginal culture. All the vulvar and urethral cultures were positive. The first organisms to appear were streptococci and staphylococci, and then the small bacilli, not colon. Colon bacilli were found in vaginal cultures of infants as early as the fifth day. Dr. Smith said that his findings were in accord with those of Semidgall, who found the vagina of new-born sterile ten out of thirteen times and by the second day a profuse growth of cocci. The colon was isolated twelve times out of twenty-one in new-borns after the second day. It was also shown that the vaginal secretions did not kill off the pathogenic organisms. A possible source of infection with colon bacilli or other bacteria was certainly present in the vulva, urethra and vagina, and a slight trauma might easily accomplish the entrance of organisms into the lymphatic vessels and blood, and thus to the kidney. The source of infection in pyelitis, in the majority of instances, males and females together, was the gastrointestinal tract. Some infections might arise from infection in the skin, teeth or tonsils and in some local septic processes.

Diet and Growth in Infantile Scurvy.—Dr. ALFRED F. HESS of New York City read this paper, in which he reported the results of observations on infants fed on pasteurized milk alone. He said there had been considerable difference of opinion as to whether pasteurized milk could induce the scorbutic condition. In its report in 1912 the Commission on Milk Standards stated that pasteurization did not destroy the chemical constituents of milk and that it was not altered by exposure to heat under 145° F. for thirty minutes. In order to test the validity of this statement he had made a test among a certain number of inmates of an infant's

home, where all the babies were fed on Grade A pasteurized milk which had been heated to 145° F. for thirty minutes. The babies had been receiving orange juice in addition. This was discontinued. No other change was made in the diet. Almost all the babies who did not receive orange juice developed a more or less marked form of scurvy, whereas those who continued to receive orange juice remained entirely free from this disorder. The results of this investigation were questioned by some who were loathe to believe that pasteurized milk could in any way lead to scurvy and hence the observations were continued during the following year. The results were the same, so that the writer felt safe in saying that a diet of pasteurized milk led to the production of scurvy in infants unless some antiscorbutic food was also given. The scurvy met with in infants fed on pasteurized milk was as a rule not of the florid type met with in infants fed for months on proprietary food, but might rather be described as latent or rudimentary. There was a gradually increasing pallor, failure to gain in weight, the development of some petechial hemorrhages, and, in the more marked instances subperiosteal hemorrhages. It seemed probable that this type of the disorder was far more common than was generally recognized by physicians and that there were many infants suffering from slight nutritional disturbances which might be attributed to this cause. It was not to be inferred from these conclusions that the use of pasteurized milk was fraught with danger, but merely that it was an incomplete diet for babies and must be given with antiscorbutic food. There were also secondary factors contributing to the development of scurvy, such as the individual variation depending upon hereditary characteristics, that was up on the amount of antiscorbutic material which the infant brought with it when it came into the world. Secondary food factors also seemed to play a part. Malt preparations seemingly predisposed to scurvy, and it seemed that there was an intimate relationship between the development of scurvy and the amount of carbohydrate in the diet. The sovereign cure for scurvy was orange juice, which was efficacious even when boiled for ten minutes. Boiled potato might be used in infant feeding when orange juice could not be readily obtained. One tablespoonful of mashed potato to one pint of water might be used instead of the usual cereal decoction. In connection with this study observations were carried out to ascertain the effect of infantile scurvy on growth. It was found that although the infants continued to gain in most instances for a few weeks following the discontinuance of orange juice, they soon reached a stationary plane and for months were unable to rise above this level, but increased in weight promptly when the antiscorbutic food was again added to their diet. It was also found that scurvy had a direct effect upon the growth in length. Lack of growth, however, did not always play an essential part in the constitution of scurvy. Orange juice was found to be a corrective for the lack of growth as well as for the failure to gain in weight in this series of cases. There was no reason why orange juice might not be given to an infant at the age of one month and there were many arguments in favor of giving it at this early period.

Dr. L. Emmett Holt of New York said that for several years he had held the view that pasteurized milk was responsible for a number of cases of scurvy, and during the past year this view had been confirmed. While they all recognized the advantages of pasteurized milk, it would be a mistake to approve of the commercial pasteurization of all milk. On the other hand, they all knew of instances in which the milk was inadequately certified and physicians did not wish to be responsible for such conditions. As Dr. Hess had pointed out, scurvy was caused by many other things, there were additional factors and hereditary predispositions to be taken into account. There were comparatively few cases caused by pasteurized milk alone. Still, he thought it would be advisable that they should band together to counteract the present tendency to pasteurize all milk. Ten or twelve years ago nearly all the cases of scurvy came from the continued use of proprietary foods while to-day it comes from pasteurized or boiled milk. The point to be emphasized was that if they used pasteurized milk an antiscorbutic must be used early and continuously.

Dr. Samuel S. Adams said he had always been opposed to commercial pasteurized milk, but he did not necessarily object to pasteurization in the home. The reason he was so much opposed to commercial pasteurized milk was because the milk was so often contaminated before it was pasteurized. He said he had seen four cases of scurvy within the last week in the city of Washington which were due to pasteurized milk.

Dr. A. D. Blackader of Montreal said he wished to emphasize the importance of pasteurized milk as a cause of scurvy. He said he had seen two instances in infants brought to him because of obscure symptoms, partly nervous and associated with lack of growth, but with no classical symptoms of scurvy. There was a rapid disappearance of all the symptoms following the addition of orange juice to the diet of these infants. When he saw these cases he thought he had observed something new, but Dr. Hess had anticipated him in describing this subacute type of scurvy due to a deficiency of vitamines.

Dr. Henry L. K. Shaw of Albany, N. Y., said he wished to defend pasteuried milk, as his experience with epidemics of milk borne sore throats led him to believe the danger of raw milk much greater in this direction than the danger of developing scurvy. They had had seventeen epidemics of septic sore throat in New York State directly traceable to milk and in one of these there were seventy cases. There had also been some fatalities. The danger of septic sore throat was, in his opinion, greater than the danger of tuberculosis from raw milk. On the other hand, scurvy was not a fatal disease and could easily be prevented or cured, so that he thought the weight of evidence was in favor of pasteurized milk.

Dr. Percival J. Eaton of Pittsburgh, Pa., said that commercially pasteurized milk was not really a perfectly pasteurized milk. It was pasteurized with overheated steam at a pressure of fifteen pounds and that process produced a sterilized milk. One got better results with a certified milk pasteurized at home.

Dr. Samuel McC. Hamill of Philadelphia said he was not opposed to the pasteurization of milk; in the cities this was necessary. There was, however, a tendency to favor the pasteurization of all milk so that one would be unable to get raw milk. This would be a mistake and it was time to take some action. The medical profession was largely to blame for this attitude of health officers and dairymen. But in any action that this society took in this matter it should state very definitely what pasteurization of milk meant. Dr. Hamill said he believed in the pasteurization of milk, and while it was not always done satisfactorily at the present time it was done better than formerly.

Dr. Henry L. Coit of Newark, N. J., asked Dr. Hess regarding the condition and vitality of the children upon whom he had based his deductions; he said he would like to know something of their heredity and environment. He also thought the tendency to pasteurize all milk was a most disquieting thing to medical men. In instructing mothers as the their home modification of milk he said he had abandoned the use of the word pasteurize. He had found that the word "refine" had a hypnotic effect on the women so he instructed them how to "refine" certified milk.

Dr. Henry Heiman of New York City said we should have laws to govern the commercial pasteurization of milk. One could not always be sure whether a child was getting pasteurized or sterilized milk. Frequently the mother in heating the milk at the time of feeding raised it to too high a temperature. One could give five drops of orange juice, or pineapple juice, to an infant at the age of one month. Simply giving the fruit juice would furnish the missing link.

Dr. Maynard Ladd of Boston said he had seen a half dozen cases of scurvy produced apparently on raw milk and was not able to account for it at first, but found on investigation that the milk was overheated at the time of feeding, so that the children were getting practically pasteurized milk.

Dr. Alfred F. Hess, in closing the discussion, said the conclusion to be drawn from the paper was not that pasteurized milk had not an advantage over raw milk, but only that pasteurized milk was not a complete food for an infant, and that it was necessary in addition to give orange juice, or potato water, or some other antiscorbutic. The commercial potato flour would not do. Dr. Herman asked why the boiling did not destroy the vitamines of the orange juice and did destroy those of the milk? That may be explained by the fact that the change that a substance underwent in boiling was dependent upon the medium in which it was boiled. The vitamines might stand boiling in water but not in fats, such as milk. As to the condition of the children and their environment, the environment

was of the best and the children were normal and had been under observation for a long time, most of them from birth.

Sarcoma of the Kidney Treated by X-Ray.—Dr. ALFRED FRIEDLANDER of Cincinnati said that it was generally accepted as axiomatical that the only hope in cases of sarcoma of the kidney in childhood laid in early nephrectomy, but even with this procedure the mortality was very high on account of the likelihood of metastases, even in those cases in which the operation was well borne. This patient was four years of age and was admitted to the Cincinnati General Hospital on October 20, 1915. The history was one of increasing languor and lassitude, with loss of appetite and anemia. Except for the condition of the abdomen, the physical findings were not of moment. The entire left abdomen was filled by a tumor extending from the costal margin in the nipple line to 3 cm. above the umbilicus. It was hard, distinctly nodular, apparently not tender to touch, and could be moved forward by pressure from behind. Urinalysis on admission showed distinct microscopic hematuria. The blood showed a secondary anemia. Fluoroscopic examination with the colon partly filled with gas showed a sharply defined dark shadow in the region normally occupied by the kidney. *X*-ray plates of the lungs for the characteristic metastatic sarcomatous shadows were negative. The *x*-ray treatments were given because of the apparent hopelessness of the case. After the seventh treatment it was noticed that the tumor had decreased very markedly in size. Later the child had an attack of influenza, then one of measles which was followed by death. The autopsy revealed a sarcoma of the left kidney with small metastases in both lungs and in the liver.

Transient Abdominal Tumor in a Child of Five Years, with Redundant Colon.—Dr. GEORGE N. ACKER and Dr. EDGAR P. COPELAND of Washington, D. C., reported this case. Dr. Copeland said that in December, 1914, a year before his first examination, the child became suddenly ill in the night, with extreme nausea, severe vomiting, and the appearance of a rounded tumor in the hypogastrium, simulating a distended bladder. The tumor was elastic, but not specially tender to the touch. The physician made a diagnosis of intussusception, but a few hours later he was surprised to find that the tumor had entirely disappeared, and the patient made a good recovery. Since this initial attack, others had occurred at varying intervals, seldom less than three weeks, and on several occasions as long as six weeks, apart. The tumor had invariably appeared first over the region of the bladder, moved about the abdomen spontaneously, and finally disappeared. Its appearance was always associated with nausea and vomiting, and its disappearance with a pronounced paroxysm of abdominal pain. When Dr. Copeland first saw the patient he found him in bed on his back with the thighs partially flexed. The attack then was several hours' old, and there was still some nausea. Presenting in the hypogastrium was a smooth, rounded tumor about the size of an orange, elastic but not tender, and dull on percussion. It strongly suggested a distended bladder. There was a well-pronounced beading of the ribs. The pulse was rapid, but regular. The temperature was normal. The leucocyte count was 11,500. The von Pirquet and Wassermann tests were negative. Under restricted feeding and large enemata slowly administered the mass spontaneously disappeared.

The clinical history, in the light of the *x*-ray findings, would seem to justify the assumption that the phantom tumor was the result of a temporary kinking of the redundant colon or sigmoid incident to its displacement to the right, which was followed by either fecal or gaseous distention in the loop. When the loop filled itself to a certain point, it swung gradually to the left and automatically unkinked itself with a disappearance of the tumor mass.

Report of a Case of Influenza in an Infant with Two Unusual Complications—Purpura and Subcutaneous Emphysema.—Dr. HENRY T. MACHELL of Toronto, Canada, reported this case. The baby when seen in consultation was 6½ months old and had always been well and healthy. The child was taken ill with grippe on March 28 and was seen by Dr. More on April 6. There was then a well-developed lobar pneumonia of the right base. The temperature was 104° Fahr., pulse 140, and respirations 60. There were purpuric rashes over parts of the body, the face, particularly the chin, the shoulders, arms, chest, legs, and feet. The petechiæ varied in size from a mere dot to one patch on the left shoulder the size of a ten-cent piece. Another patch on the left cheek was slightly smaller. These large spots had a punched-out feeling to the palpating finger as though they had previously contained fluid. The skin was unbroken. The mother stated that this rash had been present from the first appearance of the illness. On April 13 there was noted a slight swelling at the sides of the neck, under the chin, and down over the upper part of the chest. This swelling continued to increase until two days later, when he was again called to see the child. The swelling around the neck, cheeks, and chest had increased to such an extent that the chin was crowded upward and the head forced backward. It was tense, tympanitic, and crackling under the fingers. It was symmetrical in size and obviously emphysematous. He said that this was the first time he had seen purpura or emphysema as a complication or sequel to influenza either in his own practice or in consultation. The emphysema gradually improved and within five days from the time he had last seen the patient it had almost entirely disappeared. On April 19 the child had an extra severe coughing spell, when the emphysema suddenly became more marked, his breathing became embarrassed, and he died within twenty-four hours. An autopsy was not allowed. Purpura as a complication of influenza was rare. Emphysema had been mentioned as occurring occasionally in pertussis, bronchitis, etc., but he had not seen it mentioned in connection with influenza.

A Brief Report of Sixty Blood Examinations in Infancy with a Review of the Recent Literature of the Blood in Infants.—Dr. M. H. MCCLANAHAN and Dr. A. A. JOHNSON of Omaha presented this report, which Dr. McClanahan read. He stated that while the study had required a great deal of work the results were very briefly stated, that was that his observations were practically in accord with those already published in the literature. He reviewed the literature and compared his findings with those of other investigators.

The Creatin and Creatinin Content of the Blood in Children.—Dr. BORDEN VEEDER and MEREDITH JOHNSON of St. Louis presented this communication, which was read by Dr. Veeder. After citing the results of the estimation of the creatin and creatinin content of the blood by Folin and Denis, Myers and Fine, and Meyers and Lough, he stated that very few such observations had been made on children. In children the non-protein content of the blood did not vary in any marked degree from that of the adult. Tileston and Comfort made determinations on 51 children with a variety of clinical conditions. Normal children gave values of 20 to 34 mg. per 100 c.c. of blood. In normal infants the non-protein nitrogen content had been found to vary between 23 and 44 mg. per 100 c.c. by Schultz and Pettibone. The method used in the study presented were those of Folin and Denis for the non-protein nitrogen and of Folin for the creatin and creatinin. Determinations were made on 70 children. The blood was taken early in the morning before the children had had their breakfast. The cases were grouped into normals, scarlet fever at the time of exanthem when there was an elevation of temperature, afebrile scarlet fever in the first week, and a number of examinations made in the third week of canvalescence when the urinary findings were negative. In addition a number of miscellaneous cases were investigated. The creatinin figure for normal children varied from .58 to 3.44 per 100 c.c. In 10 children the figures were under 2 mg. and in two above. The febrile scarlet fever cases varied between 1.08 and 3.82 mg., but with one-half above 2 mg. and nine under 1 mg. The highest figure in the early febrile case was 3.78. There was no specific retention in any of their cases, although as a whole the figure for the creatinin content of the blood in children was somewhat higher than for adults. A comparison of the creatinin content with the non-protein nitrogen showed that as a general rule both the non-protein nitrogen and creatinin were within the same general limits as had been found for normal adults, and as Tileston found for the non-protein nitrogen in children, although the average figures for both were a little higher in children. In six cases of nephritis which they studied the retention figures were not high and but one case was fatal. This was not a uremic case. The non-protein nitrogen was not increased in two cases and the creatinin was normal in three. In one case with a low protein figure the creatinin was high and in two the opposite condition held. As the nephritis in a given case improved the amount of retention decreased. A number of cases of scarlet fever were followed from

the stage of the acute exanthem until desquamation was completed and tests were made weekly for five weeks. None of these cases developed a typical post-scarlatinal nephritis in the third or fourth week. After the acute febrile period was over there was usually a slight fall in the non-protein nitrogen and creatinin, although in the second week a few showed a slight increase. There was no apparent relationship between the amount of creatin and creatinin. Dr. Veeder said they had found much less creatin in the blood of children than Folin reported having found in adults. Folin found about 10 mg. per 100 c.c. and they had found in children rarely over 5 mg. per 100 c.c. This was interesting in view of the fact that creatin was found in the normal urine of children and was not present in the urine of adults. They had been unable to find any specific relationship between the amount of creatin and creatinin, or any relationship between the amount of creatin and the clinical condition. There was no fixed relation between the total non-protein nitrogen and the creatinin-creatin content. Dr. Veeder also reported observations on a child starved for other purposes and a few experiments as to the effect of copious water drinking and a fixed diet, and also of the effects of a fixed creatin-free diet. The child during the period of starvation showed a slight increase in all three substances during the period of starvation. The results of the experiments in diet and water drinking were negative.

The Hospital Care of Premature Infants.—Dr. L. E. La Fétra of New York presented this paper, which he stated was a résumé of his personal experience in the observation and treatment of these cases. During the past two years they had admitted to the premature ward of Bellevue Hospital 278 premature infants. Of these 13 were still in the ward and 265 had been discharged. The mortality among these infants was very high, but most of it occurred during the first few days after admission to the hospital. The records of the last 200 cases showed that 30 were saved and discharged as cured that was, strong enough so that their mothers could care for them successfully. Of the 170 that died, 90 died on the first day and 118 within the first three days. It was most unusual that a baby weighing less than 2½ pounds was saved. The greatest number of infants admitted to the premature wards had a history of utero-gestation of seven and seven and one-half months. Aside from the small size and weight of these infants they were extremely feeble muscularly, and this feebleness extended to the muscles involved in the acts of sucking and swallowing. In many instances this latter weakness was the underlying cause of fatal inanition. The symptoms manifested by these babies were subnormal temperature, imperfectly developed skin, so that the premature infant radiated more heat proportionately than the normal infant. Again, the heat regulating centers seemed not to be in satisfactory operation, so that the baby was very susceptible to the heat changes of its environment. These babies also show a tendency to cyanosis and are extremely susceptible to all sorts of infection. Absorption from the gastrointestinal tract of deleterious substances, whether as the result of fermentative processes in the intestines or of germ infection might cause profound and even fatal disturbances in a very short time. General sepsis might arise from this source or might come from the umbilical wound, or from an abrasion of the skin. In the general management of these children the aim was to reproduce in as far as possible the conditions of intrauterine life. The baby should be kept in an even temperature approximating that of the body and should be shielded from all sorts of external shocks whether thermal or mechanical. The skin should be protected from all chance of contagion and injury and the eyes should be protected from light. Dr. Le Fétra said he was not in favor of using incubators. The plan of setting apart a small room as an incubator room was far more satisfactory. Here the baby did not undergo any chilling when the clothes were changed. Probably the most satisfactory incubator was that devised by Dr. Edwin B. Cragin and described in the *Journal of the American Medical Association* for September 12, 1914. At Bellevue they were using the sunny corner of a ward facing south, which had a capacity of ten beds and a cubic air space of 1,000 cubic feet per infant. After much experience they had found that babies did best when kept in a temperature of 76° F. to 80° F. with a humidity of 60 to 70 per cent. In their ward the moisture was obtained by keeping a large pan of water simmering on an electric stove. Premature babies should be handled only when necessary to change the gauze diaper. The clothing should be the simplest possible. Babies weighing less than four pounds should be wrapped in cotton until the temperature remained constantly at normal, and the weight had risen to four or four and one-half pounds. In general, the most satisfactory method of feeding these babies was to use the Breck feeder, since this had the advantage of teaching the baby to suck. In some cases the baby could not swallow satisfactorily, and then one had to resort to gavage. The food most suitable and that requiring the least digestive effort was breast milk. The milk was to be expressed from the breast two or three times a day and a requisite amount mixed with whey or barley water or granum as a diluent and then fed to the baby through the Breck feeder. At Bellevnue they used one-half breast milk and one-half whey at first, one ounce being given every one and one-half to two and one-half hours, depending upon the size of the baby and its stomach capacity. If it was impossible to obtain breast milk, the following might be substituted: cow's milk, 6 per cent.; top milk, five ounces; whey, 10 ounces, and five ounces of Imperial granum, to make a 20-ounce mixture. To this was added milk sugar or dextri-maltose, one-half to one and one-half ounces. The number of calories required by the premature baby was much higher than for babies at full term; it was necessary to increase the calories to one and one-quarter to one and one-half times the ordinary requirements. An important apparatus in the premature room was the oxygen tank, which should be kept coupled up and ready for use in case of cyanotic attacks. As to prognosis, weight was the best criterion they had, but one must not despair of even the smallest babies. If a baby survive for a week it had a better chance of living, since the fact of its having survived that long augured a good constitution.

Dr. B. S. Veeder of St. Louis said that in St. Louis they were using a small room in St. Louis for the care of premature infants. The room was heated from a closet, the temperature kept at 80°, or somewhat above, and the children were practically not dressed at all. They were feeding more than 125 calories, usually about 185 calories.

Dr. J. P. Sedgewick said Dr. Le Fétra had spoke of feeding the babies every hour and a half or two hours. It was possible to have the premature babies do well on four-hour feedings. They gave them more than the capacity of the stomach would indicate. The calories usually ran from 120 to 150. They started with 10 or 15 c.c., usually five times daily, or 75 c.c. a day, and increased this amount as rapidly as the infant could take it, but had no regular rule of putting so much into a child at such and such a time.

Dr. B. Raymond Hoobler described an improvised incubator that could be made in a home, by means of a clothes hasket and barrel hoops, covered with klankets and heated with electric light bulbs, black cloth being used to keep the light from the eyes.

Further Experience with Homogenized Olive Oil Mixtures.—Dr. Maynard Ladd of Boston read this paper. He called attention to the fact that in a paper read before the American Pediatric Society, in June, 1915, he had described the homogenizing machine of M. Gaulin of Paris for purposes of modifying milk for difficult feeding cases, especially those showing intolerance for fat. It was possible by this process of homogenization to improve the emulsion of a modification of cow's milk so that it would be even finer than that of breast milk without altering in any way the chemical properties of the milk. There was reason to believe a milk so treated might be better digested and assimilated. Still more interesting was the possibility of substituting some other fat than the fat of cow's milk in cases of malnutrition, in which it was often difficult to make a child gain normally in weight without precipitating sooner or later a digestive crisis. It appeared reasonable in certain cases in which the child responded to breast milk containing two to three times as much fat as cows' milk to question whether there was an intolerance to fat or whether there was something in the cows' milk fat that was not present in breast milk. The principal differences in the fats of cows' milk and human milk were in the size of the fat globules and the proportion of volatile fatty acids. Olive oil was almost wholly olein and palmatin and free from volatile fatty acids, which formed a large proportion of the cows' milk fat. This fact had led him to suggest the use of olive oil in order to obtain the fat percentages in modified milk mixtures and so to eliminate

the volatile fatty acids, and also to secure an emulsion as fine or finer than that of human milk. The milk sugar and protein were to be obtained from skimmed milk as usual; and additional carbohydrates, in the form of dextrin-maltose and starch, were prescribed according to the usual indications. Dr. Maynard said he had applied this method of feeding to 37 cases, including practically all the cases of difficult feeding that he had opportunity to study. In this series of 37 cases, whose average gain on previous feedings was five ounces per month, for a period of 6.3 months, on the homogenized olive oil substituted for the fat of cows' milk the average gain per month was 18.15 ounces. The average period of the homogenized oil feeding was 4.7 months, a sufficient time to determine its permanent effects. The improvement in the babies' general condition had been as striking as that of their gain in weight. Vomiting and sour regurgitation, when present as symptoms, were quickly relieved. The child improved in strength, in the quality of its fat, and in the development of its functions. The appetite improved rapidly and the stools soon became normal in appearance, if the sugars were intelligently prescribed. (By this he referred to proper proportions of dextrin and maltose.) Barley water was used in nearly every case. In some cases the mixture was heated to 212° F.; in others given unheated. Lime water was usually given in amounts of 5 to 10 per cent. of the total mixture, but not as a matter of routine. The percentage of olive oil was almost invariably started at 1.5, and did not exceed 3.50 per cent. The total carbohydrate was usually started at about 5 per cent and never exceeded 7 per cent. The protein was started at 1.50 per cent. and seldom exceeded 2 per cent. In his opinion hunger was the safest guide as to the child's tolerance to the amount of fat it was taking.

Dr. Ladd also described his experience with olive oil mixtures in infectious diarrheas due to indigestion and fermentation. The general scheme of treatment was as follows: After the initial period of catharsis and starvation, a fat free lactic acid milk, diluted two-thirds and one-half, was given. If the infecting organisms proved to be of the Flexner or Shiga type dextrin-maltose was added up to 4 or 5 per cent., and sometimes barley water. If the gas bacillus was present no carbohydrates were added. After a period of several days, when the acute febrile disturbance showed distinct signs of subsiding, olive oil was homogenized with the lactic acid milk in percentages of 1.00, 1.50, and, if well tolerated, 2,00, thus adding considerably to the caloric value of the food. The results briefly summarized were as follows: There were 19 cases of infectious diarrheas on the service of Dr. Wyman at the Floating Hospital, 15 of Flexner bacillus type, one of gas bacillus, and three undetermined. Four cases died, giving a mortality of 22 per cent., about the same as in the other service. Of the 15 cases that lived, eight were in the hospital on an average of 21 days each, and lost over their entrance weight 15 ounces. Seven were in the hospital on an average of 14 days each, and gained an average of 10.7 ounces over their entrance weight. Whether this showing was better or worse than the other services they had no statistics to show. In the writer's opinion, however, based on this limited series of cases, olive oil homogenized could be given safely after the severe acute febrile stage had passed and in the period of convalescence, and was more effective in making up the loss of weight than the fat of cows' milk. A study on fat metabolism of infants fed on homogenized milk was carried out on the Boston Floating Hospital during the season of 1915 by Dr. C. H. Laws of the University of Michigan, the results of which were decidedly significant and justified the belief that homogenized milk mixtures and the substitution of cows' milk fat offered an additional and valuable resource in infant feeding in cases of difficult digestion with malnutrition.

A Method of Preparing Synthetic Milk for Studies of Infant Metabolism.—Dr. HENRY I. BOWDITCH and ALFRED W. BOSWORTH of Boston presented this communication, in which they stated that in connection with their studies concerning infant feeding it became necessary for them to have control of all the factors entering into the composition of the food used, and as only liquid food could be used it soon became evident that a synthetic food from pure materials offered the only solution to the problem. The method by which they obtained this consisted of four steps: (1) The preparation of the isolated food material for use in the synthetic milk. (2) The recombining of these materials to give a mixture of the desired composition. (3) The emulsification or homogenization of the fat and any of the solid or insoluble constituents entering into the composition of the food. (4) Pasteurization or sterilization of the food after it had been made. The substances used were pure water, pure fat, pure sugar, pure protein, pure salts of various kinds, and the protein-free milk of Osborne and Mendel. In some cases they had used sugars of the purest commercial grade, while in others they had used recrystallized lactose. The purest commercial olive oil was used and butter fat prepared according to the method of Osborne and Mendel. Thus far they had used only one protein—casein—and had made use of this substance in three forms, calcium caseinate and sodium caseinate of commerce, and pure casein prepared according to their method already published. Osborne and Mendel had shown that a pure synthetic food of pure materials contained no vitamines. But these substances were present in a preparation made by them and called protein-free milk. When the continued use of a synthetized milk was required for more than a few days it was always wise to add some of this protein-free milk in order to get the benefit of the vitamines carried in it. All these synthetic milks had been made up on the percentage basis. The sugar was dissolved in one-half the volume of distilled water required for the complete mixture and the salts added to this sugar solution. The protein was dissolved or suspended in the other half of the water. If larosen or nutrose were used they were rubbed to a fine paste with a small portion of the water, the remainder of the water added, and then the whole warmed to effect complete solution. If pure casein or paracasein was used they might be suspended in the water and homogenized with the fat or they might be dissolved by the addition of alkali, one-half of a cubic centimeter or normal alkali or its equivalent being used to each gram of protein. The two and one-half volumes were now united, the fat melted and added and the whole homogenized. For this purpose the Manton-Gaulin homogenizing machine was used, which was of special design, built for laboratory use. The writer described the machine and the method of cleansing it before use and of passing the mixture through under successively higher pressures until it was thoroughly homogenized, when it presented the appearance of milk. It was then transferred to glass fruit jars and sterilized, lightening jars with glass tops being the best for this purpose. If the food was to be kept for any number of days it should be reheated and then stored in a cold place.

(To be continued.)

Notes on Ureteritis.—Harry Kraus refers to the relatively small literature of this not uncommon condition. This is due to its great infrequency as an isolated affection. In pregnancy the natural results of compression are circulatory disturbance and edema. Here we sometimes see secondary infection of an ascending, probably lymphatic origin. As a rule, however, ureteritis appears to be descending in type and due to disease of the renal parenchyma or kidney pelvis. Clinically the descending form manifests itself at the lower segment. Only in tuberculosis is the entire canal involved. Ureteritis from a foreign body is a local phenomenon, which, by causing dilation or sacculation, may be recognized by the *x*-ray after injection of a contrast fluid.—*The Urologic and Cutaneous Review.*

Thymol from Horsemint.—The recently issued Bulletin 372 of the United States Department of Agriculture deals with this subject. Thymol has been an import, and since the present war the supply has been reduced to almost a tenth of the normal. It is obtainable from our native wild horsemint, and the government experts have learned that under cultivation an acre of improved mint will yield twenty pounds of oil from first plantings, which amount then increases to an annual yield of thirty pounds with a utilizable content of 70 per cent. As thymol is worth at present about $2 per pound, an acre of horsemint will not yield above $40 per annum gross. The cost of production, which includes rents, taxes, fertilizer, growing, harvesting, use of distilling plant, etc., will make the cost of production somewhere about one-half this amount. While this implies a profit of 100 per cent, the margin is not great enough for a safe investment in an untried industry. Other oil-bearing plants could be grown with the mint, with but little increase in expense, and this seems to be the recommendation of the government.—*Southern Practitioner.*

Miscellany.

Luminous Insects and Enzyme Action.—The dependence of photogenesis in fireflies, phosphorescent animals, fungi, bacteria, etc., upon enzyme action has been shown abundantly in the past few years. In 1913 Dubois showed that the mechanism of light production in beetles is bound up in the action of an oxidizing zymase upon an organic protein product in the presence of water. He terms this protein luciferin. It is contained in the form of granules in the photogenic organ while the oxidizing zymase, which he terms luciferose, is dissolved in the blood. When the latter passes the luminous organs the action of luciferose on luciferin gives rise to light. This reaction can be obtained in vitro, using instead of the zymase a chemical oxidizing agent. The luminosity of meat, dead wood, deal leaves, etc., is due to peculiar bacteria, and oxidation is likewise involved here. A hypothetical substance, photogen, is believed to be actuated by light waves in the presence of oxygen. The above jottings are found in an article by Dr. Walter G. Smith in the *Dublin Medical Journal*, June 1, 1916.

History of Diphtheria in Australia.—The records in Victoria began in 1871. From 1871 to 1892 the death rate per million inhabitants varied from 275 to 922, the average being about 521. In 1893 it was but 155 and in 1894, 190. These low figures antedated the use of antitoxin. From 1895 there was a drop until in 1906 the low mark of 47 was reached. The drop was not steady, however, for in 1897 and 1898 it shot up to 270 and 209 respectively. Since 1906 the rate has risen; in 1911 and 1912 it was 181 and 185 respectively. In 1914 it was down to 148. Two factors must play a rôle in these irregularities. First, a recurring exhaustion of epidemic influences; second, the thoroughness or reverse with which the health office is administered. In New South Wales the available records began in 1875. From that period to 1895, when antitoxin was first used the annual death rate per million inhabitants varied from 277 to 768. In 1894 the figure was 378. From 1895 to 1900 it fell steadily to 65. This is the lowest mark reached. Since 1901 the rate has shown great variation. The highest mark was 178 in 1913. In 1902 it was 131. In 1903-1906 inclusive it remained below 100. From 1909 to date (save in 1913) it ranged from 117 to 139. Membranous croup is counted throughout as diphtheria.—*The Medical Journal of Australia.*

"Germano-Medical Sacerdotalism.—W. C. Hossack, Port Health Officer, Calcutta, confesses that he is not a bacteriologist, but thinks the bystander can see some things not realized by the man on the inside. Given sufficient identification marks immutability of bacteria may seem to be proven. Yet some sudden cosmic change like the arrival of the monsoon will upset all the specific characteristics. Thus an "inulin nonfermenter" suddenly becomes an "inulin fermenter." There is a similar liability in regard to anaphylaxis, phagocytosis, immunity reactions, hemolysis, agglutination, etc. The Noguchi test seems to have invalidated the Wassermann test, for the latter is positive for several diseases, and in over a third of the cases of the latter there seems room for a difference of opinion. In other words, it is about 82 per cent. only efficient. What the author deplores is the ceaseless piling up of mere varieties by bacteriologists, which has made their study a dreary chaos, that is leading nowhere. He blames the Germans for this state of affairs because the real progress in bacteriology must be credited to Germans like Koch and Ehrlich and therefore one must not attack the high priests of that science. The only way out is to let other men than bacteriologists pass judgment on what is really valid and stable. If there is mutation its limits must be fixed by something less elusive than percentage fermentations. More stress should be laid on the actual germ recoverable from an infectious case. Chemists, physicists, and other scientists should pass on all matters which involve their respective subjects.—*Indian Medical Gazette.*

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

A Manual of Surgical Anatomy. By Lewis Beesly, F.R.C.S., and T. B. Johnston, M.B., Ch.B. 557 pages. Illustrated. Published by William Wood & Co., New York, 1916. Price, $3.75 net.

Aids to Bacteriology. Third edition. By C. C. Moor, M.A. (Cantab.), F.I.C., and William Partridge, F.I.C. 276 pages. Published by William Wood & Company, New York, 1916. Price, $1.25 net.

A Manual of Practical Laboratory Diagnosis. By Lewis Webb Hill, M.D. 179 pages, interleaved, illustrated. Published by W. M. Leonard, Boston, 1916.

Colon Hygiene, Comprising New and Important Facts Concerning the Physiology of the Colon and an Account of Practical and Successful Methods of Combating Intestinal Inactivity and Toxemia. By J. H. Kellogg, M.D., LL.D. 462 pages. Illustrated. Published by Good Health Publishing Co., Battle Creek, Mich., 1916. Price, $2.

Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes. By Charles A. Elsberg, M.D., F.A.C.S. Published by W. B. Saunders Company, 1916, Philadelphia and London. 158 illustrations, three of them in colors. 330 pages. Price $5.00 net, cloth.

The Expectant Mother. By Samuel Wyllis Bandler, M.D., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Published by W. B. Saunders Company, Philadelphia and London. 213 pages, with 14 illustrations. Price $1.25 net, cloth.

The National Formulary. By American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Published by the American Pharmaceutical Association, 1916, Fourth Edition, Official from September 1, 1916. 394 pages.

Studies in Immunization Against Tuberculosis. By Karl von Ruck, M.D., and Silvio von Ruck, M.D. Published by Paul B. Hoeber, New York, 1916. 439 pages.

Nervous Disorders of Women. The Modern Psychological Conception of Their Causes, Effects, and Rational Treatment. By Dr. Bernard Hollander. Published by E. P. Dutton & Co., New York, 1916. 215 pages. Price $1.25 net.

Treatment of Infantile Paralysis. By Robert W. Lovett, M.D. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. Illustrated. 163 pages.

The Primary Lung Focus of Tuberculosis in Children. By Dr. Anthon Ghon, Professor of Pathological Anatomy at the German University in Prague. English Edition. Authorized Translation by D. Barty King, M.A., M.D. Published by Paul B. Hoeber, New York, 1916. Illustrated. 172 pages. Price $3.75.

Abnormal Children (Nervous, Mischievous, Precocious, and Backward). A book for parents, teachers, and medical officers of schools. By Bernard Hollander, M.D. Published by E. P. Dutton & Co., New York, 1916. Illustrated. 224 pages. Price $1.25 net.

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Original Articles.

THE CLINICAL POSSIBILITIES OF THE PHARYNGEAL PITUITARY.

AN ACCOUNT OF THE CLINICAL RELATION OF THE NASOPHARYNX TO THE HYPOPHYSIS-SYSTEM.

BY W. SOHIER BRYANT, A.M., M.D.,

NEW YORK.

THE intention of this paper is to show (1) that the hypophysis-system may be affected clinically through that portion of the system lying in the nasopharynx, the pharyngeal pituitary, and (2) that the results of clinical treatments of the pharyngeal pituitary are similar to those obtained, in like conditions, by hypophysis-medication.

To illustrate these points I will discuss (1) adenotomy in its relation to the pharyngeal pituiary and the hypophysis-system, and (2) certain postnasal treatments which influence the hypophysis-system by way of the pharyngeal pituitary.

The Pharyngeal Pituitary.—To make this discussion clearer it may be well to include a brief outline of our knowledge of this organ:

The pharyngeal pituitary is a part of the hypophysis-system. It represents the lowermost extremity of Rathke's pouch, the hypophsial pedicle of the embryo, which, failing to emigrate through the cranium, has not disappeared through retrogression, but has become organized, in man, into a true glandular body in the pharynx. The phylogenetic history of the hypophysis-system shows that in the lowest vertebrates, the glandular lobe—itself a portion of the primitive pharynx—is in open communication with the pharynx; this communication is usually lost in the ascending scale, by the chondrification of the base of the skull, but remnants of hypophysisis-tissue remain along the route traveled by the embryonic hypophysis from the ectoderm ic Anlage to the brain. In mammals several hypophysis-remnants or accessory hypophses, have been found in rabbits and cats (Arai) and in dogs. In man the accessory hypophysial tissue takes the form of the hypophysis of the pharynx. Consequently, in contrast to the cerebral hypophysis which lies inaccessible in the sella turcica, protected by the sphenoid bone, this accessory hypophysis-tissue lies exposed at the pharyngeal angle,[1] the most unprotected spot in the pharynx. It is located underlying Luschka's tonsil, and it may be found anywhere within the extreme boundaries—the mucous membrane in the middle line, the posterior margin of the vomer, and the base of the sphenoid.

The pharyngeal hypophysis is known to be present in the fetus and in individuals of all ages up to seventy-six years. In a fetus of 18 mm. it measured 1½ mm. in length (Erdheim); in the adult, its average length appears to be about 5 mm. The shortest length given in the literature is 1½ mm. (fetus); the longest, 7 mm.; the least width, ¼ mm.; the greatest, 3 mm.; the least thickness, 1/5 mm.; the greatest, 1½ mm. These measurements are given here regardless of age. The size of the pharyngeal pituitary has been urged against the possibility of its functional importance. When, however, we consider the average dimensions of the cerebral pituitary (15 mm. in the transverse direction, 8 mm. in the anteroposterior, and 6 mm. in the vertical), in relation to its vital importance in the general economy, it is seen that the size of the accessory pituitary can be no argument against its activity.

According to Citelli, numerous capillaries and small veins are found both within and around the pharyngeal hypophsis; these vessels anastomose with the veins of the pharyngeal mucosa and the submucous tissue as well as with the veins of the periosteum of the lower sphenoid surface and the bone.

Histologically, the pharyngeal pituitary resembles the glandular portion of the cerebral pituitary, but it probably remains more embryonic in structure. The literature emphasizes its histologic variability. My own sections showed strong chromophile elements, with a general structure closely resembling the adrenal.

The function of the pharyngeal pituitary is probably auxiliary to that of the cerebral pituitary. Citelli has found indirect circulatory connections between the pharyngeal hypophysis and the cerebral hypophysis, through a venous plexus in the sphenoid body. There is also probably some nervous connection between them, and it is possible that there may be mutual secretory and stimulative activity between them. In cases of atrophy of the cerebral hypophysis, the pharyngeal hypophysis, very significantly, is sometimes found to be in a state of hypersecretion. The fact that the pharyngeal pituitary is regularly present in man, although very inconstant and often absent in animals, leads Pende to suggest that this gland may possess a high functional importance, perhaps a function of its own, which is different from that of the greater portion of the glandular lobe of the cerebral pituitary. My own theory of the physiological significance of the pharyngeal pituitary is partly explained by its location, which brings it into physiological, as well as anatomical, relations with the lymphoid tissue of Waldeyer's ring. It lies in the median line in close association with Luschka's tonsil, a portion of the defense mechanism of the ring. The pharyngeal pituitary is the representative of the cerebral pituitary located, like the lymphoid tissue, in the most vulnerable part of the body, because the exposure of this portion needed the strongest defense mechanism the body is capable of, which is the pituitary-system.

The Relation of Adenotomy to the Pharyngeal and the Cerebral Hypophyses.—The importance of the pharyngeal pituitary lies in the fact that this external portion of the glandular hypophysis may have its functional mechanism interfered with by the in-

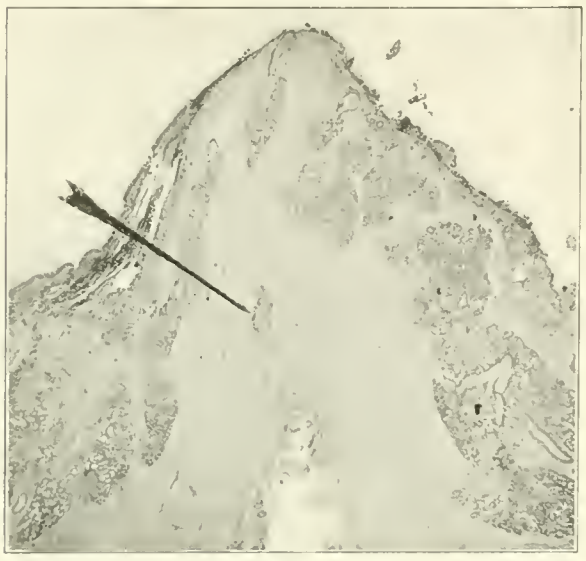

Fig. 1.—This and the following figures show sections of the pharyngeal pituitary of an individual 40 years of age; general paresis; death from bronchial pneumonia. Stained with hematoxylin-eosin. Figure 1 is a section of the anterior portion of the pharyngeal pituitary, showing it situated in midst of the mucoperiosteum, near the superior end of the choanal septum. A group of poorly staining, or clear cells, is seen.

fections of the upper air tract, especially of the rhinopharynx and the pharyngeal angle. Citelli[2] believes that the pharyngeal hypophysis is in functional contact not only with its surroundings, the pharyngeal mucosa and the adenoid vegetations, but also with the cerebral hypophysis. Accordingly, the common inflammations of the pharyngeal mucosa exert an injurious effect upon the functional and the anatomical development of the pharyngeal hypophysis and indirectly upon the cerebral hypophysis. In chronic hypertrophy of the pharyngeal tonsil ("adenoids"), the pharyngeal hypophysis is likewise hypertrophied, as would be most natural considering its relations with the pharyngeal tonsil as component parts of the defense mechanism. Furthermore, if the pharyngeal hypophysis is affected, the cerebral hypophysis is also involved; the bearers of "adenoids" have been known to present a hyperplastic condition of the cerebral pituitary with hypersecretion. Other chronic affections of the nasopharynx which must of necessity involve the pharyngeal pituitary result in pathological changes of the cerebral pituitary. Citelli's[3] findings justify the assumption that part of the associated disturbances with adenoid vegetations represent toxic phenomena in consequence of impaired hypophysial function.

Consequently, it is of great importance that in adenotomy at least one means is afforded of relieving the hypophysis-system of infections incident to its location, and of stimulating it to normal functioning. The clinical relation of adenotomy to the hypophysis-system is revealed in cases of "adenoids"; adenotomy, an operation which impinges upon the periphery of the hypophysis-system, relieves the pharyngeal pituitary, together with the lymphoid tissue, as is shown by the reaction of the hypophysis-system in form of more rapid growth and improved nutrition after this operation. It seems hardly necessary to state that the pituitary-system is known to be of essential importance for the normal course of the processes of growth (see Cushing.[4]) Furthermore, adenotomy relieves a psychic symptom-complex pathognomonic for hypophysial lesions, which is associated with "adenoids" and affections of the nasal passages; this complex comprises loss of memory, partial or complete; aprosexia, mental and emotional sluggishness, and morbid drowsiness and somnolence. The frequent remarkable psychic change after adenotomy is a matter of common knowledge. It is interesting that Citelli[3] states that this symptom-complex can be removed through operative or local treatment of the primary disease, alone; or it can also be removed through general hypophysial treatment without local measures; a certain and permanent recovery is ensured through the combination of these two methods of treatment.

Postnasal Treatments and the Hypophysis-system.—The statements recorded above are all discussed at greater or lesser length in the literature. The writer has now an entirely new statement to make regarding the clinical significance of the pharyngeal pituitary, and will attempt to place a large variety of postnasal treatments on the same level with adenotomy in regard to the hypophysis-system.

The treatment of the post-rhinopharynx is well known and widely used, and its effects are recognized as very important in all infections of this region and their complications. There is great variety of technique used in treating this region; many eminent physicians treat it in routine manner and have done so for a long time. I have a special treatment of the postnasal region, the technique and impirical indications of which were suggested by Dr. E. D. Spear; the treatment consists of an application of irritating fluids—usually ammonia ferric sulphate or hydrogen peroxide—by means of a cotton carrier through the nose, to the vault of the pharynx in the median line from the base of the vomer backwards. For nearly thirty years I have

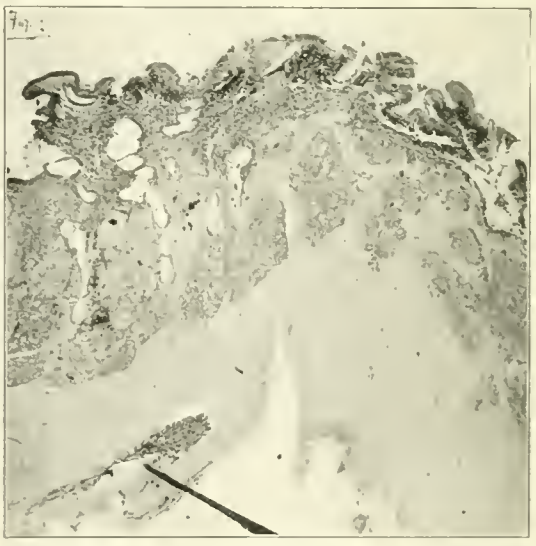

Fig. 2.—Oblique section of the posterior portion of the pharyngeal pituitary, showing its position in the mucoperiosteum of the vomer close to the sphenoid; it is overlaid by the anterior portion of Luschka's tonsil and a great quantity of mucous glands. Chromophile or deeply staining cells appear in the pharyngeal pituitary.

been using this stimulation empirically in (1) hypertrophic conditions of the lymphoid tissue and the mucous membrane of the rhinopharynx with hypertrophic ear conditions, instead of adenotomy; (2) in conditions of the mucous membrane where hyper-

trophy and atrophy in various combinations are associated with atrophic middle-ear catarrh; (3) in atrophic conditions of the rhinopharynx associated with hypotrophic conditions of the middle ear; (4) in otosclerosis; (5) in tonsillitis; (6) in cases of articular synovitis.

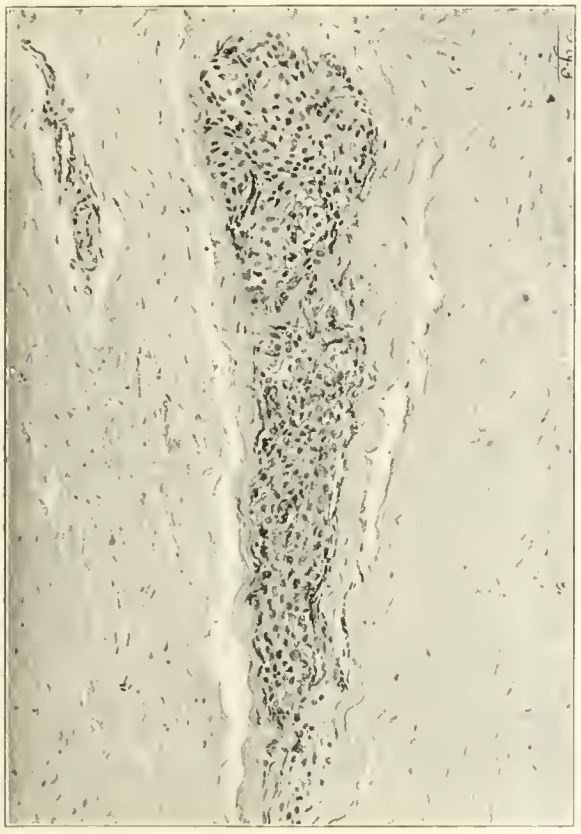

Fig. 3.—Section of the anterior portion of the pharyngeal pituitary more highly magnified. Composed chiefly of clear cells.

The effects of these applications are immediate: after one application there occurs (1) an equalization of the circulation, shown by improved color of the face; a red face loses color and a pale one becomes rosy; (2) the blood tension is likewise equalized; when abnormally low, an increase of tension occurs, whereas, when abnormally high, a reduction generally follows; similarly (3) the pulse is brought from either extreme closer to the normal. Repeated applications are followed by a consciousness of euphoria—an objective general physical improvement. A tonic effect is characteristic. The most striking of these general effects is the regulation of the blood pressure, so that it tends always to approach the normal.

The local effect, in catarrhal ear troubles and in otosclerosis, is an improvement of the hearing; in articular synovitis there is an immediate noticeable relief of pain; fluid in the joints is got rid of, and motion is restored. In the case referred to in my article, "Acute Articular Synovitis of Cryptic Nasopharyngeal Origin,"[5] pain was relieved after the first postnasal application, motion was gradually restored and fluid disappeared completely in eleven treatments.

I had made use of these empirical stimulations for a good many years before I had any understanding of their relation to the pituitary-system. The beginning of my enlightenment as to the real cause of the remarkable results from this form of treatment came when an unknown glandular body appeared (in some sections that I had made of the nasopharynx), which I located as being precisely in the region I had stimulated. This glandular body was the pharyngeal pituitary ("discovered" by Erdheim in 1904). Subsequent investigation revealed it as an integral part of the hypophysis-system, so placed as to be clinically accessible.

After making this discovery of the suggestive location of the pharyngeal pituitary in regard to postnasal stimulations, I compared what is known of adenotomy and its effects on the hypophysis-system with the fact that the results of postnasal stimulations are those associated with the activities of the hypophysis-system; that is, blood tension, pulse rate, and circulation are affected almost immediately and infection is reduced. I then compared the results of stimulating the pharyngeal pituitary with the results of hypophysis-medication in like pathological conditions, and found that clinical treatment of the pharyngeal pituitary by means of chemical stimulation and the introduction of hypophysis-substance into the system are remarkably similar in their results in arthritis, otosclerosis, osteomalacia, etc. Compare, for instance, both the general and the local effects of the chemical stimulation of the pharyngeal pituitary as given above, with those obtained by Whitbeck: "Rheumatic Arthritis Treated by the Extract of Pituitary Body."[6] In his series of cases the regulation of the blood pressure, from high to normal and from low to normal, is strikingly similar to that obtained by chemical stimulations of the pharyngeal pituitary; likewise, the results in the regulation of pulse and circulation are similar,

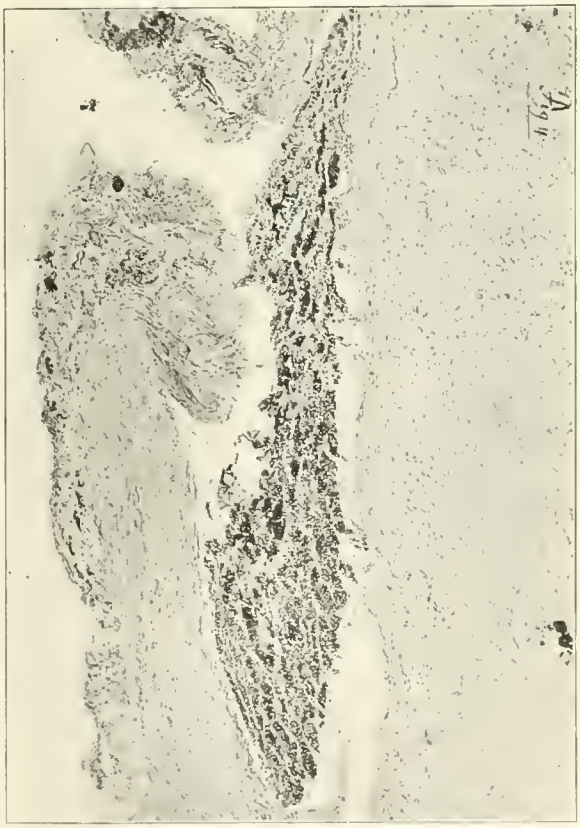

Fig. 4.—Section of the anterior portion of the pharyngeal pituitary showing a structure resembling that of the suprarenal gland.

as are also the local results of relief from pain and alleviation of joint symptoms. Compare also Macy,[7] in whose three cases of gonorrheal arthritis, all inflammation had disappeared and motion had returned after ten days' use of pituitary medication.

Borchardt[8] advises the use of hypophysis-extracts in infectious diseases with a lowered blood pressure and in rachitis. Denker[9] and Citelli[10] connect otosclerosis with hypophysis dysfunction, and Denker looks for good results from hypophysis-medication. Koch[11] has treated osteomalacia successfully by hypophysis-medication; severe pains which were not relieved by narcotics or by antirheumatic remedies were immediately relieved even by a few cubic centimeters of hypophysis-extract, with an especial improvement of the subjective conditions. Likewise, Klotz,[12] Elfer,[13] and Weiss[14] have used pituitary-medication successfully in rachitis or osteomalacia, and there is mention in the literature of its successful use in Still's disease. It is also not without interest in regard to the regulation of the pulse noted above, that Hewlett[15] makes the statement that pituitary extract is the only drug which will convert the abnormal pulse form so frequently seen in fever into a relatively normal pulse form.

As an example (under somewhat different technique) of the effects of stimulation of the pharyngeal pituitary in toxic conditions, the following is striking and illustrative. At the request of another physician I examined the throat and nose of a patient of his, a young woman of twenty-four, who had never menstruated, and who was subject to occasional "crying spells," but who was otherwise apparently normal. When I saw her she had been prostrated for some time, had a temperature running to 101⅘°, and showed a slight swelling and irritation of the adenoid. All signs were negative. As tonsil and nasal treatment did not relieve the lymphoid hypertrophy, I used forcible application in the "adenoid region" of iodine and glycerine, which caused bleeding and considerable discomfort, soon followed by a rise of temperature to a steady temperature of 104°. The case was then diagnosed as typhoid fever, which ran its course and proceeded to convalescence. In this case there was probably a slight chronic hypopituitarism associated with ovarian dysfunction; there was, nevertheless, a sufficiently active pituitary function to respond in form of temperature to stimulation of the pituitary-system. The explanation is that the pituitary-system had been so depressed with toxins that it was too sluggish to react until stimulated.

Conclusions.—It seems possible to say, on the foregoing evidence, that intervention in the region of the nasopharynx whether it takes the form of (1) adenotomy (or of scraping, slitting, finger-manipulation or forcible application to the adenoid), or (2) of chemical application through the nose to the region of the pharyngeal tonsil, affects the hypophysis-system through the pharyngeal pituitary. After adenotomy and chemical stimulation of the pharyngeal tonsil, the results in (1) rapid growth and improved nutrition, (2) in relief from aprosexia and morbid somnolence, etc., (3) in freeing the system of infection and local relief of pain, (4) in the regulation of blood pressure, of pulse, of circulation, and of temperature, all speak for themselves as to the involvement of the cerebral pituitary in the renewed activity of the pharyngeal pituitary. Consequently, it is possible in depressed states of the pituitary-system to supply pituitary activity in either of two ways—the first, by clinical treatment of the pharyngeal pituitary through intervention in the nasopharynx; the second, by supplying pituitary substance to the system. It is very likely possible to combine advantageously the clinical and the therapeutic modes of treatment.

If adenotomy and postnasal treatments are in effect, as we assume, stimulations of the pharyngeal pituitary, by which the pituitary-system is influenced, then, on account of the interrelation of the pituitary, the thyroid, the adrenals, etc., adenotomy and postnasal treatments must influence in some degree the entire glandular system, a fact which in itself is another explanation of the relief after postnasal intervention.

It goes without saying that while for many years physicians have unwittingly been activating the pharyngeal pituitary and the hypophysis-system by treatment of the nasopharynx, any idea that there might be clinical possibilities offered by the location of an outlying portion of the hypophysis-system in the pharynx, has barely been considered. It is of extreme importance to the oto-laryngologist that this gland be investigated and some definite idea of its clinical possibilities be gained. Doubtless, in certain cases, the stimulation of the hypophysis-system through the pharyngeal pituitary might be impossible, as the literature states that it is sometimes atrophied, or composed of Malphigian cells or of pavement epithelia; on the other hand, in certain abnormal cases where an open craniopharyngeal canal persists, which, according to Citelli, are less rare than was formerly thought, postnasal intervention would be quite literally a stimulation of the hypophysis *in situ*. In the great majority of cases, however, as the writer's experience has shown, it is possible to assume a normal pharyngeal pituitary, with functionating elements, which respond to clinical treatment. That this outpost of the pituitary-system lying in the pharynx is of clinical importance in the treatment of certain diseases, is without doubt. And, of necessity, to the oto-laryngologist must belong the responsibility of opening up this new field of clinical work.

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Note: Two very different theories of "adenoids" in relation to the hypophysis-system may be found in the writings of Citelli and Poppi—W. S. B.

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Congenital Obliteration of the Bile Ducts.—T. B. Holmes thinks that atresia of the bile ducts is not so extremely rare as is commonly believed; hence every medical man should bear in mind the possibility of its occurrence. It appears to be, in the majority of cases, a developmental anomaly, and in 16 per cent of cases thus far reported the anatomical relations suggested the possibility of surgical relief—an artificial passage to the duodenum, or this absent, a temporary fistula. The actual number of cases of operative cure or relief in comparison with the total number of cases recorded seems to be about 3 or 4 per cent.—*American Journal of Diseases of Children.*

HEREDOSYPHILITIC DENTAL STIGMATA.

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It has long been known that stigmatism of the teeth may be caused by heredosyphilis.

Syphilitic hypoplasia (misnamed erosion and atrophy) of the teeth, is apparently caused not directly by the *Treponema pallidum* in the tissues of the embryo, fetus, or young child but indirectly by the severe disturbance in the metabolism of the young organism brought about by the syphilitic infection; the extent of the hypoplasia depending upon the seriousness of the disturbance which in turn is determined by the amount and duration of the infection. The syphilitic infection may be so great and the disturbance in metabolism so severe that the cells of the embryo, fetus, or young child are unable to resist it and instead of stigmata being produced, death results.

Syphilitic hypoplasia of the teeth is a subject of great diagnostic and economic importance, but of late has seemed to slumber in "no man's land," interesting apparently neither dentist nor physician.

It is to be remembered that heredosyphilis is essentially the same as self-acquired syphilis, it is syphilis acquired in utero from the syphilitic mother. Syphilis "ab ovo" has not been discovered although the *Treponema pallidum* has been found in the ovocyte.

The study of syphilitic hypoplasia of the teeth presupposes some knowledge not only of the development of the teeth (especially the time when the formation of dentine begins and the height which the so-called dentine cap should normally reach at various periods of the teeth's development), but also of the time of their eruption.

It is also to be remembered that a tooth is formed partly of epithelium (ectodermic in origin)—the *enamel;* and partly of connective tissue (mesodermic in origin)—the *pulp, dentine,* and *cementum.*

The first traces of the teeth (Fig. 1*) are seen in the second month of embryonic life when a groove—*the dentinal or enamel groove* develops along the inner edge of the embryonic jaw. From the floor of this grove an epithelial lamina or ridge—*dentinal ridge, enamel ledge, dental shelf* (Zahnleiste) forms, constituting the anlage of the enamel organs.

The dentinal ridge or enamel ledge develops solid protuberances—*dentinal bulbs or enamel germs* at points where the temporary (deciduous or milk) teeth will later appear; each point corresponding to a temporary tooth. The dentinal bulbs or enamel germs are somewhat knoblike; later, their bases spread and flatten until finally the underlying connective tissue—*dentinal papillæ* projecting up into them make them cup-shaped, each enamel germ grows deeper into the underlying connective tissue, but remains connected by a thick epithelial cord (neck) with the dentinal ridge on the inner (lingual) side of the enamel germs.

The enamel germs become the *enamel organs,* which remain connected by thin epithelial cords (so-called necks) with the dentinal ridge and have the double function of determining the shape of the crowns of the several teeth, and producing the enamel for them.

*I am indebted to Dr. Francis Ováry for the drawings in Figs. 1 to 6. Figs. 2-3 were drawn from sections made in the Histology Laboratory of the New York College of Dentistry.

An Enamel Organ consists of the following layers of cells, viz., (1) An *inner layer of hexagonal cylindrical cells—enamel cells, also called ameloblasts, adamantoblasts,* (2) A *stratum intermedium,* of more or less round cells, (3) A *stellate reticulum,* or an *enamel pulp,* of stellate cells, (4) An *outer layer* of flat cells. See Figures 1-2-3.

The dentinal papillæ growing vertically soon become surrounded on all sides by the cap-like enamel organs, and at the periphery of the papillæ there develops a layer of columnar cells (odontoblasts) of mesodermic origin which form the dentin, by a process thought to be analogous to that observed in the formation of bone, by the osteoblasts. After the formation of a considerable amount of dentine by the odontoblasts, the enamel cells grow in length, and finally from or by them (by the process of amelification) the enamel prisms are formed.

While these processes are taking place a connective tissue covering—*Dental Sac,* which is rich in cellular and fibrous elements forms around each developing tooth. The cementum is thought to be produced from the cells in this dental sac.

The dentine always begins to form at the summits of dentinal papillæ so that dentine caps (Figs 2 and 3) are formed before amelification takes place; later on, however, dentinification and amelification proceed synchronously. The process of dentinification which is remarkably regular proceeds from the summit of the dentinal papillæ and gradually forms the crown, neck and the root of the tooth.

Dentinification takes place much earlier than is generally supposed. According to Magitot and Legros the dentine caps of the teeth begin to form approximately as follows:—

Deciduous teeth: Incisors and cuspids, 17th week of intrauterine life; 1st and 2nd molars, 18th week of intrauterine life. Permanent teeth: 1st or 6-year molars, 6th month of intrauterine life; incisors, 1st month after birth; canines or cuspids, 3d and 4th month after birth; biscuspids, 6th month after birth; 2d or 12th year molars, 3rd year after birth; 3d molars or wisdom teeth, 12th year after birth.

At birth no permanent teeth have begun to calcify except the first molars.

Figure 4 shows the time of the inception of calcification (dentinification) of the teeth.

If the morbid influence of syphilis does not affect the tooth during its development, it erupts complete in form and structure. Syphilitic stigmata upon the teeth can be produced only during the development of the teeth and are the result of some interruption in the process of calcification. Suspended or improperly performed calcification produces irreparable stigmata, which may be seen on any part of the tooth from its morsal surface to its gingival margin depending upon the time when the syphilitic infection is sufficient to produce them. If the disturbance caused by the syphilitic infection is sufficiently active at the time when dentinification is about to begin the hypoplasia will be upon the morsal surface of the tooth, but if the syphilis is active later on, the stigma may show itself at a higher level upon the facial, lingual and mesial surfaces of the tooth, upon that part of the tooth which is then undergoing development. Thus it is possible to tell from the stigmata on the teeth the time when some vicious disturbing influence attacked the embryo, fetus, or new-born child.

The apparent relationship already referred to between the degree of syphilitic infection and the degree of syphilitic hypoplasia of the teeth is indicated by the fact that the hypoplasia of the dentine, and the enamel, may be slight, or extending through various degrees, very marked. The dentine may be covered with but poorly differentiated enamel or

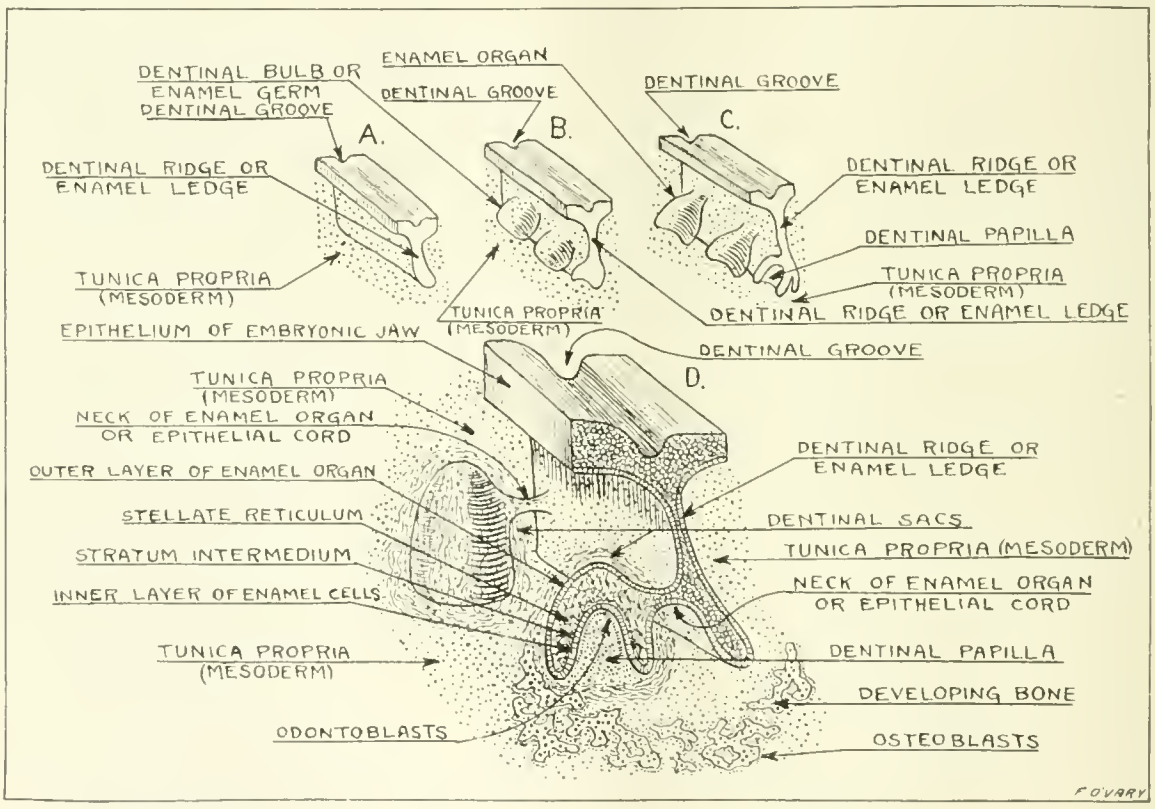

FIG. 1.—Diagram illustrating the earlier periods in the development of the tooth.

no enamel; or the tooth may not be formed at all, the cells of the tooth germ having been destroyed.

Syphilitic hypoplasia of the deciduous teeth rarely occurs, because the beginning of dentinification for these teeth takes place, as we have said, from

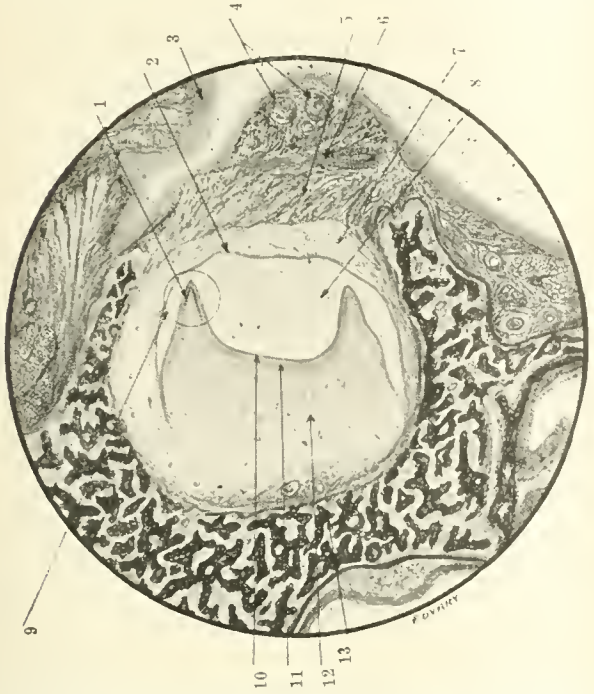

Fig. 2.—A longitudinal section of the left upper deciduous first molar from a human fetus of about four and a half months, showing the early formation of the dentin cap. (Leitz, oc. III, obj. 1.) 1. Dentin cap; 2. outer layer of enamel organ; 3. epithelium; 4. epithelial debris; 5. tunica propria; 6. dentinal ridge; 7. dental sac; 8. stellate reticulum.

about the seventeenth to the eighteenth week of intrauterine life, and if the fetus is infected with syphilis at this time it usually dies. Syphilis is a potent abortionist; but it is possible when the syphilitic mother is given antisyphilitic treatment that the life of the fetus may be saved.

The first molar, incisor, and cuspid teeth of the second dentition are the ones which show frequently the evidences of heredosyphilis, (Figs. 5-6) because the first molars are beginning to undergo dentinification during the last months of fetal life and the incisors and cuspids during the first three or four months after birth. (Fig. 4) It is at this time that the syphilitic process is most intense, frequently causing the death of the fetus or child.

Suppose the syphilitic infection, theretofore not sufficiently active to interfere with the process of calcification, is most intense at the fourth month after birth; (Fig. 5) calcification of the deciduous teeth having already taken place no evidence of syphilis will be seen upon them. But, because at this time only about half the crowns of the incisor teeth have undergone dentinification, the stigmata will, after their eruption be evident on them, at the same level, viz., about half way up, on the crowns

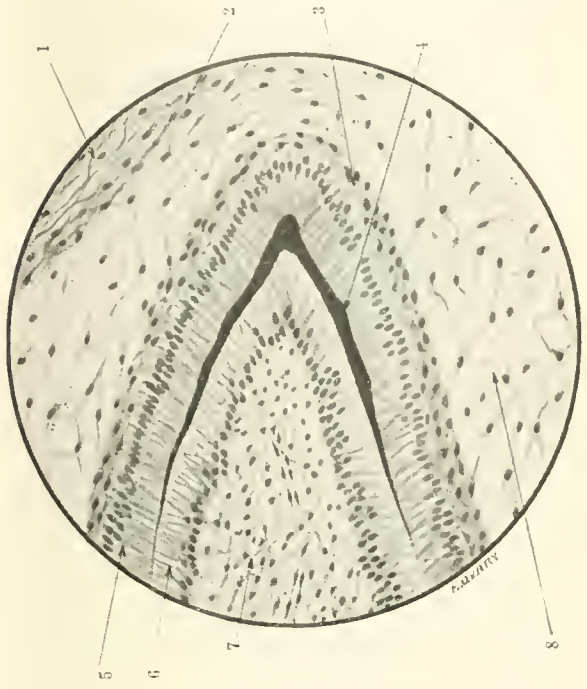

Fig. 3.—Higher magnification of the contents of the circle in Fig. 2. Notice that the enamel has not begun to form. (Leitz, oc. IV, obj. 5.) 1. Dental sac; 2. outer layer of enamel organ; 3. stratum intermedium; 4. dentin cap; 5. inner layer of enamel organ; 6. odontoblasts; 7. dentinal papilla; 8. palate reticulum.

of all the eight incisor teeth. Dentinification for the cuspid teeth is beginning at this same period, consequently only the summit of these four teeth will be affected. The first and second bicuspids will not be affected at this time as dentinification has not yet begun. But the first molar teeth at the fourth month after birth have considerable dentine (half or two-thirds) formed for the crowns of their teeth, consequently the lesions will appear about half or two-thirds the way up, on the crowns of those teeth.

The second and third molar teeth cannot be affected as dentinification does not occur until some years later.

The stigmata of developmental syphilitic hypoplasia are usually found upon the same group of teeth at about the same level on their crowns.

Some general morbid influence produces the hy-

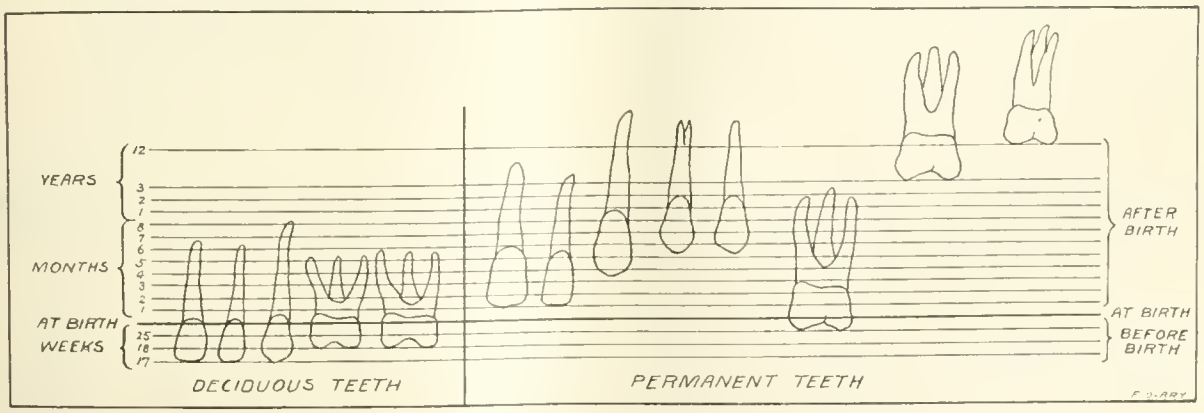

Fig. 4.—The time of the inception of calcification (dentinification) of the teeth.

poplasia for a local cause would produce a more or less local result, *e. g.* an osteoperiostitis of the left half of the mandible might interfere with the development of the teeth on that side but not upon the other side nor with teeth of the maxillæ.

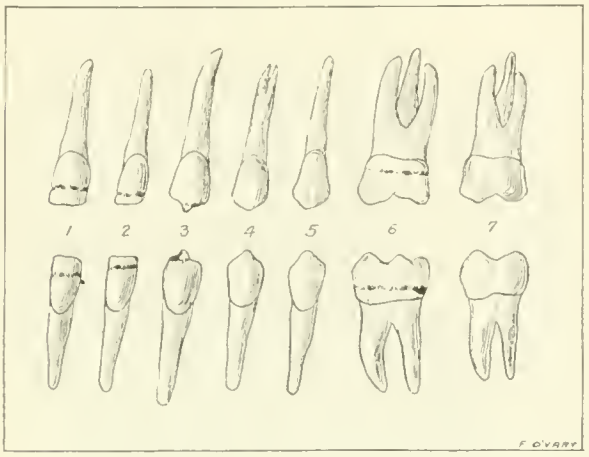

FIG. 5.—A semi-diagrammatic representation of a systematized hypoplasia of several sorts of upper and lower teeth (incisors, cuspids, and molars). The general systemic disturbance which must have caused these stigmata occurred about the fourth month after birth. (The third molars have not been inserted in the drawings.)

A local cause cannot produce, but a disturbance in metabolism occasioned by the severe general systemic syphilitic infection of the embryo, fetus, or young child could produce: (1) Multiple and disseminated stigmata of the teeth in both maxillæ and mandible. (2) Symmetrical stigmata here and there upon homologous teeth. (3) Systematized stigmata at the same level on different sorts of teeth.

The most characteristic stigmata of the teeth in heredosyphilis are: (1) Hutchinson's teeth; (2) Hypoplasia of the morsal surface of the incisor teeth, other than Hutchinson's teeth; (3) Hypoplasia of the morsal surface of the cuspid teeth; (4) Hypoplasia of the facial, lingual, and mesial surfaces of the teeth in the form of pits, furrows

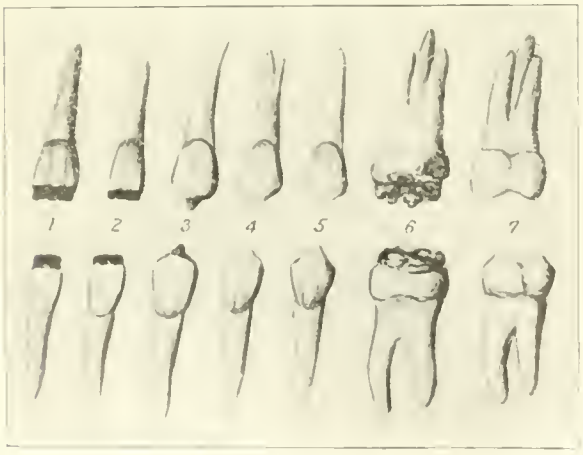

FIG. 6.—A semi-diagrammatic representation of a systematized hypoplasia of several sorts of upper and lower teeth (incisors, cuspids, and molars). The general systemic disturbances which must have caused these stigmata commenced about the twenty-fifth week of intra-uterine life and continued up to about the fourth month after birth. (The third molars have been omitted.)

and honeycombed teeth; (5) Symmetrical hypoplasia of the four first molars; (6) A systematized hypoplasia of several sorts of upper and lower teeth, *e. g.* incisors, cuspids and molars.

Hutchinson's Teeth.—Jonathan Hutchinson was the first to describe this extraordinary dental stigma and explain its pathological significance. This form of syphilitic dental hypoplasia, which was the first recognized, is characterized in its most typical form by a marked crescentic indentation of

FIG. 7.—Typical Hutchinson teeth. (Fournier.)

the morsal surfaces of the two upper median incisor teeth (Fig. 7). The term Hutchinson's teeth has been misapplied to any other tooth having a similar depression upon its morsal surface. This form of hypoplasia has also been seen in heredosyphilitics upon the four inferior incisor teeth and even upon cuspid teeth.

According to Hutchinson this term is to be applied to the superior central incisor teeth of the second dentition presenting a semilunar depression on their morsal surfaces, the teeth being screwdriver shaped (wider at their neck and narrowing towards their morsal surfaces) and converging obliquely. (Figs. 7 and 8.)

This lesion when typical has such an individuality that no other dental lesion can be confused with it. It can be recognized at a glance. It is impossible to misunderstand it, although it varies in character with the age of the heredosyphilitic. When the tooth erupts the characteristic semilunar indentation upon its morsal surface does not exist. The place where the future crescent is to form is filled in with hypoplasic tooth structure, either in the form of acuminate buds, points, or spicules forming a sort of fine denticulation, or in the form of a more or less homogeneous lobular mass. This hypoplasic dentine, which is not covered with enamel, is non-resistant, friable, and rapidly crumbles and wears away so that after a few years it entirely disappears and in its place we have the crescentic notch.

During adolescence the morsal surfaces of Hutchinson's teeth change and at maturity lose their

FIG. 8.—Typical Hutchinson teeth in a patient twenty-two years of age. Here the crescents have nearly disappeared, but the beveling on the facial surface of the teeth is still evident. Notice the pits on these teeth, especially the upper left central incisor. The cause of this patient's condition, facial paralysis, was first recognized through these two upper central incisors. His blood afforded a positive Wassermann (N. Y. Health Dept.) reaction, and examination of his eyes revealed a heredosyphilitic choroiditis.

characteristic appearance. The arcs on these morsal surfaces gradually diminish; at 20 to 22 years (Fig. 8) they are noticeably effaced, and at about the twenty-fifth year the characteristic crescents disappear entirely and the morsal surfaces become

rectilinear. But at the twenty-fifth year an important characteristic of the lesion, the beveling of the inferior facial surfaces of the teeth, still persists; for the crescents of Hutchinson involve not only the morsal surface of the teeth but also

Fig. 9.—An early stage of Hutchinson's teeth, showing the crescents before hypoplasic tooth structure has been worn away. Patient 14 years of age. Mal-coaptation of the teeth.

the facial surface in that the beveling extends from above downwards, slanting from the facial to the lingual surface of the teeth, and so involving more of their facial surface. These bevels which crown the crescentic notches are the last of the stigmata to be effaced through usage of the teeth and they are the last vestige of Hutchinson's teeth, disappearing at about the thirtieth year. The teeth then are shorter and have lost all their diagnostic significance.

The so-called "crescentic notch of Hutchinson" may also be seen upon the following permanent teeth: (1) The lateral superior incisors; (2) All the lower incisors; (3) Very exceptionally upon the cuspids.

Legros, Hutchinson, Moon, and Fournier report having seen Hutchinson's crescent upon one upper central incisor tooth, the other being perfectly normal.

The superior incisor teeth, especially the central incisors may have the screw-driver shape, but neither converge nor have they crescentic notches upon their morsal surfaces. This lesion is at times so slight that it is liable to be overlooked. Such teeth have not been conclusively shown to be of heredosyphilitic origin.

Hutchinson's triad, viz., Hutchinson's teeth, in-

Fig. 10.—Teeth of heredosyphilitic (?), eleven years of age. Hypoplasic flattening of the morsal surfaces of the upper central incisors, hypoplasia of cuspids, amorphism of teeth. Absence of upper right lateral incisor. Patient had a hypoplasia of the morsal surfaces of the first molars, more or less general venous ectasia, general infantilism, a high and contracted dental arch, general adenopathy, and had undergone two operations for adenoids. Wassermann negative (N. Y. Health Dept.).

terstitial keratitis, and otitis media, are pathognomonic of heredosyphilis.

Hypoplasia of the Morsal Surfaces of the Incisor Teeth other than Hutchinson's Teeth.—Among the numerous forms of hypoplasia of the morsal surfaces of the incisor teeth the following are the most frequent types: (1) *Flattened;* (2) *Saw-like;* (3) *Stunted.*

In the flattened type the summit of the tooth is flattened on its facial and lingual surfaces, resem-

Fig. 11.—This case shows pits on the teeth, saw teeth, hypoplasia of morsal surfaces of the upper lateral and all the lower incisors and upper left cuspid, and microdontism and amorphism of teeth. The patient was thirteen years of age, and but 4 ft. 1 in. in height, showing all the signs of general infantilism, and a persistence of the deciduous upper second molars, hypoplasia of the two upper and loss of the two lower first molars, and delayed dentition of three second molars, a heredosyphilitic choroiditis, and a positive Wassermann (by N. Y. Health Dept.) reaction.

bling somewhat a tooth which had the summit of its crown compressed on its four sides in a vise (Fig. 10). This hypoplasic surface appears yellow, gray, or even black at some points and is irregular, uneven, and roughened with more or less vertical furrows. I have seen cases where this stigma extended on the crown of the tooth to the height of 3 mm. from the morsal surface. It is evident that this portion of the teeth is friable and easily falls to pieces. Fournier compares it to "a sheet of heavy paper."

The "saw-like teeth" (Figs. 11-13) have morsal surfaces which are irregular and rugged as if fine vertical incisions or little grooves had been filed on them.

The teeth with "stunted" morsal surfaces have circular grooves about 2 or 3 mm. from their summits, from which emerge amorphous yellowish caps. Sometimes these caps appear like small teeth placed upon larger ones; at other times the caps have small buds upon their summit giving the caps the appearance of a clove, "stunted" teeth with such caps are sometimes called "clove teeth."

Hypoplasia of the Morsal Surface of the Cuspid Teeth.—Syphilitic hypoplasia of the cuspid teeth occurs nearer the morsal than gingival margin of these teeth. A circular constriction is evident near their morsal surface, the hypoplasia portion ap-

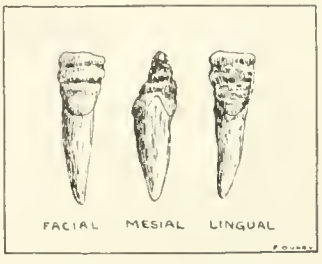

Fig. 12.—Typical syphilitic stigmata in the form of transversely arranged furrows and pits on the facial, mesial, and lingual surfaces of incisors.

pearing somewhat like a teat upon the end of the tooth.

Hypoplasia of the Facial, Lingual, and Mesial Surfaces of the Teeth in the Form of Pits and Furrows, and Honey-combed Teeth.—The pits in the

teeth vary in size, they may be very small like the depression made in soft wax with the point of a pin or they may be large, deep and similar to a depression made in soft wax with the head of a match. The surface of these pits is irregular and in young

Fig. 13.—See legend of Fig. 15.

teeth is white, but later becomes gray, brown or even black. These pits varying in depth, may be very superficial with a slight covering of enamel, or may extend a considerable distance into the dentine (Figs. 8-11). They involve by preference the incisors, especially the central superior incisors. They vary in number and where several exist they are usually disseminated without order, but at times they are arranged in a horizontal line and more rarely in two superimposed horizontal lines separated from each other by one or two millimeters.

Stigmata in the form of furrows are more common than pits upon the crowns of teeth. The tooth appears as if it had been scratched transversely and the scratch, furrow, or sulcus encircles the tooth horizontally.

The furrow may be so superficial that it is likely to escape notice and resembles a line on a sheet of paper made by the pressure of one's finger nail. This lesion, which is not very evident, gives one the

Fig. 14.—See legend of Fig. 15.

impression that it is a transverse line, not a groove, crossing the tooth. The existence of the groove, however, is proved by scratching the crown of the tooth with the finger nail. Sometimes the groove may be a quarter to one-half a millimeter deep with little or no enamel covering. This form of lesion later becomes gray or black and so more striking and evident.

Instead of the stigma taking the form of a single groove traversing the circumference of the tooth horizontally, there may be two, three or more of them (Fig. 12). The multiple grooves which are superimposed horizontally on the crowns of the teeth are located nearer the morsal surface than gingival margin of the tooth. The grooves are separated by bands of enamel which form light ridges between them. Such teeth have been called by the French "dents en étage, dents en escalier, or dents en gradin." We might call them "graded" or "intermittently affected teeth." The grooves, alternating with the ridges, indicate alternating periods of exacerbations and remissions of the disease.

The morsal surface of such teeth where the first grade or step of the hypoplasia appears is usually thin, rough, irregular, brownish in color and without any enamel covering. It rapidly falls to pieces and disappears so that in adolescence or in young

Figs. 13, 14, and 15 are taken from casts showing the teeth of a heredosyphilitic, thirteen years of age, whose father, mother, sister, and two brothers were also syphilitic, all giving a positive Wassermann (by Otto Lowy, Newark, N. J.) reaction excepting the youngest brother (two months of age). An examination of his blood was not made because the *Treponema pallidum* was found by me under the dark field microscope in the exudate taken from the mucous patches about his mouth. This case shows delayed dentition, hypoplasia of three of the first molars (the left upper first molar not having erupted), persistence of all the deciduous molars in the mandible and the second deciduous molars in the maxilla, a saw tooth, microdontism, amorphism of teeth, Hutchinson's crescents on the upper lateral incisors, and malcoaptation of the teeth.

adult life the tooth is deprived of its morsal surface and the shortened crown of the tooth appears as if this morsal surface had been cut off transversely.

Stigmata in the form of furrows usually appear on the incisor teeth but they may appear upon the cuspids or first molars.

Sometimes a third, a half, or three-fourths of the crown of the tooth is hypoplasic, so that its surface is uneven, rough and at times anfractuous, and appears grayish yellow, even grayish black. Fournier calls such a lesion "erosion en nappe." Tomes calls the teeth "honey-combed teeth."

Symmetrical Hypoplasia of the Four Permanent First Molar Teeth.—The morsal surface of the four permanent first molar teeth is completely changed (Fig. 6). In infancy and adolescence two-thirds or three-quarters of each tooth nearer its morsal surface is hypoplasic, diminished in all its diameters, eaten away, and marked off

from the rest of the tooth by a circular constriction; so that there appears to be a small stump-like tooth, a stump of undeveloped dentine, emerging from the remaining apparently normal crown. This surface is extremely irregular with rough, conical, pointed eminences which are at times markedly anfractuous, has fissures which are more or less deep, and penetrate even the dentine, and has a yellow, brown, dirty gray, or black appearance. This hypoplasic stump partially covered with enamel is gradually worn away and crumbles to pieces so that it finally disappears and with the crown of the tooth thus shortened, the morsal surface becomes flat, yellow in color and surrounded by a zone of white enamel. *This symmetrical hypoplasia of the morsal surfaces of the four permanent first molar teeth is of the greatest importance in the diagnosis of heredosyphilis.*

Later on caries attacks the central portion of the morsal surface of these teeth, frequently destroying them. Thus, the heredosyphilitic may have either a hypoplasia of the crowns of his first molar teeth or caries at the center of the remainder of the crowns of three or four of his molar teeth, or a loss of some or all of his first molar teeth through caries, or a combination of these conditions.

The hypoplasia of the morsal surfaces of these first molar teeth, which must have begun at some time after the beginning of the sixth month of intrauterine life, proves that the fetus has been attacked by some disease at this time, and syphilis appears to be this disease.

I quote from "Diseases of the Mouth" (F. Zinsser—J. B. Stein): "On the facial surfaces of all the upper and lower incisor and cuspid teeth are several furrows and cuplike erosions, and all their morsal surfaces are notched in several places. All the first molars are missing except the lower right one, in which there is a central caries, apparently following a developmental hypoplasia of the morsal surface. The cuspid and bicuspid teeth show on their surfaces slight erosions and transverse furrows. This is the result of a condition existing before birth and continuing to the end of the first part of the second year of life. The history of this case is very instructive."

"The patient, a boy of twelve years of age, had been treated a year and a half for a parenchymatous keratitis. The diagnosis of syphilis was not made, and antisyphilitic treatment was not energetically applied because the keratitis did not react well to mercury. The Wassermann reaction was negative, there were no other symptoms of heredosyphilis, and the condition of the teeth was attributed by me (Zinsser) at that time to rhachitis. A year later the boy returned with a severe syphilitic perforation of the hard palate and a positive Wassermann reaction. If the hypoplasia of the lower right first molar had been recognized as a sign of heredosyphilis and energetic antisyphilitic treatment resorted to, the patient would have been spared the severe disfigurement."

A Systematized Hypoplasia of Several Sorts of Upper and Lower Teeth.—This form of hypoplasia affects several sorts of teeth; the teeth of one sort at one level and those of another sort at another level. The hypoplasia is multiple, being as a rule found on (1) All the incisor teeth (superior and inferior). (2) All the cuspids (superior and inferior. (3) All the first molars (superior and inferior). It does not seem to affect the bicuspids or second and third molar teeth.

Dental infantilism.—Delayed dentition, microdentism and persistence of the deciduous teeth may serve as a stigma of heredosyphilis. Microdentism of all teeth is rare, but a number of teeth—mostly the superior and inferior incisors—and occasionally single teeth exhibit this condition (Figs. 13, 14, and 15).

The so-called *persistence of the deciduous teeth, i. e.*, their non-replacement by the permanent teeth occurs more frequently than is generally supposed (Fig. 14-15)—in one-third of the cases of heredosyphilis, according to one observer (Chompret). Few physicians or dentists have recognized this condition in heredosyphilis. It is a very important diagnostic sign. The deciduous teeth which remain in the mouth for a longer time than is usual are in order of frequency, the following:—(1) the second molars; (2) the first molars; (3) the cuspids; (4) the incisors.

The persistence of the deciduous tooth appears to be due to the absence or arrested development in the tooth which should displace it.

Absence of Certain Teeth, etc.—The absence of certain teeth is a stigma which occurs in heredosyphilis implying a non-formation or complete arrest in development of the dentinal germ or follicle.

Abnormalities in the position of teeth and amorphism of the teeth (Fig. 13) (teeth with crowns somewhat resembling sharks teeth, pianokeys, pebbles, squares, twisted teeth, pegged-shaped teeth, etc) are frequently attributed to heredosyphilis and less frequently, the following conditions, viz., (1) Vulnerability of the teeth and marked liability of the teeth to caries resulting in premature edentation. (2) Malcoaptation of the teeth, or, as Fournier called it "the absence of the sign of the artichoke" (Fig. 13). (3) Asymmetry of the superior maxillary bones. Prognathism and deformities of the lip and palate. (4) The presence of supernumerary teeth.

Some forms of hypoplasia of the teeth are certainly syphilitic, and some may be attributed to syphilis but there are forms of hypoplasia of the teeth which are certainly not caused by syphilis.

Non-syphilitic hypoplasia of the teeth has been seen in animals (the bull and very frequently the dog).

Fournier found that of 480 cases of heredosyphilis examined by him approximately 43 per cent displayed hypoplasia of the teeth as marked stigmata of the disease.

Many patients with hypoplastic teeth have been seen by me whose blood has given a negative Wassermann reaction. This does not disprove the syphilitic nature of the hypoplasia because the syphilis may have been cured or arrested. Some of our patients with hypoplasia of the teeth whose blood gave at first either a negative or a weak positive Wassermann reaction gave later a distinct positive Wassermann reaction. The luetin reaction of Noguchi, which he and others claim is valuable in detecting heredosyphilis, may be useful in confirming the diagnosis of syphilis in cases where dental stigmata exist.

Hypoplasia may affect the teeth at hazard and without method, depending upon some local accident or affection, and apparently has no significance or its significance is at present unknown. But the hypoplasia which I have described either affects symmetrically certain sorts of teeth (the first molars or incisors especially, the two upper central

incisors) or affects several sorts of upper and lower teeth, *e. g.*, the incisors, cuspids, and first molars, in a more or less systematized way.

There must be some general morbid cause for these conditions. Morbid conditions other than syphilis, can produce hypoplasia of the teeth, but the hypoplasia thus produced is not the same as that caused by syphilis, and *vice versa*. Of all diseases, syphilis is the most frequent cause of hypoplasia of the teeth (80 per cent of the cases according to Fournier). Heredosyphilis is essentially a dystrophic disease and exercises its noxious influence especially during intrauterine life and the first months after birth, at a time when dentinification is beginning or progressing.

What diseases are met with in intrauterine and the first months of extrauterine life which would profoundly affect the cells of the entire organism and the cells of the dentinal germs in particular? Rachitis rarely occurs during the first six months of life; usually in the second year. To-day variola is seldom met with. Scarletina, measles, diphtheria and typhoid fever are rarely observed during the first year of life. Acute rheumatic fever seldom occurs before the fifth year; and can it be said that a disturbance in metabolism occasioned by gastroenteritis could cause hypoplasia of the morsal surfaces of the first molar teeth?

Has an authentic case been recorded either of a symmetrical hypoplasia of the crowns of the four molars, or of Hutchinson's teeth, or of a systematized hypoplasia of several sorts of teeth, upper and lower, which was caused by any disease other than syphilis?

Heredosyphilis appears to be the only cause of these three forms of hypoplasia of the teeth, and until some better proof is forthcoming must be regarded as the definite cause.

The diagnostic significance of syphilitic dental stigmata is of great importance:

1. In detecting heredosyphilis; because the stigmata are at times the only evidences of this disease.
2. In tracing, in a patient with these stigmata, the possible syphilitic origin of some condition the cause of which was unknown and was not suspected of being syphilitic.
3. In tracing back the existence of syphilis, as, for example, in diagnosing the condition of a woman (the mother of a child when she has no manifestations and gives no history of the disease), an examination of her children's teeth may prove her to have had syphilis; and so in diagnosing a younger child's condition (an epileptic for example) the examination of an older brother's or sister's teeth may alone reveal or lead to a discovery of the diseased syphilitic condition through which the younger had passed.
4. In life insurance examinations.
5. In the effective administration of the efforts of all interested in dental, oral, social, moral, and mental hygiene.

205 East Twenty-third Street.

The Speech in Athetosis.—W. B. Swift relates a case of athetosis which shows in the vocal mechanism as a constant intertwining change of mouth positions, so that all sounds are immediately varied into other forms of vowels and other sounds of consonants; their interrelations are extremely varied. In brief, athetoid speech is a constant variation in vowel form and consonant sound, clear only when correctly struck during the constantly changing contractions or when, during rare moments of relaxation, the sounds are hit before contractions occur.—*Review of Neurology and Psychiatry.*

PRIMARY CARCINOMA OF THE LUNGS

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Increased interest in primary carcinoma of the lung in recent years has furnished statistics which indicate that this condition is more frequent than is usually stated. Reinhardt, in 545 cases of carcinoma, found five which were primary in the lung. Passler recorded 16 cases in 1000 cases of carcinoma. In the course of 16,047 autopsies in one of the large hospitals of Petrograd during the last ten years, primary carcinoma of the lungs is reported by Laurinovich as having been found sixty-one times, or 0.38 per cent. In the laboratory of pathology at the Ohio State University, three primary pulmonary carcinomata were chanced upon, while 302 carcinoma were being collected.

A summation of the more recent statistics made by Weller, in 1913, gave an incidence of 0.3 per cent in 11,093 autopsies. In the same year, von Wiczkowski compiled the reports of 126 cases in 58,497 autopsies.

In 1912, Adler published his excellent monograph, in which he gave the reports of 374 collected cases of primary pulmonary carcinoma. In 1913, Weller

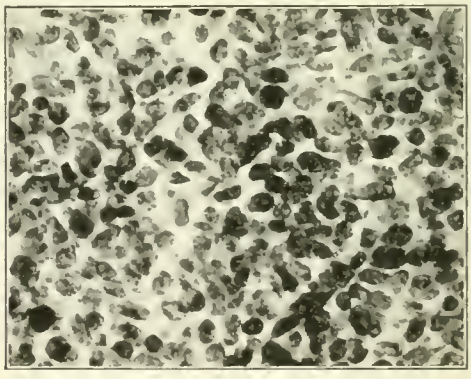

Fig. 1.—The type of cells seen in the more undifferentiated areas of cases I, II, and III.

published a collection of the primary carcinoma of the larger bronchi. His series contained nineteen cases not mentioned by Adler, including his own case. In 1912, there were seventeen other cases reported, one each by Apert and Rouillard, Gilchrist, Pfister, and Edlavitch, together with 13 cases by Kolszewski. In 1913, von Wiczkowski added six cases, Lombardo and Argaud, Crespin, and Legroux two cases. In 1914, Leclerc and Michel reported a case, and Edlavitch added his second case. In 1915, the paper of Laurinovich, based upon sixty-one cases, appeared, and in 1916 Herrman and Mayer report a single case.

There are not doubt many other cases which have been reported but are buried in papers bearing upon some other phase of work. As examples of this, there is the brief report of a case by Ash, in a discussion of the pathology of mistaken diagnosis in the Consumptive Hospital, and also the case described by Howard and Schultz in their monograph on the biology of tumor cells.

In lower animals, primary tumors of the lung are rather frequent. Tyszer, who first called attention

to the frequency of neoplasmata of the lungs in mice, found fifty-two lung tumors in seventy mice, which had developed eighty-three spontaneous tumors, or 62 per cent. of the total. Slye quotes Sticker that, in 1026 cancers in horses, cattle, dogs, sheep, cats and pigs, 3 per cent. were primary in the lungs. In her own series of 6000 autopsies upon mice, Miss Slye found that 1 per cent. of the series presented primary malignant tumors of the lungs.

This paper is a study of four specimens of primary carcinoma of the lung, which are in the Museum of Pathology at the Ohio State University.

Case VI, however, is of the dermoid type, and presents a different picture. In this case, the lung is small and firmly bound in with adhesions. A mass measuring 5 x 6 cm. in cross section occupies the upper lobe, and attaches itself to the ascending and transverse portion of the arch of the aorta involving the bronchial lymph nodes in its growth. The bronchi are completely filled and obliterated by the new growth.

Histological examination shows a tumor composed of squamous epithelial cells, which present intercellular bridges and a concentric arrangement

Case	Age, Sex, Occupation	Lung Involved	Clinical Symptoms	Sputum	Remarks
I. 1246.	Male. 60. Broker.	R.	"Dulla che" in right chest for last year. Attacks of violent coughing during last 18 months. Distinct shortness of breath for 6 months. Slight irregular fever. Areas of consolidation in right lung. Marked cachexia.	Muco-purulent and rather abundant. Neg. to tuberculosis.	Diagnosis: Tuberculosis. Autopsy by Dr. Scott.
II. 2129.	Male. 48. Salesman	R.	Began with attacks of violent coughing and sharp pain in right chest. Treated in sanitorium for tuberculosis. Pleural cavity tapped and then rib resected both with negative results. Evidences of consolidation in right lung. Marked orthopnea. At the end swallowing became nearly impossible. Patient lost 50 pounds in all.	Muco-purulent. Negative upon repeated examination for tubercle bacilli.	Diagnosis: Tuberculosis. Autopsy by Dr. Scott.
III. 2574.	Male. 60. Manufacturer.	L.	Two years previously patient caught in a belt and suffered severe contusion to right chest wall. From this time on, a dry hacking cough developed. During the last few months, slight dyspnea and a slight, irregular fever B. C. (shortly before death) 15,000 leucocytes with 85 per cent polymorphonuclears.	Small in amount.	Seen by many physicians who made a diagnosis of tuberculosis. Last one diagnosed a cancer of lung. Autopsy by Dr. Barnes.
IV. 2568.	Male. 50. Chemist in smelting works	L.	Began as a "bronchitis" with a constant dull pain in the left chest. Followed by cough paroxysmal and very severe in character. Slight, irregular increase in temperature. Towards the end swallowing became somewhat difficult.	Abundant and muco-purulent. 15 examinations negative for tuberculosis.	Diagnosis: Tuberculosis. Autopsy by Dr. Scott.

The important features of the clinical notes are given in the accompanying table. It is interesting to note that, based upon a slight increase in temperature, the presence of a cough, evidence of consolidation in the lung and the loss of flesh, each case was mistaken for one of pulmonary tuberculosis in an advanced stage.

Complete autopsies were held in each instance, and no new growths were found other than in the lung.

There is a striking similarity in Cases I, II and III. The new growth in each instance begins in the large bronchus at the root of the lung, and extends along it into the substance of the lung. In each case, the growth consists of a yellowish mass in which remnants of bronchi may be seen. In Case I, the upper lobe is chiefly involved. In Case II, the tumor occupies the middle lobe and the upper portion of the lower lob, while in Case III the lower lobe is involved exclusively. In all three cases, the bronchial lymph nodes have been invaded and overgrown by the neoplasm. The growth has extended into the pericardium in Cases I and II. In Case II, there is also a distinct invasion of the esophagus producing stricture. In each lung there is a thickening of the pleura, which is especially marked over the portion of the lung involved by the tumor.

The histological pictures presented by the first three specimens is also very similar, varying with the portion of lung examined. Sections taken from the roots of the lungs, and including the wall of the larger bronchi, show masses of large cells which are definitely epithelial in type. Sections of the esophagus at the constriction in Case II show that this stricture is due to an invasion by the tumor cells rather than to a primary growth. Sections taken from the main mass of the tumors present cells which have lost their distinctly epithelial character and have become small in size and irregular in shape, and appear when taken by themselves not unlike those from certain sarcomas. They, however, resemble somewhat the cells seen in the basal layer of normal bronchial epithelium. with keratinized centers. Karyokinesis is abundant throughout the tumor. In certain areas, especially from those in the outer border of the cell masses, ten or more mitotic figures may be seen in almost every field presented in the use of a 16 mm. objective.

It is of further interest to note in Case IV that a branch of the tenth nerve is markedly infiltrated with cancer cells. This patient had suffered constantly from pain in this region. The need of more investigation into the relationship between pain in carcinoma and the invasion of the nerves has recently been emphasized. As regards this feature of primary carcinoma of the lungs, Kretschmer noted the involvement of the left vagus, and Passler reported extension into the "larger nerves."

In lower animals metastasis outside of the lung substance is not common. In her series of mice, Miss Slye reported four cases of metastasis in pulmonary carcinoma. In Adler's series of 374 human cases, metastasis is mentioned 280 times. In none of the four cases here reported do nodules appear, which do not have continuity with the primary tumor.

In two of these cases (III and IV), mitosis is a conspicuous part of the histological picture. Henrici in his case mentioned the presence of cell division. Howard and Schultz noted the mitotic figures in their case. Miss Slye noted that she had never seen a lung tumor in which the mitotic nuclei were not difficult to find. In relation to the etiology, it is interesting to note that there is only a moderate amount of anthracosis in each of these cases. Pigmentation, therefore, would not appear to play an important etiological role here.

In Case IV, the patient had been subjected for years to the influence of heavy tobacco and strong chemical vapors. This exposure might easily be considered as an exciting factor, the more especially when the epidermoid character of the tumor is considered.

Grosser injuries have long been considered as causative factors in the production of carcinoma. Adler, in his series of lung carcinoma, found that in only six of the 374 cases was traumatism in the ordinary larger sense recorded. So as an important etiologic factor this can be eliminated. Gross injury is recorded in only one of this series. In Case III, it is noted that the contusion was done to the right side of the chest, and that the cancer developed in the left lung, thus making an etiological relationship quite improbable.

As to the probable origin in each instance, it is to be noted that there is a distinct invasive growth within the lumen of the bronchus. In two Cases (III and IV), the growth in the upper portion of the bronchus extends for a considerable distance unaccompanied by any peribronchial growth whatever. Further in each case, there is direct continuity of the growth in the lumen with that in the lung substance.

In Cases I, II and III, it is difficult to determine the exact histogensis from the microscopical evidence alone. This is not at all remarkable when the continuity and embryological identity of the bronchial and alveolar epithelium is taken into consideration. Cuboidal and rather high columnar types of cells may arise from either of these locations.

In these cases the tendency to undergo a more complete differentiation exhibits itself in the growth within the bronchus. Here quite high columnar cells may be seen. As the tumor cells are followed out into the lung substance, they lose their differentiation. First, they come to resemble cells of the fusiform type seen in the normal bronchial epithelium. Then they pass over into a type of small irregular cells which are not unlike those of a basal layer of the mucosa. In some areas all differentiation is lost, and the cell presents itself as a small round cell with scant cytoplasm and a small deeply staining nucleus. These cells so closely simulate the cell type seen in undifferenciated rapidly growing sarcomata that a mistaken diagnosis might easily be made had not sections been taken from the bronchus.

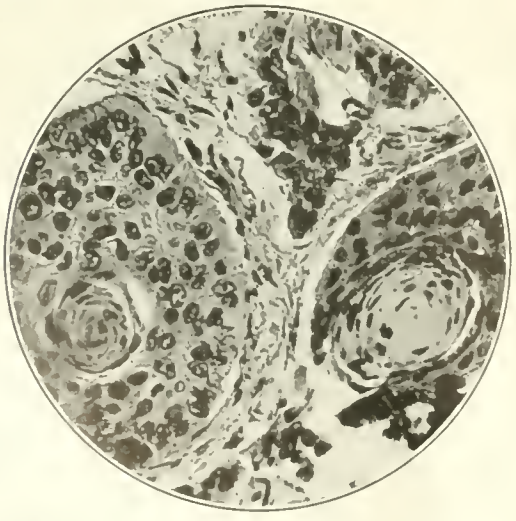

Fig. 2.—The formation of keratinized whorls in case IV.

Alveolar epithelium may, it is true, be transformed into a columnar type, but in no instance do any of these cells present an apparent attempt to resemble the large flat cells of normal alveolar epithelium. There is not a papillary formation seen such as Miss Slye and others have noted in mouse cancers. There are considered by her as probably of alveolar origin. In all of this series the air sacs are invaded and filled by tumor cells, presenting much the same picture as that described

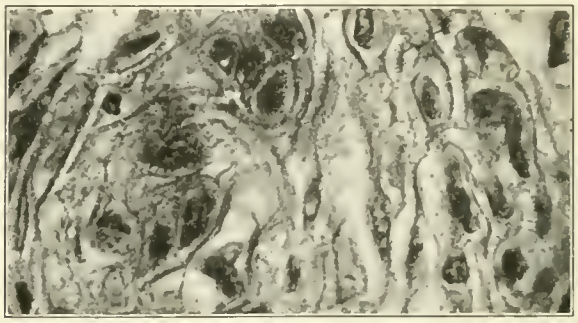

Fig. 3.—The intercellular bridges developed by the cells of the carcinoma in case IV.

by Henrici in his case, where the tumor cells were using the alveolar wall for their stroma.

While these data are not convincing evidence as to the bronchial origin, it is very suggestive of such an origin, especially when the gross features of the specimens are taken into account. Mitotic nuclei were not difficult to find.

As to Case IV, the evidence is somewhat cleared. As Henrici observes, "it is a far cry from simple aveolar epithelium to a structure composed of stratified squamous cells, having inter-cellular bridges, forming types of epithelial pearls, and in some instances keratin." Several observers have noted metaplastic change to a squamous type of epithelium on the part of the bronchial mucosa in the absence of tumor formation. Haythorn reported this observation in three cases of pneumonia. He considers these metaplastic cells as newly formed from the growing layer in an attempt at repair. In Case IV, there is a distinct history of prolonged irritation to the bronchial mucosa and the epithelium of the bronchi, where it is not involved in the new growth, presents many areas of metaplasia to a distinctly flattened type of cell, so that this case would seem to bear out Haythorn's conception. These facts, together with the gross features of this case, make a bronchial origin quite probable.

Conclusions.—1. The fact that Adler was able to collect only 374 authentic cases of primary carcinoma of the lung from the literature up to 1912, and that at least 120 cases have been reported since, makes it apparent that the condition is much more frequent than the earlier statistics would indicate.

2. A study of these cases tends to confirm the idea that the majority of the so-called primary carcinoma of the lungs are probably in reality of bronchial origin.

3. A casual histological examination may lead to a diagnosis of sarcoma in certain cases of carcinomata of the lungs.

Acknowledgement is due for the clinical notes on Cases I, II and IV to Doctors Horton, Edmiston and Deem, in whose practice these cases respectively occured. We are also obligated to Dr. Robert L. Barnes for the presentation to the Museum of the specimen in Case III, together with the clinical notes and for permission to report the case.

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GASTRO-ENTEROLOGY AND SURGERY.

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Ordinarily the matter which I wish to discuss would not be entitled to a place in a program devoted to purely scientific subjects. But I think that it is as vital as any before the profession and that it deserves special mention at this time.

I refer to the increasing tendency, on the part of some, to magnify the importance of surgery and to minimize the importance of internal medicine in the treatment of gastrointestinal diseases. Quite a number of our leading surgeons have expressed the opinion that more than 90 per cent of gastrointestinal diseases are primarily surgical, while others, with the same meaning, say that primary disease of the alimentary tract is very rare. These expressions have been much quoted, and, the opinions have become convictions in the minds of many.

These opinions are based, of course, upon operations or examinations which revealed some condition associated with indigestion supposed to be without the reach of internal medicine. It appears that no account has been taken of the majority of patients with gastrointestinal diseases who never apply to a surgeon for treatment, and in whom, presumably, the per cent of surgical cases is relatively small. It is reasonable to suppose that those who have subscribed to this doctrine have considered all the facts involved. Yet, in the light of modern science it is hardly credible that any one can hold views so radical, and, as we believe, so erroneous. It should be remembered that some of these clinicians and writers are accepted as authority in departments of medicine other than those which they so ably represent, and that they speak the last word to a large audience in the wide field of medical practice—that they also have the stronger voice in shaping the policy of under-graduate schools, wherein to a greater extent they direct the thought and inspire the emulation of the students. This departure from our faith in elementary medicine is more significant since we find general practitioners joining in the movement. The possible evil of it is clear. Not all of us, even veterans in practice, are prepared to follow safely in the footsteps of some of those who move along the highest vantage ground. Especially is it impossible for an undergraduate to discriminate between what is established, and what remains in doubt, and to select from the mass before him the essentials he should know. Naturally he learns what is most impressed upon him. And he is impressed more by the objective demonstration of a theory than by the subjective analysis of a fact.

If it is true that primary disease of the alimentary tract is rare, it is also true that much of the medical curriculum is useless. If it is true that more than 90 per cent of gastrointestinal diseases are surgical, the articles of our faith should be revised, and the principles of our practice should be amended. If it is not true that primary disease of the alimentary tract is rare, or that 90 per cent of gastrointestinal diseases are primarily surgical, the profession should not allow this fallacy to stand in the way of progress.

By whom shall these questions be answered, and by what shall the correctness of these answers be

*Read at the annual meeting of the American Gastro-Enterological Association in Washington, May 10, 1916.

judged? Law has its standards, so have art, literature, and other departments of science. What has medicine? Nothing agreed upon but basic principles of organic life. Only by these, therefore, can an impartial decision be rendered in any case.

Opinions may differ, and methods may change, but the laws of organic life do not change. By these laws we have defined the pathology of diseases and have constructed a system of therapeutics. By them have our research efforts been directed and controlled. By them has medicine been elevated from the plane of simple mechanics to the dignity of a more comprehensive science. And they cannot be set aside by any art, however brilliant. I have honestly tried to find some reasonable basis for the contentions of those who are inclined to overlook these facts. But I can see nothing beyond the effect of overzeal on the one hand—of bias and indifference on the other. I confess that I do not know what constitutes a surgical disease. I have heard of infectious disease caused by some infection, of traumatic diseases caused by traumatism. By the same token I can only infer that a surgical disease is one caused by some surgeon. Otherwise, the question remains—whence these diseases? Do they spring like Minerva, full fledged from the head of Jove? Or do they come by way of vital processes, like other diseases—waiting their turn of development and their place in the order of physical change?

The eye of the professional world is riveted upon the alimentary tract and its accessories. There is an insistent cry, especially by surgeons, for the early recognition of diseases common to these parts —which amounts to asking the internist to distinguish by conditions, the pre-existence of which they deny, the character of something the occurrence of which they say is improbable. In other words, the internist is to exercise his skill by watchful waiting, thus automatically opposing the very end which he is expected to hold most conspicuously in view. Despite these contradictions, many are joining in a feverish search for objective symptoms upon which to base a diagnosis. There is not so much thought about what has happened, or about what is happening to give expression to these symptoms. The art of finding out is becoming of more concern than the knowledge of what is found, and what is found is considered of more importance than what produced it.

I do not believe that substantial progress in medicine and surgery is favored by a policy which does not embody every essential principle of medical science, or that any practice, however successful in some particulars, can continue intelligently which does not harmonize every factor related to it. Certainly the future of preventive medicine is not encouraged by depreciation of one department by another.

The newer knowledge of digestion has come hardly less from the laboratory and from the clinical experience of the internist than from the operating room. The internist, therefore, may speak with equal authority of those phenomena most intimately connected with diseases of the digestive system. The channels of our education are too wide and too poorly guarded for us to encourage or condone a weakness within our own system. For this reason it cannot be agreed, even by the assent of silence, that the greatest number of gastrointestinal diseases are either primarily or secondarily surgical. On the contrary, it must be insisted that just the opposite is true. I believe that a brief review of fundamental facts must convince the most doubtful of this. Disease is not an entity—as every well informed physician knows, but a part and product of perverted physiological action. This perversion must start somehow, somewhere and there must be a definite cause for it. Let us find an example in a disease usually classed as surgical. From the standpoint of many surgeons intestinal stasis may be due either to adhesions, atony or kink of the colon. Granting this, and for the time being overlooking the more frequent causes such as errors in diet, abnormal secretion, malnutrition—what is the origin of the atony, adhesions and kinks, and how do they come about?

Something precedes everything. Gallstones do not exist already in the blood and do not precipitate by gravity. Adhesions do not form or reform from mere contact or coincidence. The colon does not kink spontaneously and atony does not develop over night. Gallstones, kinks, and adhesions are neither diseases within themselves nor the primary causes of disease. They are the results thereof. There is no disease which consists of mechanical insufficiency or obstruction alone, or which can be defined by a single circumstance, or limited in its relation to one event. One condition in disease may favor production of another. But the question is what favors production of the first and how and why. This we can only explain by looking from a given effect through a known pathological process to the initial action or a primary cause.

The primary cause of disease is either overwork, underwork, injury, or infection of a part, or of the whole body, as the case may be. Regardless of the cause, the requirements for development are the same. The primary forces engaged in the devlopment are the same. The order of development may vary, and the forces may have different direction, but in essentials of pathology diseases are closely akin—all being the product of perverted metabolism. And when we speak of metabolism we must claim a limitation which does not exist, if we do not in the same connection speak of digestion with its primary importance and possibilities as a causative factor in disease. It is another thing to speak of secondary conditions which jeopardize health or threaten life and the only relief promised is by the knife. But this discrimination has not been made. They say that more than 90 per cent. of gastrointestinal diseases are surgical. They do not say, as it should be said, that no disease is surgical by legitimate birth, but some acquire a surgical nature, while others have it thrust upon them.

Please let it be remembered that we are not discussing what surgery can do, nor even when it should be done—though the latter especially is a question worthy of debate. Surgery has done wonders and promises to do more. And I would not, if I could subtract from the glory of its achevements. Yet the genius of a work consists not in the character or measure of transformation, but in what remains untouched in the accomplishment of the desired result. We believe that some operations have been performed with disadvantage to the patients. On the other hand, surgery is needed in many cases where it is neglected. There are many gall bladders which should be emptied and released and many kinks which should be straightened. Many appendices languish in the iliac vale, unwept, unhonored and unsung, which should have gone the way of their renowned compatriots.

The point is, where can the internist and the surgeon meet, and upon what can they agree. I think the answer is very simple. Unless we are willing to repudiate the laws of biologic and physiological entities upon which such stress is laid by undergraduate medical schools, we must acknowledge their validity and potency in practice. Correct interpretation of these laws allows no divergence of opinion as to their relation in disease as well as in health. According to the laws, if appendicitis can be the primary cause of gastritis, gastritis can be the primary cause of appendicitis. If perverted metabolism can induce myasthenia cardiæ, it can by the same factors lead to myasthenia gastrica, atony, or kink of the colon, and by the same laws and the same factors does primary disorder of digestion result in perverted metabolism.

The same chemicovital and physical forces which preserve a balance of salts in the plasma and substance of the cells, can, when not controlled, become the morbid action anticipating the production of cholelithiasis, or other changes of form or state which we are pleased to call surgical. These are truths which should be emphasized, for they are master keys to many problems which separate us in our ideas and in our efforts.

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THE INADEQUACY OF PRIVATELY-FEED MEDICINE.*

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The history of medical progress records a growing sense of professional inadequacy on the part of profession and laity, and of effort directed toward its correction. Necessarily, in prescientific days, progress was slow. Early acceptance of disease and health as imposed from without by malevolent or beneficent agencies precluded any general development of a sense of personal or professional responsibility for the futilities of the healing art. Nor did empiricism, with its medley of truth and error, offer either incentive or opportunity for the search for new facts. Isolated discoveries of vast moment attested that most valuable attribute of the human mind—scepticism—which in every age has led investigation.

Scientific medicine beginning, in any adequate sense, with the work of Virchow and Pasteur, in the middle of the last century, a time of intense general scientific ferment, has developed synchronously with vastly increased transportation facilities, opening new lands to settlement; the organization of industry on the factory basis, with its outgrowth of occupational disease and accident, and, as a part of the speeding-up policy of competitive industry, its demand for increased efficiency of workers; a change from a rural to an urban environment for nearly one-half of the population; an appalling increase in poverty; and, along with this the growth of the social conscience, which is democracy, demanding for the individual not only the right to live, but the right to health.

Tremendous demands have been put upon medicine. Its adequacy has been tested to the utmost, and found wanting, as attest the various supplementary health agencies to-day in operation, or projected. That medical inadequacy has been more from the art side than from the scientific, from the practical more than from the theoretical, that there has been more of knowledge than of application of that knowledge to human needs, must be ascribed to conditions governing medical practice rather than to any unusual inertia of the medical mind.

Two years ago, in a paper read before this society, I discussed in detail and at length the inherent inadequacy of privately-feed medicine, the determining principle in this inadequacy being competition. It has seemed to me of value to consider at this time the various supplementary health agencies already in operation or planned, to determine if they be free from or exhibit the evils and weaknesses characterizing privately-feed medicine, and, if they utilize those methods imposed by modern conditions.

The past few decades have revolutionized knowledge of the causation of disease and of means necessary to its cure. To-day are demanded as routine procedures diagnostic methods which require much time, expensive equipment, accuracy of technical knowledge, delicacy of manipulation, trained interpretation. Present demand is for a highly organized system of medical practice, with minute specialization, limitation of function and cooperation. Contrariwise, present practice is still in theory on the ameba plan, presupposing the ability of any part of the medical mass, equally with any other, to procure, assimilate, and make contact with the environment. No physician to-day can acquire, assimilate, and apply to the prevention, diagnosis, and cure of disease any considerable part of medical knowledge. Nor can he command facilities for efficient work.

The other day, in cleaning my attic, I was strikingly reminded of the enforced changes in my practice in two decades; and I am certain my experience has not been exceptional. Unopened vials of tropæolin, congo red, methyl violet, Canada balsam; a number of Levis' perforated metal splints; Thoma-Zeiss hemacytometer and von Fleischl hemaglobinometer; silver chloride dry cell and acid cell galvanic batteries, etc., recalled the days when I, not from choice, but of necessity, to eke out income, in my inadept way, stained and mounted specimens, treated fractures, counted red and white blood cells, and estimated hemoglobin other than by the Talquist paper, and had not relegated the use of the electric current to the electrotherapeutist, who alone can develop and bring to bear its therapeutic virtues. My office table, as I am sure does that of most general practitioners, bears witness to the abandonment of the attempt to more than keep abreast in a general way of medical progress. Two general medical weeklies replace a former half dozen more special journals. And in these, many of the articles are so technical as to make the reading of only conclusions the part of wisdom.

Efforts to remedy professional inadequacy have proceeded along two lines—improvement of service and more effective application of service. Impelled to self-preservation from the assaults of Christian Science, faith healing, osteopathy, chiropractic (these star witnesses to medical inadequacy), and with, doubtless, in less degree, an altruistic motive, the profession has adopted increasingly higher standards of medical education, preparatory and technical. Medical schools are diminishing in num-

*Read at a meeting of the Nebraska State Medical Society, May 24, 1916.

ber and gaining in quality, as is true of medical graduates. We may safely trust that effort along this line has gained sufficient momentum to carry it over to the standard set by the Committee on Medical Education of the A.M.A.—State medical education—with State schools providing that adequate equipment impossible to privately endowed schools; more largely free from the temptation to sacrifice standards to numbers; with salaried, full time professorships.

Of supplementary health agencies instituted for the more effective application of medical knowledge must be considered first that one having as its object the prevention of disease—the Public Health Service, national and local, including medical school inspection. Instituted in response to the recognition of control as the essential factor in prevention of disease, its effort was first directed toward control of the individual, through compulsory examination, isolation, and enforced treatment, as by vaccination; and later, toward control of environment, through drainage of soil, destruction of parasites, factory inspection, building regulations, etc. To-day we already see the beginnings of effort toward control of heredity.

Established chiefly for the protection of trade interests, and the better-to-do classes, from the ravages of epidemic disease, the Public Health Service has grown increasingly altruistic, and of vastly greater social significance. In so far as it has been adequately supported, and free from partisan political alignment, allowing of freedom of action unrestricted by expedient subservience to individual persons or interests, its workings have been eminently satisfactory. Already it has achieved results of incalculable value. When, with the general institution of non-partisan government, it shall be brought under the operation of civil service, the minor weaknesses which it has exhibited will disappear. To-day, no one desirous of medical progress would advocate its limitation, but rather the extension of its field and the enlargement of its activities. The Public Health Service, supported by taxation, of general application, its staff under governmental control is, in so far as it goes, *State medicine.*

Of supplementary health agencies next come various forms of health insurance, necessitated by the economic inability of at least half the population to avail itself of medical examination and care. All of these, whether they be private (as through lodges, fraternal orders, etc.), supported by dues, and applying only to members; or contractual, between State and private organizations, applying to certain economic classes, State supported, but in part privately administered, as in England; or as proposed in the health insurance measures outlined by the committee of the American Association for Labor legislation, such measures to come before the coming legislatures of New York, New Jersey, and Massachusetts, support is to be divided between workers, employers, and State, and the details of organization and administration left to the medical profession, all of these exhibit certain weaknesses in common—class legislation, friction between privately employed and State employed physicians, increased administrative cost, through multiplication of boards and officials, and lack of specialization, censorship, and control of medical service.

Per capita contract or contract by visit (as operative in lodges, etc.), gives, of necessity, cheap, inefficient, and dishonest service. Unlimited choice of physicians, as in France, has led to inconceivable abuses. Limited choice, as in England, has given rise to similar evils in lesser number. Under all these forms of health insurance the physician is employed as an individual rather than, as would be the case under State medicine, as a salaried member of a specialized staff, working in constant association and cooperation with fellow members, with time rotation in service, his work censored, and his relation to the public impersonal. While the present English panel system, the nearest approach to State medicine, has already accomplished much for profession and public, already leading members of the British profession are calling for its complete socialization.

The recent introduction of health inspection into many large industrial establishments employing thousands of men, the service performed by physicians salaried by employers, has proven the inability of privately-feed medicine to reach a large part of the industrial population until it is more or less incapacitated by disease. Such inspection is instituted primarily in the interests of employers, with the object of increasing efficiency and profits; and often works extreme hardship to the physically defective worker, through loss of employment, or transfer from better to that which is less well paid.

Of plans for bringing the best medical service within reach of persons of moderate means, that of most recent and general interest is proposed by a no less distinguished member of the profession than Dr. Richard Cabot of Boston, in the columns of a popular magazine—that of the voluntary or institutional lay group, in control of hospital facilities, and employing a salaried staff of medical specialists. This plan Dr. Cabot frankly admits to be a buffer against the shock of the coming of State medicine until such time as government shall be by the qualified rather than the unscrupulous. In his distrust of State medicine Doctor Cabot seems to me unfair to the relatively creditable record of governmental administration of public utilities, the postal service, public education, as well as the Public Health Service. Indisputably, in the buying of medical service, as in commercial buying, the group can bargain more advantageously than can the individual, and the larger the group, the more advantageously. However, this group plan will not insure the best medical service. It is not the opinion of one specialist member of the group, but the consensus of specialist opinion that is desirable. To assemble voluntary groups sufficiently large to affect any considerable portion of the community, and possessed of sufficient funds for physicians' salaries and hospital maintenance, with any promise of permanence of membership lay or medical, and with the inevitable prospect of friction between various groups, seems to me to offer insuperable difficulties. The logical outcome of Doctor Cabot's plan is the community group, working through the community group of hospitals—general, contagious diseases, maternity—which is the only group combining permanence, control of adequate funds, authority and representation of the interests of all the people of the community.

Further convincing proof of the inadequacy of privately-feed medicine along all lines is found in the conditions for effective service demanded by specialists in various fields. In general, all emphasize the need of early diagnosis and of continuity of treatment—these being impossible under the present system with its private fee and lack

of control. It is now possible for the patient, whether from financial inability or inertia, to postpone examination by a physician until alarmed by symptoms of disease. And after he has presented himself for examination, and treatment is instituted, he is advised by well-nigh every acquaintance whom he meets, to seek another medical advisor; and if possessed of any income worth while, at every turn he encounters, ready to snatch him, a hungry horde of medical vampires, made vampires by the conditions under which they work.

In a recent symposium on tuberculosis, before an Eastern State medical society, it was the consensus of opinion that adequate handling of the tuberculosis problem called, specifically, for notification and intitutional treatment—dispensaries with visiting nurses for ambulatory cases; sanatoria for incipient bed cases; hospitals for advanced cases; and, in general, for improvement of industrial conditions, eradication of poverty, money and more money, and authority. What system of practice save State medicine can measure up to these requirements?

Dr. William F. Snow, general secretary of the American Social Hygiene Association, who presumably voices advanced opinion as to the prevention, diagnosis, and cure of venereal disease, names as essential conditions for its eradication: notification; provision of public health laboratories for free bacteriological and serological examinations; ample facilities at public expense for clinical diagnosis and advice; free treatment of ambulatory cases, hospital care for advanced cases; the following-up of such cases by social service workers; compulsory examinations generally of large bodies of men, as in schools and industrial establishments, and wherever food is handled. As necessary accessory measures are named: public education; provision of ample public facilities for wholesome recreation; reorganization of industry; elimination of alcoholic drinks. What part, may I ask, has privately-feed medicine in such a program?

As regards cancer, hope of discovery of causation and consequent prevention rests in the research of salaried specialists. Here early diagnosis is above all imperative. Its accepted treatment—surgery—with the surgeon's fee, the cost of hospital care, the expense of subsequent *x*-ray or radium treatment, cannot be obtained, except through charity or at public expense, by many of its victims, and imposes a grievous burden upon the families of all its victims save the very wealthy. Indisputably, dread of the expense of treatment is in part responsible for delay in seekng medical advice. The diagnosis and cure of no other disease more imperatively calls for State medicine.

Recently, Dr. G. E. de Schweinitz, the distinguished ophthalmologist, in a plea for the conservation of vision and prevention of blindness, called attention to the need of effort along legal, institutional, social, and industrial, as well as professional lines. He demanded for the individual case of ophthalmia neonatorum notification and hospital treatment, and called attention to the fact that only two hospitals in Philadelphia admit such cases. For trachoma he demanded quarantine; for glaucoma, education of the public as to symptoms, and correlation of social work in treatment; for myopes, classification and training for appropriate employment. I am sure you will grant this to be a program for State medicine. Already, under the working of medical school inspection, certain municipalities have assumed responsibility for removal of diseased tonsils and adenoids, and the correction of errors of refraction.

Dr. William Palmer Lucas, physician in chief in the department of pediatrics in the University of California, in outlining an ideal child welfare service for the community, calls for cooperation between department of pediatrics, hospital, laboratory, medical school inspection service, and board of health, holding that only through unification of all these agencies can the problems of child welfare be solved. Such unification is possible only under State medicine.

Consider that triad of disease—heart, kidney, and vascular—the menace of our middle age, the Nemesis of our high-geared civilization. Leading authorities name as necessary for their limitation —early diagnosis, medical and social supervision, and appropriate employment. As steps in the prevention of organic heart disease (with application to kidney and vascular disease as well) are demanded: medical school inspection for early detection of defects; a special vocational training for those showing defects; control of infections; public education as to causation and prevention of such defects; compulsory examinations at intervals after leaving school; and I myself would add—the barring from school and college curricula of strenuous and competitive athletics—basketball, football, track athletics.

There has been recently brought to professional attention by a leading member of the New York profession, whose name I do not at this moment of writing recall, the valuable therapeutic asset which this country possesses in its mineral springs, especially those at Saratoga; and the necessity, judging by European experience, of State ownership and control, if they are to be developed and operated in the interests of the public health.

Let me but refer to the inadequacy of privately-feed medicine in the field of orthopedics, with its requirement of minutely specialized knowledge, costly and extensive equipment, and prolonged institutional care; in the treatment of neuroses, where institutional treatment is imperatively demanded, the same free of cost, or at a cost below that possible in a private sanatorium; in the treatment of imaginations of disease, which have filled the Christion Science churches, and the waiting rooms of practitioners of medicine on a bath house basis. Let me instance the absurdity of conceding to the Public Health Service control of acute epidemic disease through quarantine, and then relinquishing its treatment to the general profession. And I might continue indefinitely.

In view of all this, I am not liable to the charge of proposing a Utopia when I affirm the coming of State medicine, nay, that it has all but arrived. If I may venture an opinion as to the manner of its coming it is that it will be through utilization of the appropriate organization already existant—the Public Health Service, through the natural evolution of this service, which at present has been worked only upon the surface, and is capable of vast expansion.

Doubtless the chief obstacle to the coming of State medicine will be the privately-feed medical profession. A change in the professional attitude is demanded. The medical monopoly, forced to choose between economic advantage and the public good, and as between public and profession, assuming the attitude, "my profession, right or wrong,"

must go, and that speedily. Medicine exists for the public, and not the public for medicine. It will be the part of professional wisdom to accept the change from within before such time as it shall be imposed from without.

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ALKALOIDAL ADJUVANTS IN GENERAL ANESTHESIA.

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The oscillation of the pendulum in human affairs is quite well shown in the development of general anesthesia. The first attempts, followed by more or less success, according to authentic writers, to attain loss of sensation for surgical procedure, were by substances derived from the vegetable kingdom. Then came the discovery of the inhalation anesthetics, and the exclusive use, practically, of these agents, for this purpose, for the next half of a century. In our own day the pendulum is swinging back to the vegetable kingdom for either the sole or adjuvant agents in the production of approved anesthesia.

The patient who realizes that an operation is impending is more or less apprehensive of the procedure, discomfort, suffering, and result. This preoperative fear is highly productive of shock, and it is here that the primal "anesthetizing draughts," now displaced by the refined and more certain and quicker acting alkaloidal solutions hypodermatically administered, prove their usefulness. Under the influence of morphine the nerve and cerebral centers are tranquilized, and a neutral psychic state induced, that is, fear is banished. With preliminary morphine, the induction of anesthesia is smoother and more rapid, consequently there is less struggling. All observers agree that patients who have struggled during induction do badly in anesthesia and are very prone to suffer from shock and cardiac weakness. Gatch has shown that this struggling produces excessive cardiac strain. In addition, being a narcotizing agent itself, morphine lessens the amount required of the principal anesthetic.

In the administration of morphine preliminary to the chief anesthetic, either atropine or scopolamine, or both, should be combined with the morphine. When morphine is used without scopolamine the dose should be 1/6 grain to the average adult, and if nitrous oxide is to be the chief anesthetic 1/150 grain of atropine should always be combined with this amount of morphine. In robust males this medication may properly be increased to 1/4 grain morphine and 1/100 grain atropine. If ether is to be the principal anesthetic it is not so essential that atropine be combined with the morphine, although I consider it is always preferable to do so. When scopolamine is used 1/6 grain morphine and 1/200 grain scopolamine is the preferred dose for the average adult, and this medication should be given one hour prior to the time of operation; whereas if morphine and atropine alone are used the time of administration is preferably one-half hour before the operation. When scopolamine is combined with morphine the tranquilizing effect, especially upon the higher brain centers is quite pronounced, and the pulse rate and respiration are both thereby decidedly lessened in frequency.

Combining either atropine or scopolamine, or both, with the preliminary morphine overcomes one of the objections that has been urged against such use of this narcotic, namely, that it interferes with the utilization of the pupil as a guide to the depth of anesthesia. With the use of either of these combinations the size of the pupil is a more reliable guide to the depth of anesthesia than when no preliminary medication is used, for while the pupil does not begin to dilate till a slighter deeper anesthesia is attained, yet when the pupil is dilated it is more surely indicative of a deep anesthesia, as this medication tends to prevent reflex dilatation under light anesthesia. Besides, the upper lid reflex is a much more reliable sign of the depth of anesthesia than is the size of the pupil, or its reaction to light, either with or without preliminary medication.

It is properly held by those who have raised objections to this preliminary alkaloidal medication that it should be employed only by those versed in its use. But, indeed, no anesthetic, or system of anesthetization, is safe enough to be placed in the hands of the unskilled and untrained. This is not the age for a skilled profession to decry anything that is of benefit simply because its use requires training and experience.

There is decidedly less postoperative nausea and vomiting when the preliminary alkaloidal medication is used. This is probably due to the fact that this medication, plus the amount of the principal anesthetic that is then necessary to produce the required depth of anesthesia is less toxic than is the larger amount of the principal anesthetic when used alone to produce the same depth of anesthesia. This disposes of the objection that it is not advisable to introduce into the system several such toxic agents at one time, for in actual practice there is less toxication manifested when there is a proper combination of these synergistic agents than when only a single narcotic is used.

It is not contended that this preliminary medication should be indiscriminately used in all cases, but rather that in all cases in which it is used there should be discrimination. The disintoxicating organs of the young are not as fully developed as are most of the other organs; and in the aged the disintoxicating organs have a subnormal activity, so, in the extremes of life, if used at all, the dose of the preliminary alkaloids must be smaller accordingly than the usual medication for these ages. Patients who are very ill, especially those suffering from the various toxemias and toxications, and who, therefore, require smaller amounts of narcotics to produce a given effect, should be given only small doses of the preliminary alkaloids. Most of the so-called idiosyncrasies against morphine are found in the last mentioned class, more particularly the chronic, and are, therefore, not true idiosyncrasies. In such patients the eliminating and disintoxicating organs are constantly overworked, and consequently cannot adequately respond to the sudden increase in toxic substances thrown upon the system. Such patients do not tolerate ether any better than morphine, as these substances are so toxic to them that they act in the nature of "the last straw."

Of even greater importance than the preliminary time of the operation to prevent centripetal impresmedication is the use of alkaloidal adjuvants at the sions passing from the field of operation. Crile's exhaustive researches show that unless the operative field is blocked off from the central nervous system through local anesthesia, noxious impulses pass continually from the traumatized area to the brain, even though the patient is surgically anesthetized; that the anesthetized patient is not as a cadaver merely because there is no visible response

to traumatism; but that from the traumatized area impulses pass to the brain and produce injury just as certainly (but not to as great a degree) as though the patient were completely conscious; that the brain "feels every thrust of the knife and traction on the viscera, even though the patient be profoundly sleeping." As soon as the profession thoroughly grasps the full significance of these teachings a new spirit will pervade surgery, and the time is not far distant when lack of gentleness will be considered as unscientific as lack of asepsis.

The technique, briefly summarized, is infiltrating the skin and each of the subsequent layers in the line of incision, with a one-fourth per cent. solution of novocain, and in certain cases the deeper layers, but away from the incision with a one-sixth per cent. solution of quinine-urea hydrochloride.

Objection is raised at once that this procedure consumes too much time, but this objection, like most of objections to new methods, is more theoretical than practical. My own experience has been that the surgeons using the nerve-blocking technique consume less time to the average than those not using it. As this seems strange I venture an explanation. Those using this method are strongly imbued with the idea that they must work gently, otherwise there would be no need of using this technique, therefore they do no unnecessary surgery. If the getting-in process is delayed it is only slightly so, and the getting-out procedure is more than correspondingly accelerated, for the no-injury idea is so predominant. "Get-in" and "get-out," with emphasis on the latter, are not bad ideas in abdominal surgery, from the viewpoint at least of the anesthetist.

Nitrous oxide is the general anesthetic *par excellence* to use in conjunction with these alkaloidal adjuvants. The resulting anesthesia is so light that whenever the surgeon passes beyond the blocked area changes in the patient's respiration immediately warn him of his transgression, so that he may either cease his traumatizing, or extend his local anesthesia. This system of anesthetization enforces gentleness. When the technique is perfect there is rarely need of any adjuvant ether whatever. Even in such procedure as the removal of the gall-bladder, which otherwise requires the deepest type of general anesthesia, I have been able to dispense with ether entirely; the operation is practically shockless, the patient's vitality is conserved, his resistance is left unimpaired, and his ultimate recovery is thereby rendered more certain.

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Medicolegal Notes.

Administration of Narcotics to Relieve Pain and Cure Drug Habit.—In a prosecution under the Texas statute making it unlawful to prescribe a narcotic drug for an habitual user thereof, it appeared that the person to whom morphine was administered had been a morphine fiend, and had become emaciated and was confined to her bed. The defendant, as physician, administered the morphine for two purposes: First, to relieve her of her present suffering; and, second, to cure her of the habit. The evidence of the woman showed that he succeeded in both. The Texas Court of Criminal Appeals held that the statute does not prohibit the prescribing of the drug when necessary to alleviate pain or cure the drug habit. It was held to be error to exclude the defendant's evidence that he gradually reduced the size of the dose, and finally ceased it altogether; that being material to show that the drug was prescribed in an effort to cure the habit. It was also error, there being evidence that the drug was prescribed to alleviate pain, to refuse to charge that if the drug was administered in an effort to relieve pain the defendant physician was not guilty.—Fyke v. State (Tex.) 184 S. W. 197.

Basis for Hypothetical Question.—In an action for personal injuries error was claimed in not sustaining an objection to hypothetical questions asked a medical witness, Dr. Platt. This witness had heard all the testimony in the case, including the testimony of plaintiff, and of his attending physician, Dr. Comstock, as to his condition. He was asked his opinion as to the permanency of the injuries to plaintiff's jaw, basing it upon the testimony of plaintiff as to his condition, and the testimony of his attending physician as to what he found and what he did, excluding any opinion he had expressed. The objection was that the question "does not give the elements, and is too broad as it does not give in detail the facts, but leaves to the witness to eliminate that which his own judgment may induce him to eliminate." Other questions of like tenor were asked, objected to on the same ground, and permitted to be answered. The answer of the witness was that in his opinion the injury was permanent.

The appeal court did not think that the questions were fairly open to the objections made. It is of course true that it must be made plain to the jury as well as to the expert what facts he bases his opinion on, and he must not be left to decide between conflicting facts, but must assume as true the facts stated in the question or those found in the testimony he is asked to base his opinion upon. But this witness had heard plaintiff testify, not only as to the condition of his jaw, but as to the history of the case, and the history and habits of the plaintiff. He was asked to give an opinion based upon this testimony, and the testimony of the attending physician as to what he found. It appeared from the cross-examination of the witness that the past history of the patient and his habits were elements necessary to be considered in giving an opinion as to the permanency of the condition of his jaw, and the witness understood that these elements were included in the hypothetical questions asked. The claim was that these elements were not included in the questions and not shown by the testimony, and therefore that the expert must have based his opinion in part on knowledge acquired outside of the court room and not disclosed to the jury. If this had been the case, the testimony should have been stricken out, but the record did not bear out the claim as to the facts. The past history of the patient, as well as his past life and habits, was quite fully disclosed by his own testimony and the testimony of Dr. Comstock, and the expert was asked to assume this testimony to be true and to take it into consideration in giving his answer. The court did not think that the expert "usurped the functions of the jury," or that there was any error in the rulings made in regard to his testimony. Nor was there anything in the claim that the testimony of the doctor showed that he was not competent to testify.—Johnson v. Quinn, Minnesota Supreme Court, 153 N. W. 267.

Hypothetical Questions.—The general rule is that a hypothetical question should include a full statement of all material facts, if they are uncontradicted, or such facts as the interrogating party may reasonably deem established by the testimony of his witnesses, but should not assume facts not warranted by the evidence. If opposing counsel is of opinion that material facts are not included in a hypothetical question he may incorporate these facts in questions asked on cross-examination, and may also frame questions involving a consideration of facts which he contends are established by his evidence. The exact form of the question and the extent of the examination are under the control of the trial judge, whose duty it is to see that the examination is properly conducted.—Albert vs. Philadelphia Rapid Transit Co. (Pa.), 97 Atl. 680.

Medical Evidence as to Damages.—In an action for personal injuries where there was evidence that prior to the accident the plaintiff had enjoyed good health, that immediately thereafter she was removed to a hospital in an unconscious condition and was confined to bed six or eight weeks and was absent from her employment for some months, and frequently since the time of the accident was subject to convulsions, it was held that the testimony of physicians, who made their examination more than two years after the accident, as to her condition is not to be stricken out on the ground that the connection between the accident and the plaintiff's present condition was not shown.—Albert vs. Philadelphia Rapid Transit Co., Pennsylvania Supreme Court, 97 Atl. 680.

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THE MORBIDITY OF DRUG INTOXICATIONS.

THE success in the present reduction of disease, and the increase of the span of life from an average of nearly 12 years in the Dark Ages to the present average of 50 years, through achievements in preventive medicine, have been mainly the result of a reduction in the infectious disease incidence. In a great measure, this is due to the fact that the attack on the infectious disease element is an extrinsic one which places but a slight burden of moderation on the individual, the measures necessary in this sort of preventive work even helping to increase the personal and the esthetic conveniences of every one. But because there is required an intrinsic endeavor to render it effective, preventive medicine has had little appreciable effect upon the incidence of the degenerative diseases which appear in persons in the prime of life—between 40 and 60 years of age. It is estimated that the annual death rate from the degenerative diseases, exemplified in kidney, heart, and blood-vessel diseases has increased over 100 per cent within the last 20 years. These figures bear mute testimony to the increasing desire of the sedentary for artificial stimulation and of the overstrenuous for artificial sedation.

The resistance of the body is reduced by such things as alcohol, tobacco, narcotics, occupational poisons, and syphilis. While alcohol leads the list of drug intoxicants in being the most prolific cause of the degenerative conditions, both of the body and of the central nervous system, it rarely operates alone, being usually accompanied by dissipation of other kinds, and the "strenuous life" and syphilis often add their effects.

Moreover, quite apart from the increased use of strong alcoholic beverages, there has been an enormous increase in the manufacture and consumption of patent medicines. The public is persistently dosing itself with drugs of various kinds and of various actions. Some are stimulants, some sedatives, and some combinations of both, and the taking of them is often a fad or a pure habit, the consumers not knowing really why they take these medicines. To be sure, many of these patent medicines are purely alcoholic, and the effect is that of alcohol. With all of them the body is put to the trouble of eliminating highly irritating substances which have the tendency to reduce the vitality of the eliminating organs, as well as often positively injuring them. It is through such injury that the general fibroid changes are often set in motion.

The expenditure for these unproductive and highly injurious products has been estimated to be over $150,000,000 a year. The increase in the population of this country has been nowhere in proportion to the increase in the consumption of drugs. While the population has increased about 100 per cent in the last twenty years, the increase in the use of these products has been over 750 per cent.[1] All drugs, no matter what their proper value is, are potentially harmful. They are not intended for consumption at random, but only under expert guidance. All the untoward and poisonous effects of these drugs are met with in the consumers. There are the effects on the heart, blood-vessels, kidneys, muscles, nervous system, etc. Because the body often establishes a tolerance to these poisons, an increasing amount must be used to get the original effect, and so the habit is formed.

What the remedy for this great evil may be is a secret still in the laps of the gods. Prohibition notoriously does not prohibit, except to a limited degree, and the various antinarcotic laws, including the defective and vexatious Harrison law, merely make it more difficult and more costly for drug victims to get their favorite narcotic or stimulant. As for patent medicines, the enforced publication of their formulæ and their percentage of alcohol has little or no deterrent effect. Nevertheless, the curbing of the alcohol and drug-intoxication habit is one of the most important considerations in the problem of increasing the stamina of the people, of reducing the death rate, and of increasing the span of life. Perhaps the research foundation recently established in Hartford may succeed in throwing some light on this dark subject.

PHYSIOLOGY AND PSYCHOLOGY, AND THEIR EUPHORISTIC HARMONY.

PROGRESS in knowledge depends upon pressing forward toward an unachieved goal. Attainment of the end would defeat advance in its very initial impulse. Therefore the elusiveness of the goal toward which psychology turns and its refusal to yield clear knowledge of the intimate relation of mind and body afford emphatic proof of the importance of the effort directed thither. What is demanded, what must be accomplished in the search is this. Our pragmatic knowledge must be increased and our power of control enlarged. We must continually widen the horizon and shift our viewpoint toward an ever better adjustment of mind and body so that the former has a more complete and harmonious mechanism at its disposal and so that the latter is not turned aside to the service of mental caprice and unbalance. Every sincere effort, then, from either side of the problem, to throw light upon this obscurity is just so much practical service rendered to the theory and the practice of life in its possibilities.

George Van Ness Dearborn, in an article on

[1] Martin I. Wilbert, Reprint No. 227, Public Health Reports.

"Movement, Cenesthesia, and the Mind" (*Psychological Review* for May, 1916), throws a hearty "euphoristic" interest into the problem in his study of the flood of "animus" which pours into the cortical "gray" from the environment which our own physical bodies afford in themselves or as transmitters of external stimuli. Earlier studies of his, particularly "Certain Further Factors in the Physiology of Euphoria" (*Psychological Review*, May, 1914), discuss more fully certain divisions of physiological activity which furnish a constant and important stream of influences which must affect psychological well-being. These are chiefly the nutritional area so greatly extended by the presence and function of the intestinal villi for absorbing and storing the lipoid and perhaps protein substances conducive to the euphoria of the nervous system, also the great cinesthetic system of sensations, and by no means of least importance the epicritic sensibility of the skin area. The later study bases itself upon these and other organic contributing factors, but concerns itself chiefly with the universal movement continually present in the body in which all parts of the organism have their part and likewise with "cenesthesia" or the sum of influence which the afferent nerves continually transmit to the gray matter.

All of this is of an importance not to be set aside. It must be and is the basis of accurate laboratory research in order to determine with increasing accuracy and knowledge how the organic processes can influence our psychic euphoria, and therefore our capacity, and to know what the definite relationships are which make psychology and physiology mutually dependent. Yet just here the author is hampered still by the psychophysical attitude of which he himself complains. The reason is not far to seek. The relations of mind and body are reversed. There is too much about "behavior's nuerility," "skeleton of mind," and the like, from the point of view that makes the mind the product of this cenethesia of all the vast contributing area of bodily tissues comprised in our organic make-up. The reactionary influence of a complex organism upon the mind that controls and utilizes it is quite another thing from the "raising a good quality of mind" from such influences. Headed in the right direction, phylogenetically, from the mind to its potentially perfected implement, the body, then it is possible to enter into the depths of practical discovery. Then the unconscious or "subconscious" is freer for investigation even through the study of this organic cenesthesia and movement. The autonomic thus becomes but a division of the vaster unconscious, but perhaps the relation is even closer than that the author conceives between the higher nervous action and the autonomic "subconscious" of the nervous system on the one hand, and the conscious and unconscious mind on the other, the master, director, and artisan, too, of the organism. Ideational euphoria, he believes, lies beyond physiological euphoria, but that it arises from cortical associations reflects again the reversed point of view. Mental readjustments effected through purely mental therapy, which takes into account the individual psychical determinants, the sum of which may well form a psychic cenesthesia, prove themselves so effectual in dissolving physical dysphoria that we must conclude that the author has laid the emphasis on the wrong side. There is such rich suggestion, however, in Dearborn's discussions of the contributing physiological factors in the close relationship of what psychoanalysts have styled "libido areas" and psychic states that his work is stimulating to follow. He has pushed onward into the unknown and cast out some very definite charting lines for steady scientific advance.

THE DETOXICATING ACTION OF SLEEP.

While this title may at first suggest something new in physiology, it only connotes the old view that sleep is due very largely to the accumulation of waste products and persists until these have been taken up by the circulation. It is a corollary, therefore, that in loss of sleep the body becomes in a measure intoxicated. In animals deprived of sleep death occurs at the end of three or four days with a gradual lowering of temperature and reduction of erythrocytes to 2,000,000. Under the combination of excessive muscular labor and injection of meat extractives an animal succumbs in from thirty to forty hours. The injections made at the conclusion of the labor precipitate a condition of extreme lassitude. According to certain authorities sleep is not even a function *per se* but the result of fatigue toxins. Upon the view that the thyroid gland presides over disintoxication the claim is made that in hypothyroidism there is always a tendency to drowsiness. From a similar viewpoint the power of alcohol to produce drowsiness and deep sleep has been ascribed to an overstimulation of the thyroid; for while alcohol in small doses increases the activity of the gland the reverse becomes true when large quantities are taken.

The toxic or antitoxic nature of sleep is thus discussed in a brief article by De Castro in the *Revista de Medicina y Cirugia de la Habana* for July 25. It is indeed evident that some of the older views of sleep have not made good. We do not know whether or not sleep is dependent on a particular state of the cerebral circulation, for it apparently occurs with anemia, hyperemia, or the ordinary status. Drowsiness after a full meal is still held to be due to a derivation of blood from the brain and it has been shown that when one drops asleep there is a sudden lowering of blood pressure. But no theory of sleep can be devised on this basis which can begin to account for all its phenomena. A good night's rest from which a subject awakes refreshed and active, appears to show that all fatigue toxins have been expelled from the cells. But it is evident that such a slumber can have little in common with the somnolence which follows a gluttonous meal during which toxins accumulate and from which the subject wakes unrefreshed and with most wretched subjective sensations. Any sleep apparently normal which fails to refresh could not have been true slumber of the detoxicating type.

The neurasthenic, regarded usually as poisoned by his cell products, may be a sound sleeper in appearance but has no corresponding advantage over

a neurasthenic with insomnia, and at no time of day does he feel so devitalized as upon waking. Conversely the active man who can do with little sleep must have superior facilities for detoxication, or perhaps for some unknown reason he is more immune than others to fatigue poisoning. The fact, however, that many individuals who lead sedentary lives are able to obtain prolonged and refreshing sleep seems to show that sleep cannot be regarded merely as a measure of fatigue poisoning. To account for such cases we have to invoke the agency of habit and the adaptability of mankind to methods of living.

REVACCINATION AGAINST TYPHOID AND PARATYPHOID FEVERS.

PARATYPHOID fever is said to be extremely frequent in the various armies in Europe. There has been no severe epidemic of typhoid since the commencement of the war, but from almost the very outset of hostilities, there has been a somewhat wide prevalence of paratyphoid fever. In the *Medical Press*, August 2, 1916, F. Widal and I. Gourmont point cut that on account of the extensive prevalence of this disease Landouzy, as far back as December, 1914, indicated the practice of vaccination as the sole effective prophylactic procedure that could be adopted to fight successfully against this malady and called for a comparative study of the method of successive vaccination against typhoid and paratoyphoid fever respectively, and of that of double vaccination carried out by the injection of a mixture of the typhoid and antityphoid bacilli.

In August of last year such tests were made by one of the writers, who concluded that the final choice should be that of a triple vaccine, consisting of a number of typhoid bacilli equal to that contained in the simple antityphoid injection, and a double number of each of the paratyphoid bacilli, A and B. This observer has reported experiments of which the results furnished cogent proof of the powerfully immunizing action of such vaccines when heated; and he has also shown that this vaccine had the effect of making the several specific antibodies of each of those microbes appear in the blood of the vaccinated individual and has demonstrated the harmlessness of his procedure. Widal and Gourmont state that they have revaccinated with the triple vaccine about 4,000 persons who had previously been immunized with the simple antityphoid vaccine. Furthermore, they always used the triple vaccine even in the persons who had had typhoid, for the reason that they believed that even in such cases it could not be other than advantageous to profit by the supplementary antityphoid vaccination for the purpose of reinforcing the degree of immunity against the typhoid infection itself. In summarizing their results they assert that the triple vaccine suffices for all the requirements of both antiparatyphoid and antityphoid revaccination.

As paratyphoid prevails to a considerable extent among our troops on the Mexican border, it might not be amiss to test the value of the triple vaccine there.

THE POLIOMYELITIS PANIC.

A MEETING of the town board of Oyster Bay, L. I., held on Monday of last week, was taken possession of by a number of indignant citizens who passed a resolution regarding the poliomyelitis situation, setting forth "That it is the sense of this committee that the credulity of the public has been preyed upon sufficiently long in the neighborhood; that the business interests are sufficiently paralyzed; that frenzy and terror have been sufficiently propagated; that it is high time for a return to common sense, the discharge of the medical maniacs, the resumption of local business, the recall and restoring to confidence of our easily scared summer residents, and the application of common horse sense to the so-called epidemic with which we as well as other communities have been afflicted." This is a little strong in spots, but it is only what was to be expected as a natural reaction against the quarantine hysteria that is raging epidemically in this neighborhood. When a town stations men at every point at which a ferocious child may possibly enter, even though it wants only to pass through, and drives back the invader practically at pistol point unless it is armed with a certificate from a board of health—and in certain places even then, that community has plainly lost its head. When, furthermore, the healthy child, admitted on the strength of the official certificate, is immediately quarantined and forbidden to leave its home for twenty days, the community so ordaining is devoid of reason. Although poliomyelitis has not been proved to be spread by direct contagion, and possibily never will be, it nevertheless is for the present a justifiable precaution to isolate the sick; but to war upon the well, to forbid children in evident health, riding in an automobile, to pass through the town at a speed of ten or more miles an hour, and even to expell children known to be in perfect health from a town in which they have been passing the entire summer because in the winter they live in New York City, betrays a degree of hysterical panic and craven fear that, were it not a fact, would be beyond belief. A Sicilian peasant mob in time of cholera could hardly do worse, but theirs would be the sin of the mindless while the suburban health officer is supposed to know better.

News of the Week.

Poliomyelitis Receding Rapidly.—The last days of August witnessed a sharp decline in the number of cases of poliomyelitis in New York City, and for the week ending September 2, 477 cases only were reported. The total number of cases to September 6, was 8,330, of which 2,047 were fatal. The passing of the epidemic was clearly indicated by the fact that the Willard Parker Hospital, which had at one time nearly 1,100 patients suffering from the disease, on September 4 harbored only 950. On the same date there were in all the hospitals in the city 3,784 patients under treatment. Dr. Charles E. Banks of the United States Public Health Service, in charge of the quarantine regulations in reference to infantile paralysis in New York, has protested against what he calls the inconsistent quarantine policy inaugurated by local health authorities in towns near New York City, especially in Westchester and Nassau Counties. He has suggested that there should be some State board which could regulate the action taken by

local authorities in small villages, so that a uniform and sensible method of guarding against the spread of disease could be promoted without interference with the business of a community. It really is time that some official notice should be taken of the inane action of many so-called health officials. September 25 has been definitely decided upon as the date for the reopening of the public schools in New York City, provided, of course, that no flare-up of the epidemic occurs before that time.

The after-care of children discharged from the hospitals as cured has been considered by the Department of Health, and it has been arranged that in each case a formal notice of the approaching discharge of a child shall be sent to the parents, setting forth the child's condition, and urging that the family physician be consulted or that the nearest orthopedic dispensary (a list of these dispensaries being inclosed) be visited. The facts in each case are sent also to the director of the committee on after-care, Dr. Donald E. Baxter. In this way, it is hoped, many permanent disabilities may be avoided. The Department of Charities of the city has estimated that $100,000 will be needed for the care of those convalescent from poliomyelitis up to January 1 and more after that date. The Department of Health has already received over $26,000 in voluntary subscriptions for the purchase of braces and other appliances.

Changes in Red Cross.—The active executive management of the American Red Cross at National Headquarters in Washington, passed on September 1 to Mr. Eliot Wadsworth of Boston, who has been elected to succeed Major General Arthur Murray, U. S. A., resigned. Gen. Murray has devoted himself to the constructive upbuilding of the Red Cross for the better part of a year. Mr. Wadsworth has already had considerable experience in war relief matters, having served as a member of the Rockefeller Foundation War Relief Commission in 1915, as a member of the Poland Relief Commission, and later as director general of the International Commission for the Relief of Poland.

Dental Hygiene at Columbia.—The New York School of Dental Hygiene has become allied with the new Columbia University School of Dentistry and the College of Physicians and Surgeons. The school will open on September 27, classes being held in the Vanderbilt Clinic.

Street Accidents.—The National Highways Protective Society reports that during the month of August 48 persons, of whom 25 were children, were killed on the streets of New York by vehicles. In the State outside of New York City during the same time 54 persons were killed by automobiles, trolleys, and wagons while in New Jersey 26 persons were killed in the same way. In New York State 8 persons were killed at railroad grade crossings, as compared with 17 during the same month of last year.

Inquiry Into Garbage Disposal.—Dr. Linsly R. Williams, Deputy Commissioner of the State Department of Health, has been appointed by Gov. Whitman to conduct an investigation into the proposed building of a garbage disposal plant for New York City on Staten Island. The taking of testimony was begun at Borough Hall, St. George, Staten Island, on August 28, and some thirty experts will be examined. The building of the plant has been bitterly opposed by some of the residents of Richmond Borough.

Tuberculosis Test Town.—The National Association for the Study and Prevention of Tuberculosis is sending representatives through New York and Massachusetts in search of a town of about 100,000 population, in which studies may be made of the new theories for the control and elimination of tuberculosis. The officers of the association desire to find for the test a town which has some industries, since tuberculosis is a poor man's disease, one not too far removed from industrial centers, and one with but few commuters. It is planned to expend about $150,000 in the experiment.

Paratyphoid in Camp.—An outbreak of paratyphoid is reported in the camps of the New York division of the National Guard in Texas.

Study of Infant Mortality.—The seventh annual meeting of the American Association for Study and Prevention of Infant Mortality will be held in Milwaukee on October 19 to 21, 1916. The preliminary program includes a discussion of measles and pertussis, a symposium on governmental activities and vital and social statistics in regard to infant welfare, and discussion of public school education for the prevention of infant mortality and of nursing and social work in rural communities. Full particulars may be obtained from the executive secretary of the association, 1211 Cathedral Street, Baltimore, Md.

German Hospital Red Cross Unit.—The complete equipment of an American Red Cross base hospital unit with a staff from the German Hospital, New York, has been made possible by a gift of $25,000 from Mr. Fritz Achelis of this city. The unit is now being organized by the Military Relief Department of the Red Cross. Dr. Frederick Kammerer, who recently returned from active service with the German Army, has been made director.

Civil Service Examination.—The United States Civil Service Commission announces an open competitive examination for both men and women, for the purpose of filling a vacancy in the position of medical interne in St. Elizabeth's Hospital, formerly the Government Hospital for the Insane, Washington, D. C. The position carries a salary of $900 a year and maintenance. The examination is open to graduates of reputable medical colleges or students in their senior year. Candidates must be unmarried, and twenty years or over on the date of examination, and must not have graduated previous to the year 1914 unless they have been continuously engaged in hospital, laboratory, or research work along the lines of neurology or psychiatry since graduation. Application blanks may be obtained from the United States Civil Service Commission, Washington, D. C.

Removals.—Dr. Frederic E. Sondern announces his removal to 20 West 55th Street.

Dr. Charlton Wallace has removed to 11 East 48th Street.

Obituary Notes.—Dr. Warren Fisher Gay of Boston, Mass., a graduate of the Medical School of Harvard University in 1893, and a member of the American Medical Association, the Massachusetts Medical Society, and the Suffolk District Medical Society, died suddenly at his home, on August 26, aged 50 years.

Dr. William H. B. Pratt of Brooklyn, a graduate of the College of Physicians and Surgeons, New York, in 1867, consulting physician and a member of the Board of Managers of the Methodist Episcopal Hospital, Brooklyn, consulting physician at the Home for Dependent Children and the Home for

Aged Men, and a member of the American Medical Association, the Medical Society of the State of New York, and the Kings County Medical Society, died at his home, on August 27, aged 74 years.

Dr. Ernest Watson Cushing of Boston, emeritus professor of abdominal surgery and gynecology at Tufts College Medical School, Boston, a graduate of the College of Physicians and Surgeons, New York, in 1871, and a member of the American Medical Association, the Massachussetts Medical Society, the Suffolk County Medical Society, the American Gynecological Society, and the American College of Surgeons, died at the Cushing Hospital, of which he was the head, on August 27, aged 69 years.

Dr. Howard Fellows Morse, formerly of Lynn, Mass., a graduate of the University of Vermont, College of Medicine, Burlington, in 1904, died suddenly, at his home in Center Harbor, N. H., on August 15.

Dr. George Whitehouse Ryan of Boston, a graduate of the Tufts College Medical School, Boston, in 1899, died at the Commonwealth Hospital, after a short illness, on August 15, aged 44 years.

Dr. Hugh L. McLaurin of Dallas, Tex., a graduate of the Medical Department of the Tulane University of Louisiana, New Orleans, in 1884, and a member of the American Medical Association, the State Medical Association of Texas, and the Dallas County Medical Society, died at his home suddenly, on August 11, aged 54 years.

Dr. Edward E. Flagg of Moreland, Okla., a member of the American Medical Association, the Oklahoma State Medical Association, and the Woodward County Medical Society, was instantly killed in an automobile accident, on August 18, aged 42 years.

Dr. Augustus Assenheimer of New York, a graduate of the New York University Medical College in 1868, and a member of the New York Academy of Medicine and the New York State and County Medical Societies, died at his summer home in Far Rockaway, N. Y., on August 24, aged 67 years.

Dr. John Wesley Ward of Pennington, N. J., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1866, and for many years medical director of the New Jersey State Hospital at Trenton, died at his home on August 25, aged 76 years.

Dr. John A. Fritchey of Harrisburg, Pa., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia in 1879, and three times mayor of Harrisburg, died at the Presbyterian Hospital, Philadelphia, after a long illness, on August 25, aged 58 years.

Dr. William F. Waldron of Brooklyn, N. Y., a graduate of the New York University Medical College in 1893, died at his home on August 24, aged 44 years.

Dr. Edgar T. Spratling of Atlana, Ga., a graduate of the College of Physicians and Surgeons, Baltimroe, in 1891, a member of the Medical Association of Georgia and the Fulton County Medical Society, and a captain in the Fifth Regiment of the National Guard of Georgia, died suddenly on August 25.

Dr. John Bart Webster of Philadelphia, a graduate of the Medico-Chirurgical College, Philadelphia, in 1887, and a member of the New York State Medical Society, the Medical Society of the State of Pennsylvania, the Philadelphia County Medical Society, and the American Medical Association, died at his home, from heat exhaustion, on August 9.

Obituary.

WILBUR B. MARPLE, M.D.

Dr. Wilbur Boileau Marple of New York, surgeon to the New York Eye and Ear Infirmary, died suddenly, of apoplexy, while playing golf at his summer home, Kennebunkport, Me., on August 30, aged 60 years. Dr. Marple was graduated from Amherst College in 1877, and from the Starling Medical College, Columbus, Ohio, in 1881, since which time he had practised in this city. In addition to his work at the New York Eye and Ear Infirmary with which he had been connected for many years, he served as consulting surgeon in ophthalmology to the Workhouse and Babies' Hospital. He was also a member of the American Medical Association, the New York State and County Medical Societies, the American College of Surgeons, the American Academy of Ophthalmology and Oto-Laryngology, the American Ophthalmological Society, the New York Ophthalmological Society, the New York Academy of Medicine, the American Therapeutic Association, the New York Clinical Society, and the Hospital Graduates' Club.

Correspondence.

DOCTORS, PREPAREDNESS AND THE RED CROSS.

Sir Frederick Treves is one of the most distinguished of British surgeons, and has had a large experience of military service in the Boer war and the present great conflict. He has recently written an interesting article in the *London Times*, in which he states clearly the logical and proper relation between the Sanitary Service of the army and the Red Cross. He says:

"However efficient an army medical service may be, the help of the Red Cross organization is—and ever will be—a necessity. All those who are familiar with the operations of the Army Medical Department in the present war will admit that its work has been beyond praise, and will own, indeed, that it could scarcely be surpassed.

"No army medical service can be maintained in time of peace upon a war footing. There is evolved in such times an elaborate scheme for expansion in war; but one prominent and inevitable feature of that scheme is the enrollment of a vast body of personnel from the civil population in the form of doctors, nurses, orderlies, motor drivers, clerks, cooks, dispensers and the like. In such work a civilian society can act with greater ease and promptness than can a huge organization like the War Office, and thus it is that in the supply of personnel the Red Cross societies have undoubtedly rendered sterling service. In the furnishing of medical and surgical comforts also the Red Cross societies are untrammelled by those very necessary forms and procedures which must be observed by a government body dealing with public funds.

"In the matter of personnel, the Red Cross Societies provide a vent for that ardent sympathy which the people of this country feel for the wounded soldier, and, at the same time, make the bounteous eagerness to be of service which has been so glorious a feature in this unexampled campaign. In this eagerness to be kind, to do something for the wounded and the sick, the men and women of Britain, and of Britain beyond the seas, will not be de-

nied. They insist upon taking their share in the work of mercy; they demand the right to assist; they decline to sit still with listless hands. This resolve of the generous folk of the Empire is the foundation of all Red Cross work, and it has expressed itself in a way of which the country of Florence Nightingale may well be proud."

The same opinion has been reached by the military and Red Cross authorities in the United States. Congress enacted and the President proclaimed some years ago that the American Red Cross was the one agent which should render aid to its land and naval forces in time of war, and that the personnel engaged in this work should constitute a part of the sanitary forces. Even the sphere of activity of this volunteer aid was specified by the President. The service at the front was forbidden to it, being the special and appropriate domain of the medical service of the military establishment. This pronouncement of rude and practical common sense should have power to dispel the romantic dream-picture in which the beautiful young Red Cross nurse (not registered) is seated on the battlefield with the head of the stricken warrior on her lap.

The allotted sphere of volunteer assistance is specified to be at the base of military operations, along the line of communications, on hospital ships, and at hospitals in the home country.

As the military base may be in a foreign country, and if not will be always, we hope, on our borders, the Red Cross in its enrollments of personnel classifies them as follows, according to the locality at which their services will be available:

Class A. Willing to serve anywhere, at home or abroad.

Class B. Willing to serve anywhere within the limits of the home country.

Class C. Willing to serve at place of residence only.

Although the War Department as long ago as in 1912 had prescribed in orders the units which the Red Cross should organize and their sphere of action, and had provided for the registration of these units in the Surgeon General's Office, nothing further was done at that time. This inactivity was due in part to the fact that our people were not at that time interested in questions of preparedness, and in part to the fact that the Red Cross was organized and administered along exclusively civilian lines and without reference to its charter obligations to assist the military forces in war and "constitute a part of the sanitary service thereof."

But when the world-conflict aroused us from our dream of a peace that would be perpetual because we so willed it, the Red Cross awoke also to its responsibilities, and reorganized its administrative machinery so as to meet them. All of its external activities were divided into two great departments of Civilian Relief and Military Relief, each under a director general. At the same time, ex-President Taft was selected to be the administrative head of the society. He presides over an Executive Committee of unusual distinction and virility. Its membership includes the Secretary of the Interior, the Surgeons General of the Army and Navy, and three other men and one woman of national reputation. A colonel of the medical corps, U. S. Army, was selected to be at the head of the new Department of Military Relief. Congress recognized the far-reaching importance of this reorganization by authorizing in the National Defense Act the detail of five regular medical officers for duty with this department. Its director at once placed his department at the disposition of the Surgeons General of the Army and Navy, and proceeded to carry out their wishes and instructions as to the direction and scope of its activities. The Navy to be efficient has to be always on a war footing, and the battle fleet is but little capable of expansion by volunteer units. Its needs in the way of volunteer medical assistance in war will therefore he small and easily met. With the Army, however, the case is far different.

The Army is like a spear of which the regular establishment is the small iron head, sharpened and ready for use, while behind it is the great militia, which is the shaft which must be shaped and fitted to the head when war comes. No nation maintains a sanitary establishment any larger than is actually necessary to care for the regular army in time of peace, and no provision of additional officers is made to meet the needs of expansion. In our Army even this modest requirement has not heretofore been met, and the medical establishment has had to call in additional aid to do its work, even in time of peace, although for the line of the Army a decided surplus of officers has been maintained. Now this medical spear head of trained officers is nearly all required for the service of the front, where special military training is necessary, and only enough will be left for the second zone, the line of communications and base, and the third zone, the home country, to fill the more important administrative positions. The strictly professional work of these zones must be done by the medical volunteers from civil life, and fortunately for the professional workers in these two zones preliminary military training is not essential as it is in the zone of the front.

The supreme importance of the base hospitals is appreciated when it is remembered that in the scheme for the rescue and care of the wounded the base hospital is the first real hospital that the wounded man encounters in his journey to the rear. The so-called field hospitals and evacuation hospitals of the zone of the front are in fact not hospitals at all, but mere shelters for the wounded, where they are put under cover and fed and their wounds are dressed while they are waiting to be transported to the base. They have no trained nurses or comfortable beds with mattresses and sheets, or any real comforts. Not until he arrives at the base hospital does the soldier find a bed where broken bones can lie in comfort, or the grateful ministrations of a Red Cross nurse, or the quiet and order of a fixed hospital. Here also the wounded, except a few emergency cases, will find the surgical staff on whose skill will depend their lives or future usefulness in life. Thus it is clear why the base hospital looms largest among the Red Cross organizations, and why the organization of these was the first task given by General Gorgas to the Director General of Military Relief.

It is evident that here is the crucial point in the care of the wounded, and their interest can be best served by transporting here *en bloc* the trained and skillful staffs of our best hospitals. This is what the Red Cross has now undertaken to do for the medical service of the Army, and twenty-five of these base hospital units are now organized or in process of organization in the best hospitals of our country. It should be clearly understood that though organized by the Red Cross they will not be administered by it. As soon as they are called into service by the War Department or the Navy

Department, they "will constitute a part of the sanitary service thereof," in the language of the President's proclamation, and come absolutely and entirely under military authority, and they will be transported by the military authority from their mother hospital to the military base. The nurses will still wear, as a sort of vestigial organ, the red cross on their caps, but the medical staff will wear the uniform of the Officers' Reserve Corps, U. S. A., the commission of which they will have had from the time of their muster-in as a Red Cross unit.

Another Red Cross unit of great practical value is the field column, which is in fact a sick transfer company, which will bring the sick and wounded from the evacuation hospitals in the zone of the front back to the base hospitals. The field column will use for this transportation motor ambulances or hospital trains or boats, or all three.

In the zone of the home country are yet other units, called general hospitals, which will be organized in the larger civil hospitals or at army posts for the reception of the overflow and the convalescents from the base hospitals. The plans for the expansion of these will be prepared, and the personnel enrolled as far as practicable in advance of the time when they will be needed. There are still other Military Relief activities of the Red Cross, which space does not permit to be described.

The Red Cross, in addition to the organization of units, has undertaken in conjunction with five great national medical societies an enrollment of the profession, so as to acquire a record of the capabilities and special accomplishments of the medical profession of the United States. By an arrangement with the National Association of Nurses, it has enrolled and holds ready for service over 7000 nurses, the cream of the nursing profession of this country. Non-professional personnel is also being enrolled for service in war, such as stenographers, clerks, chauffeurs, cooks and hospital attendants.

The Red Cross Chapter in any city is the local organization, whose duty it is to finance the military relief activities of the community, supervise the enrollment of the non-professional personnel, and give such other assistance as may be needed. As the Red Cross is the accepted agency for medical preparedness, it is clearly the first step of every medical man to "join now," and promote in every way the growth and success of this great national institution.

JEFFERSON R. KEAN,
Colonel, Medical Corps, U. S. A., Director General of Military Relief, American Red Cross.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

TREATMENT OF CONVALESCENT SOLDIERS BY PHYSICAL MEANS — EARLY DIAGNOSIS — SYPHILIS — DIATHERMY—HIGH-FREQUENCY CURRENTS—WHIRLPOOL AND OTHER BATHS—HOT SAND—ACTIVE CONGESTION.

LONDON, August 11, 1916.

MAJOR TATE MCKENZIE, R. A. M. C., has brought before the Surgical Section of the Royal Society of Medicine the treatment of convalescent soldiers by physical means; he compared a great military hospital to a general post office, in which the sick and wounded were sorted into first, second, and third class matter—the first being rapily distributed to Red Cross and other military hospitals, where treatment, operative or general, soon enabled them to return to the line. The second class had further to stay at a convalescent institution commanded by an officer of the R. A. M. C., where they could obtain treatment by physical means, including regulated exercise; many of this class found their way back to the front. The third class presented more difficulty, as they were so chronic as to be referred from depot to depot. For some months now such cases have been sent to special depots, each under a competent officer for purposes of discipline but with a medical officer attached. It is hoped that men fit for light duties may be able to release stronger officers for active service and may also allow the discharge of men from whom no further satisfactory work can be expected. Each special depot is for the accommodation of 2,000 or 4,000 men.

The physical therapeutics under consideration include electricity, hydrotherapy, massage, exercises, training, and marching. The three forms of current were employed. The committee of the Royal Society of Medicine on balneology assisted in converting an ordinary hut into a good hydrotherapeutic establishment. The pool bath at 94° Fahr. would hold twelve men sitting up to their necks in that water, in which they usually remained an hour. This was the routine for patients suffering from shock and disordered cardiac action. A whirlpool bath was used for limbs with painful scars or frostbitten; the temperature of this was 110° F. and the water was kept violently agitated; compressed air introduced into the stream provided a bubbling effervescent envelope for the painful limb, which in about 20 minutes was found to be flushed and remained so for hours. It was an excellent preparation for massage, which sometimes could not be borne without it. It could be followed by passive manipulation and the numerous exercises of muscles and joints designed to re-educate them and restore the general physical training.

Lieut.-Col. R. J. Morris remarked that more than a century ago Professor Ling elaborated physical exercises as a definite system of treatment. These exercises he claimed as active or passive again or reduplicated. In these last the work was partially done by the patient, but another person provided resistance. Since November over 76 per cent. of men in his depot had returned to service after physical treatment—massage, gymnastics without apparatus, but by experienced masseurs; also with apparatus, as bicycle, rowing, dumbbells, graduated weights, galvanic and faradic currents, and other means. When his patients could bear more strenuous exercises he passed them on to the army gymnastic staff at Aldershot.

Dr. Bezley Thorne extolled mineralized baths for cardiac rheumatic cases. He had had trench rheumatism cases put on their feet by these which had resisted salicylates and other remedies. Instead of drying after a bath he let patients dry gradually in their blankets. Long emersions should not be given when irritable heart and muscular tremor were present.

Dr. Fortescue Fox thought the preceding reports opportune and valuable. Whirlpool baths were a new feature so nothing dogmatic would be said about them. At high temperatures they assisted immobilized limbs.

Colonel Rodd said the important point was early diagnosis. At the Ramsgate Canadian institution a special board attended to this and in six weeks

quite a number of myopathic and neurasthenic cases were found to have tertiary syphilis; when treatment for this was applied many of the patients were soon back in the firing line.

Dr. Cumberbatch said too little attention had been given to electrical methods, diathermy, and high-frequency currents. Injuries to nerve trunks would need attention for eighteen months or more before the return of some degree of power and the best treatment was by baths supplied with the rhythmically varying, sinusoidal current. His results with this were uniformly good.

Major Turrell said diathermy was of great value. The whirlpool and other baths affected the surface only, but in diathermy the current went directly through the tissues intervening between the two electrodes and could be made to bear on every part of the body. It had been efficacious for relief of acute pain and for frost-bite, was quite safe and warmed the tissues—a good preliminary to massage, it cleared up joint effusions and phlebitis and liberated fibrous adhesions.

Dr. W. Gordon had great faith in hot sand for some forms of injury, more than radiant heat or light in some cases.

Dr. Ackerley had been treating by physical means for more than twenty years, the aim being to overcome defects of circulation by producing active congestion in the part. Pain was sometimes the only obstacle to movement and must be met in the best way. Active movements could not be borne at first.

The July meeting of the new Dermatological Society was devoted to the exhibition of cases. Dr. D. Vinrace showed one of diffuse cellulitis following syphilis, contracted four years ago by a man of forty. He had had four doses of salvarsan and fancied himself cured. Last December he consulted Dr. Vinrace for a diffuse cellulitis in his neck, for which he had taken neosalvarsan and later galyl. The swelling subsided very slowly. Both mercury and iodide of potassium were administered.

Dr. Vinrace also showed a case of leukoplakia in a man. He, too, was about forty. A similar case was shown by Dr. Vinrace some weeks ago. It came on gradually and subsided slowly. The patient had had gonorrhea but not syphilis. He was a very nervous man and a great smoker. Dr. Eddowes, in the chair, thought the tests for syphilis should all be applied as the man might be suffering from a condition left by that disease. Leucoplakia used to be called the "smoker's patch," and that smoking aggravated it he had no doubt.

Dr. Eddowes then showed a case of urticaria pigmentosa, macular form, in a girl of twelve. It contrasted forcibly with a case lately shown by Dr. Samuels. The president repeated an opinion he has often expressed to the effect that rich, hot, fatty food was a cause of urticaria. The mother declared that fat made the girl bilious and gave her heartburn.

The Nonoperative Treatment of the Accessory Sinuses.—Lewis A. Coffin has abandoned the idea of curing diseases of the sinuses, either by operative or other measures, and is satisfied to produce an arrest under constant treatment. By means of a special apparatus for suction, with or without the addition of cannulas, he exhausts as far as practicable the air in the sinuses, beginning with low pressure with resulting escape of mucus, and thereupon forces into the cavities under a pressure up to ten or fifteen pounds air medicated with nebulized oil, iodine and the Bulgarian bacillus. He also gives a course of autogenic vaccine treatment. In two chronic cases he appears to have produced relative recovery.—*Virginia Medical Semi-Monthly.*

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

FEAST TO THE DEAD—CHILDBIRTH—NAMING THE BABY—PUBERTY—MARRIAGE AMONG THE ESKIMO.

St. Michael, Alaska, April 30, 1916.

Some of the Eskimo thoughts are very beautiful, as for example "The Feast to the Dead," and some of their acts are strange and very unnatural even in comparison with those of the lower animal. A good example of the latter is the care of their children.

There is usually in each village a squaw who claims to be versed in matters of midwifery, and she attends the mothers in confinement. The most capable midwife in this connection is the one who does the least work and who interferes with Nature the least. It used to be customary for primiparæ to be considered unclean, and as such they were put off by themselves until the child was born, food being handed to them through a crack, but never a word spoken. This custom is passing away with the Eskimo of the lower Yukon. The newborn babe may or may not be wanted. Formerly it was the custom to kill many of the female babies, as they were considered food consumers and in return produced nothing. If it is decided to kill the female baby it is taken out on the tundra or far out on the ice, the mouth filled with snow and left there to freeze to death. It was the custom to kill these females at any time up to the age of five years if it was decided that the child was a burden. This custom fortunately seems to be passing away, and certainly is not tolerated where there are civil authorities.

The baby is named. If born in a village the child is given the name of the last person who died there. In doing this they believe that the spirit of the dead person leaves the grave and enters the child. It now behooves the relatives of the dead person to contribute to the support of the infant as will be spoken of in describing the "Feast to the Dead." The Eskimo believes that spirits or shades ("tagunuhak" as he calls them) preside over everything, and believing this he makes every attempt to avoid offending them as the shade would bring disease upon him, make him have bad luck with the seal, tomcod, white whales, etc. For the same reason the native never punishes a child after it is named until the child is large enough to care for itself. At this time the spirit of the dead ceases to act as a protectorate, so in slapping a child about the age of twelve they will not offend the shade. If the baby is born in camp it is named for the first object the mother sees after its birth, as for example, a tree, mountain, etc.

Apparently the Eskimo care very little for their young. They are filthy, poorly clothed, and without a diaper. They are transported in the hood of their mother's parka, and it is a common sight to see the child's nose bleeding from striking its head against the neck of the mother. The mother usually nurses the child until it is about three or four years of age, and one will sometimes see a mother nursing both a baby and a two-year-old child. They nurse their young until the young can eat raw tomcod or dried salmon fish and sop seal oil with their fingers. The babe of an Eskimo squaw is not kept as clean as a Malamute will keep her pup. Another example to show how little they care for their young. A midwife will sometimes see a baby that she would like to have, if so, will put it under her parka and carry it away, regardless of how it is to be fed. Anteso-

luck, "Cyndrock Mary, the Reindeer Queen," was the midwife for a squaw at St. Michael and took quite a fancy to the baby. The following day she wrapped it up and packed the baby sixty miles by dog team to Unalakleet, with the weather below zero, and raised the child. This is permissible with the native.

When a girl reaches the age of puberty she is considered unclean, and must remain in a corner of the house for forty days. She must have a hood on, hair streaming over her face, and face turned toward the wall. In some places she is kept only four days in this position and then behind a grass mat. The native speaks of her as being "agulingagak," meaning "has become a woman." Should a man come close enough to her during this time to be touched, he is supposed to become visible to all the animals, so that when he goes hunting he will have no luck as the animals will see him. At the end of the period in which she remains in seclusion the girl takes a bath and puts on entirely new garments. She is now ready to become a wife. If no suitors approach her in a reasonable time the father gathers together much food and has a festival (coming out party of better society) to announce that his daughter is ready for marriage.

When the Eskimo sees a girl that he desires to marry he tells his father, who in turn has an interview with the girl's father. If the match is approved of, the young man puts on the very finest clothing that he can get and goes to call. He also takes the finest suit of clothing he can get for the girl, and she dresses up in it. Then they are man and wife according to the native belief. If there are no children in one of either of the parents' families the newly married couple goes to live with that family. Child betrothals are common and take place in one of two ways. The mother of the girl, regardless of the age, may take a boy to live in her home to become the girl's husband when they grow up, or a girl may leave her home and be adopted by a boy's mother for this purpose. There is evidence to show that two native men of different villages sometimes become bond-fellows, and when one goes to the other's village he is given the privilege of his bond-fellow's bed and wife. The children of these kind of families call one another "katknun."

Annually the "Ihlugi," or "Feast to the Dead," is held. This is soon after the Bladder Festival and before salmon fishing begins. It is for the purpose of offering clothing, food, and water to the spirits of those who have died within the year. The day before the festival the nearest male relative of the dead to be honored goes to the grave and plants a stake bearing the family totem. If the deceased was a man this is a kyak paddle; if a woman, a wooden dish. This is to call the spirit to the grave where it waits until called to the Kashim, or Council House. No work is permitted in the village during this festival, and the use of any sharp instrument is strictly prohibited for fear of injuring the spirit, as the spirit would bring evil upon the village. Persons who are to honor their dead take an oil lamp to the Kashim at mid-day, light it and place it upon a stake in front of the seat where the deceased was accustomed to sit. This is to furnish light for the shade and is kept burning until the festival is over. The villagers now gather in the Kashim, the relatives bringing food as far as the door, where it is left. An old man seated in the middle of the floor, and beside the main lamp, begins a rhythmical beating on a drum as an accompaniment to his song. This is usually the Medicine Man. The villagers join in as a chorus, but to the white man's ears there is no music to this. The music is to call the spirit, and when it arrives the relatives go to the door and procure a bit of each kind of food they brought. Returning, they throw this upon the middle of the floor and pour water upon it, washing the food through the cracks. In this way the spirit is believed to receive the benefit of the food. The remaining portion of the food is then brought in and distributed to the guests, and with loud stamping upon the floor, shouting, and singing, the spirit is driven from the building not to return until the next "Feast to the Dead." The native is afraid to die if he leaves no one to represent him at these festivities, as he feels that his shade would suffer from destitution.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 24, 1916.

1. Hygiene of the Mind. Benjamin P. Croft.
2. Mental Preparedness. James J. Putnam.
3. The Meaning of the Mental Hygiene Movement. William A. White.
4. The Menace of Mental Deficiency from the Standpoint of Heredity. Henry H. Goddard.
5. The Functions of Social Service in State Hospitals. Hannah Curtis.

1. Hygiene of the Mind. — Benjamin P. Croft discusses the hygiene of the mind more particularly as it applies to the physician, though his suggestions are equally valuable to others. He says he has wondered many times of late whether as practitioners of medicine we are not in danger of forgetting the real significance of the influence of our minds upon the successful conduct of our work, and the better preservation of our physical bodies and those committed to our care. In our constant efforts to cure diseases either by drugs or surgery or both we are prone to forget how important the influence of a proper control of the emotions is. History teaches that the loss of emotional control has in some instances resulted in death, and there are on record many instances of the effect of emotion on the various physiological functions. There seems to be no question as to the need of regular systematic mental and physical diversion from one's usual occupation. In discussing this proposition the essayist considers what benefits may be derived from outdoor occupations, such as golf, agriculture, geology, etc., and from the relaxation of literature. He thinks that the mental relaxation and stimulation of friendship is one of the benefits we are losing out of our busy modern lives. Above all, he emphasizes the importance of attaining and keeping an attitude of mental optimism. This mental habit should be cultivated early in life; but it is never too late to begin.

2. Mental Preparedness. — James J. Putnam states that the European war—its causes, its emotional history, its probable results, the obligations of America with reference to international affairs—relates very naturally to mental preparedness. The question therefore arises as to how we shall make our children and ourselves mentally more stable and to what end we should seek mental stability. The principles chiefly significant are that the human race, as a whole, undoubtedly does move toward a type which we can represent to ourselves ideally, though only ideally. This is the goal of ideal perfection. The evidence is strong that an influence is actually at work that indicates the existence of such a goal and points the way toward it. This influence is opposed by the tendency to reversion, and the problem of helping our children resolves itself

into how we can best neutralize this tendency. The author discusses how this may be done through a proper direction of the elemental passions, through a recognition that the same forces are immanent and vital in the child that have brought mankind to where it is and that will carry it still farther. If the child is to progress toward the goal of social companionship and usefulness, three things must be properly directed, egoism, love, and imagination. If the European war has taught us anything it is that highly organized social efficiency is indispensable for the ultimate success of civilization and the attainment of human ideals.

3. **The Meaning of the Mental Hygiene Movement.**—William A. White points out that in primitive communities many courses of action were tolerated which would not be endured in a civilized community; that in a civilized community one cannot do anything that he may happen to choose without crossing the path of some one else. The group of people who are called insane are those who exhibit a type of conduct that cannot be tolerated in the community in which they live. The characteristic of this type of conduct is social inefficiency. There are many different kinds of socially inefficient conduct, as for instance the pauper, the criminal, the neurotic. They all have one characteristic in common; they cannot adjust themselves to their social environment. A proper environment means a great many things and can only be obtained in an institution where the problems regarding these different types of people should be worked out, and they should be worked at until solutions have been reached which are sufficiently valid, sufficiently correct, sufficiently definite and far-reaching, to be backed up by the community and formulated in some sort of statute. The institution conducted on scientific principles aims to provide an environment in which these people who cannot adjust themselves to the community can find their best personal expression, and an environment in which they can pay back what they are getting from the community. The writer thinks we shall never entirely solve the problem of the mentally defective, but we can perhaps make the distance which separates the man at the top of the ladder and the man at the bottom a little bit shorter, by concerted and really tremendous effort.

4. **The Menace of Mental Deficiency from the Standpoint of Heredity.**—Henry H. Goddard emphasizes the fact that the essence and importance of the menace of mental deficiency lie in the rapid propagation of the feeble-minded compared with other classes in the community. Formerly when all stocks were equally prolific and the mentally deficient were more exposed to eliminative accidents, natural process served better to maintain the balance. Now the feeble-minded are more protected by society from disaster, and the steadily declining fertility of the superior stocks tends to destroy this advantage. Optimists believe that the situation will yet right itself; but there seems, nevertheless, occasion for very genuine and serious concern, unless additional measures are taken to correct the disturbance of evolutionary process created by modern protective measures, which favor the survival of the unfit, and by modern practice which limits artificially the number of fit who survive. Broadly speaking corrective measures may be of two kinds—those which tend to restrain the inferior, and those which tend to increase the superior stocks. Dr. Goddard emphasizes the former, but calls distinct attention also to the latter.

New York Medical Journal.

August 26, 1916.

1. The Substitute Feeding of Infants. J. P. Crozier Griffith.
2. The Physiological and Toxic Actions of Formaldehyde. Samuel E. Earp.
3. Fever, a Part of the Syndrome of Toxemia. Francis M. Pottenger.
4. Typhoid Fever. I. L. Nascher.
5. The General Practitioner. J. V. O'Connor.
6. An Evaluation of Paraphrenia. (Concluded.) Edward A. Strecker.
7. Chronic Suppurative Otitis Media. Hugh B. Blackwell.
8. Orthopedics of the Hand. Lawrence G. Hanley.
9. Frostbite in the Hand Resembling Raynaud's Disease. N. S. Yawger.
10. The Value of Iodine in Gonorrhea. M. Abramovitz.

2. **The Physiological and Toxic Action of Formaldehyde.**—Samuel E. Earp discusses the physiological action of formaldehyde, and reports three cases of poisoning from formalin. Two of these were accidental and one was due to an attempt at suicide. All recovered, though the first patient was moribund and there was apparently no possibility of recovery. The treatment consisted of the administration of a quart of milk by the stomach tube after the stomach had been washed by diluted aromatic spirits of ammonia, which is supposed to be the only antidote for formaldehyde. Milk of magnesia was also given. As a stimulant sulphate of strychnine was administered according to the requirements of the case. These cases are reported to call attention to the danger of this agent which is used commercially with hardly a thought of its being harmful.

3. **Fever, a Part of the Syndrome of Toxemia.**—Francis M. Pottenger recalls that in attempting to classify the symptoms of tuberculosis he has suggested that those belonging to the toxic group were, for the most part, an expression of general discharge through the sympathetic nervous system and that they were caused by the action of toxins upon the central nervous cells. In this manner he has accounted for the rapid heart action, lack of appetite, coated tongue, deficient secretion on the part of the stomach and other glands of the intestinal tract, particularly the liver and pancreas, and for the deficiency in motility on the part of the stomach and intestinal tract. He accounted for the symptoms of malaise, lack of endurance, and nervous irritability as part of the same picture. Further study has led him to believe that fever, too, belongs to this same group, and instead of being considered an entity should be considered as one of the symptoms of toxemia. His theory briefly put is that fever is due to the action of the toxins on the nervous system. It arises largely from constriction of the superficial vessels interfering with heat dissipation. Its production is a part of general sympathetic stimulation. The collapse which results from excessive toxic action is due to a vasodilation, a temporary or permanent vasomotor paralysis, and is accompanied by perspiration, rapid dissipation of heat, and subnormal temperature. This theory would also account for the fever which follows various depressive emotional states.

4. **Typhoid Fever.**—I. L. Nascher reports two unusual cases of typhoid fever. The first was irregular in its onset and course, the symptoms in the first place being rather indicative of a lobar pneumonia. The subsidence of the symptoms referable to the chest and the persistence of diarrhea toward the end of a week led to the suspicion of typhoid fever. Although text-books say there is no eruption after the fourteenth day, in this case the typical typhoid spots appeared in the third week. Delirium occurred on the twentieth day and for several days thereafter. The severe typhoid state began at this time and lasted for about a week after. The second case, a daughter of the first patient, aged thirteen years and weighing 130 pounds, had the disease, which ran a fairly typical course for about a month when she developed signs of pulmonary involvement, although there had been no chill, cough, pain, expectoration, or any of the usual symptoms of pneumonia. From this time until the patient died, some eight weeks later, there was no relationship between temperature, pulse,

and respiration, there being frequently a marked rise or fall in temperature, pulse, or respiration, without any apparent cause. There was a persistence during the entire time of four groups of symptoms—gastric, intestinal, pulmonary, and cerebral. There was a frequent absence of correspondence between symptoms and physical findings. There was an improvement in the temperature, pulse, and respiration toward the end. There seemed to be two and perhaps three distinct infections —typhoid, pneumonia, and septic. During the course of her illness the patient vomited pus, and pus came from the rectum and vagina. Autopsy revealed a unique condition. There was a pus reservoir lying between the transverse colon and the diaphragm; perforation of the diaphragm upward into the pleural cavity; no pathological condition in the lungs, except adhesion of the lower lobe of the left lung to the diaphragm; there were widespread adhesions and necrotic areas in various organs and tissues, and the second and third lumbar vertebræ were denuded. There was absence of perforation of the vegina or of any other assignable cause for the presence of pus in the vagina. The liver was enormously enlarged, weighing five and three-quarters pounds. Both kidneys were also enlarged.

7. **Chronic Suppurative Otitis Media.**—Hugh B. Blackwell reports sixteen cases in which he has performed the following operation: He makes the usual postaural incision, as in the Stacke operation. The soft parts anterior to this incision are elevated and retracted forward; the cortex is removed with a gouge and the subcortical cells with curettes until the antrum is opened; the posterior bony canal wall is lowered and the antrum widened to its fullest possible extent. When the short process of the incus becomes visible, the external attic wall is removed by placing the back of the curette external to and in front of the incus and curetting from within outward. The bony canal wall is still further lowered until the facial ridge is reached, leaving only an epitympanic ring in its superior portion, with a width of about one-sixteenth of an inch. In four instances I have removed this ring in the superior and outer quadrant of the circle, leaving the membrana typmani and ossicles intact. The granulations, polypi, and cholesteatoma lying in the external and internal attic are removed by curetting internal or external to the incudal body, care being observed not to destroy the suspensory ligament of the malleus or its external lateral ligament. In curetting near the incus great care must be taken not to disturb the ligament which binds the extremity of its short process to the bone below and just in front of the external semicircular canal. The drum and ossicles are of course not removed, but left *in situ*. An L-shaped metal flap is cut, as in a radical operation, the cartilage removed, and the flap sutured to the temporal fascia. The mastoid wound and attic region are packed snugly, thereby furnishing support to the flap, and the posterior wound is sutured. The author does not present this operation as one that would entirely replace the radical procedure, but is convinced that when a proper selection of cases is made it will yield even better functional results as well as a dry ear.

Journal of the American Medical Association.

August 26, 1916.

1. Congenital Deformation and Defunctionalization of the Caudad Ileum and Colon. Joseph Rilus Eastman.
2. Indications for Cholecystectomy. Donald Guthrie.
3. Fat Embolism in Bone Surgery; Incidence and Prevention. Edwin W. Ryerson.
4. The Evolution of Osteochondritis Deformans Coxæ Juvenalis. Albert H. Freiberg.
5. Elective Localization of Bacteria in Diseases of the Nervous System. Edward C. Rosenow.
6. Poliomyelitis, with Some Observations on Thirty Cases. Archibald L. Hayne and Francis P. Cepelka.
7. Municipal Control of Infantile Paralysis. Abraham Sophian.
8. Gastrointestinal Findings in Acne Vulgaris, Especially Fluoroscopic. Lloyd W. Ketron and John H. King.

1. **Congenital Deformation and Defunctionalization of the Caudal Ileum and Colon.**—Joseph Rilus Eastman. (See MEDICAL RECORD, July 8, 1916, page 80.)

2. **Indications for Cholecystectomy.**—Donald Guthrie. (See MEDICAL RECORD, July 8, 1916, page 86.)

3. **Fat Embolism in Bone Surgery.**—Edwin W. Ryerson relates several cases of fat embolism that have occurred in his experience which lead him to believe that this is a much more frequent and serious danger in bone and joint surgery than he had supposed. He reviews the various methods that have been proposed for the treatment of fat embolism, and states that these are apparently not on a well-defined basis and cannot be considered as having any curative value in cases in which a large quantity of fat has been forced rapidly into the lungs. It seems likely that a complete stasis of the circulation during and a short time after the operative procedures would probably prevent or at least reduce the transportation of the fat through the venous channels. The tourniquet can be left in place as long as half an hour, and can then be gradually loosened. Animal experiments show that fractures and contusions of the bones cause much more embolism than does the performance of a typical Albee bone transplant to the spine. The use of the chisel and mallet is far more dangerous than the motor saw. The experiments also showed that when a tourniquet was applied the fatty embolism from all kinds of traumatism to the bones was markedly decreased. The tourniquet should be made a matter of routine in bone surgery.

4. **The Evolution of Osteochondritis Deformans Coxæ Juvenalis.**—Albert H. Freiberg calls attention to a deformity of the femur occurring in children which in its later stages bears much resemblance to that seen in so-called arthritis deformans of the adult. The most striking difference, however, is seen in the absence of new bone formations, or osteophytes, in those portions of the joint peripheral to its bearing surface. In its symptoms also the disease of early life differs from that of the adult, being in the former of much milder character and often of such insidious course as to escape detection until the terminal deformity has been discovered. It seems quite evident to-day that these juvenile cases have in their earlier stages, and in former years, constituted largely the class of cases which were formerly regarded as mild hip tuberculosis. Here may be found the explanation of the remarkably complete restoration of function in cases of hip disease which were formerly brought forward from time to time as evidence of the efficiency of this or that method of treatment. A roentgenological study of these cases identifies them with the disease accurately described by Perthes. The writer believes it is logical to assume, as an etiological basis for osteochondritis deformans juvenalis, a chronic infectious process of probably secondary character, just as is done in explaining other deforming joint dseases of later life.

5. **Effective Localization of Bacteria in Diseases of the Nervous System.**—Edward C. Rosenow.— (See MEDICAL RECORD, July 1, 1916, page 31.)

6. **Poliomyelitis, with Some Observations on Thirty Cases.**—Archibald L. Hoyne and Frances P. Cepelka state that the cases in this series were, with a few exceptions, of a mild type and there were no fatalities. Two of the cases were of the encephalic variety, all the others being spinal. Eighty-six and two-thirds of the patients were under five years of age. There were fourteen boys and sixteen girls. Practically all the children were fair-haired, there being but one really dark-complexioned child in the series. Where the pa-

tient was received early, following lumbar puncture, from 0.5 to 1 c.c. of 1:1000 epinephrin chlorid solution was given intraspinally. This was repeated every four to six hours, provided the pulse rate did not exceed 160. In no case was the dose repeated more than three times. Some patients showed marked improvement in from one-half to one hour following the injection. Such marked improvement was seldom permanent, but gradual improvement in some instances seemed to be more rapid. The authors draw the following conclusions: (1) There is still some unknown agency responsible for the transmission of poliomyelitis. Not every case is acquired through direct contact or by means of a human carrier. (2) A leukopenia is not characteristic of poliomyelitis, since a leukocytosis was present in almost every case observed by us. (3) In order to control an epidemic or an impending epidemic, isolation by means of compulsory hospitalization will give the best results. (4) An isolation period of three weeks from the date of attack is probably sufficient.

7. **Municipal Control of Infantile Paralysis.**—Abraham Sophian, who was special Commissioner of Health for Bridgeport, Conn., in charge of prophylactic measures against infantile paralysis, gives the result of this experience. He says that, following the outbreak of the epidemic in New York, cases immediately occurred in neighboring cities that had close business relations with New York and in some of these cities the epidemics were very large. The relatively larger number in other cities as compared with Bridgeport indicates that active preventive measures are important. The preventive campaign as planned and carried out in Bridgeport may be classified as follows: (1) Quarantine of the sick and healthy contacts. Quarantine of the sick should be rigid and, until we learn more about the disease, should cover the probable period of the epidemic, about eight weeks. (2) Exclusion of probable carriers from New York and adjoining cities in which the disease was epidemic. (3) Establishment of a special central hospital to which was enforced compulsory removal of all patients with infantile paralysis. (4) Organization of a special medical "poliomyelitis diagnosis squad." (5) Repeated circularization of the physicians, calling attention to abortive cases and the preparalytic stage of the disease. (6) Mobilization and enlargement of all the sanitary forces covering the street-cleaning department, garbage department, police and fire departments, regular sanitary inspectors, and the staff of nurses.

8. **Gastrointestinal Findings in Acne Vulgaris, Especially Fluoroscopic.**—Lloyd W. Ketron and John H. King present an analysis of thirty cases of acne vulgaris which were subjected to a fluoroscopic examination of the gastrointestinal tract; the patients also received test meals, and analysis of the gastric contents was made. It was found that 93 per cent. showed gastric abnormalities and 70 per cent. showed intestinal abnormalities. The most common gastric findings were hyperacidity, 48.1 per cent.; retention, 36.6 per cent.; atony, 33.3 per cent., and ptosis, 40 per cent. The most common intestinal findings were cecal stasis, 46.6 per cent.; ptosis of the colon, 36.6 per cent., and right lower quadrant adhesions, 23.3 per cent. Clinically, 62.3 per cent. of the cases gave evidence of gastric disturbances and 40 per cent. of them were constipated. None of the cases examined gave entirely normal gastrointestinal findings, and 60 per cent. of the cases showed abnormalities which were of such a nature as to permit gastric and intestinal stasis, followed by toxic absorption. The conclusion seems evident that while there are a number of predisposing factors to this disease, one of the most important is gastrointestinal derangements.

The Lancet.

August 5, 1916.

1. Observations on the Development of the Regulation of Temperature and Its Clinical Significance. M. S. Pembrey.
2. An Address on the Tuberculous Soldier Delivered at the Annual Meeting of the National Association for Prevention of Tuberculosis on July 26th. William Osler.
3. Serum Reactions of 300 Unselected Cases of "Enteric" with the Oxford Standard Agglutinable Cultures. Ernest Glynn and E. Cronin Lowe.
4. Acute Intestinal Obstruction. George F. Aldous.
5. Immobility after Joint Injury. John Collie.
6. Extraction of Bullet from Middle Mediastinum. L. E. Barrington-Ward.
7. Cessation of Tachycardia on the Outbreak of Spontaneous Perspiration. Thomas Oliver.

3. **An Address on the Tuberculous Soldier.**—William Osler states that the Allied armies in the west have been singularly free from camp diseases; the common civilian diseases, however, have had their innings, and have played relatively the more important rôle. The soldier takes with him into camp two great enemies—the tubercle bacillus and the pneumococcus. The proportion of tuberculous individuals is much less than among civilians. In 1915, 2770 cases of tuberculosis were dealt with by the Chelsea Boards, but it cannot be said just what proportion this bears to the enlisted force. An inquiry shows that in 13 sanatoriums out of 160 cases 90 were regarded as due to the war; in five other places most or very many out of 84 were attributed to this cause. Of the 2770 cases considered in 1915 only 1641 were granted pensions. The question arises as to what becomes of the remainder. Reviewing the whole situation Osler offers the following suggestions: (1) A more searching examination should be made of all recruits. Doubtful cases should be referred to the tuberculosis expert of the district. Men unfit to be worked up to the soldier standard become simply material for pension claims. (2) Army experts should decide upon the doubtful cases before their discharge. Provision should be made for their study. There are plenty of tuberculosis experts in khaki whose knowledge should be used to put these cases in their proper category. (3) A national organization should look after the welfare of the tuberculous soldier. A roll and record should be kept, and every case supervised with the greatest care. The National Association should undertake this work in cooperation with the Society for the After-care of Soldiers. A small central committee of these two bodies could organize committees in each county and bring official pressure to bear on authorities to furnish the proper hospital accommodation.

4. **Acute Intestinal Obstruction.**—George F. Aldous presents notes on ten cases of acute intestinal obstruction, in some of which the causes are common and in some rare. In dealing with these cases he emphasizes the importance, first of early operation, and, secondly, of one or more enterotomies to reduce toxemia. He admits that it is occasionally difficult to make a diagnosis but is sure that it is safer to open the abdomen when acute symptoms are present than to wait.

6. **Extraction of Bullet from Middle Mediastinum.**—L. E. Barrington-Ward recounts the case of a soldier sent back to England six weeks after having received a wound of the chest, which had healed. The man appeared to be healthy when at rest. Exercise gave him sharp pains over the precordia and breathlessness. A radiogram showed a bullet apparently lying in the pericardium near the left border of the heart just above the diaphragm. On screening, movements of the bullet due to cardiac and respiratory excursions were well seen. At operation an incision was made in the midline of the sternum from the level of the fifth costal cartilage downward to the sixth costal cartilage, and then along the sixth costal cartilage outward. The

sixth costal cartilage was removed. The left lung and pleura were pushed aside; it was thus found that through this incision it was possible to palpate thoroughly the heart and explore the pericardium. At a depth of about 4 inches from the surface the bullet was found adherent to the pericardium and also to the pleura and the lung. It lay surrounded by a few beads of pus with its long axis applied to the pericardium, apex forward. The bullet was extracted, the pericardium closed with fine catgut, the muscles brought together, a small rubber tube inserted superficially, and the skin wound closed with Michel's clips. Among the points of interest in this case were the comparative freedom with which the heart and pericardium could be examined without embarrassment under inhalation anesthesia and the possibility of separating the pleura off the pericardium without any recognizable collapse of the lung taking place.

British Medical Journal.

August 5, 1916.

1. Notes on Military Orthopedics. VI. Disabilities of the Knee Joint. Robert Jones.
2. Further Observations on the Treatment of Gangrene by Intravenous Injection of Hypochlorus Acid (Eusol). John Fraser and H. J. Bates.
3. Convalescent Paratyphoid and Dysenteric Cases Considered from the Preventive Standpoint. I. Walker Hall, D. C. Adam, and R. E. Savage.
4. Treatment of Scabies by Sulphur Vapor. John Bruce and Stanley Hodgson.
5. The Economical Use of Solutions of Costly Alkaloids for Ophthalmic Purposes. N. Bishop Harman.

1. Disabilities of the Knee Joint.—Robert Jones gives a broad classification of these derangements and disabilities, with their diagnostic signs, and indicates appropriate lines of treatment. He points out that there are three common conditions which are not always as clearly distinguished by practitioners as they might be. They are: (1) Simple sprain of the lateral ligament, usually the internal; (2) slipping of the semilunar cartilage, and (3) nipping of the infrapatellar pad of fat. All of these injuries are associated with effusion of fluid into the joint, and in all the patient complains of more or less recurring disability after the lesion. Simple sprain of the internal lateral ligament is marked by a special tender spot over the attachment of the ligament and nowhere else. A joint which has been the seat of a definite injury will generally fill up with synovial fluid when first used. Therefore the application of a pressure bandage should never be omitted. If the knee is carefully brought into use by graduated exercises each succeeding day there should be less effusion. If the effusion does not become less the patient is using the knee too much. The author's experience of operations on the internal semilunar cartilage covers some 2,000 cases, on the basis of which he states that the knee should never be opened except under the most scrupulous aseptic conditions, and never in a hospital where there are a large number of septic cases. The procedure which he prefers is to place the leg so that it hangs over a table at right angles to the thigh. The knee is wrapped in sterile gauze soaked in biniodide solution. The incision is made through the gauze. A second clean knife should be used for the deeper dissections. The incision is made over the anterior end of the cartilage, nearly but not quite parallel to the upper edge of the tibia. Great care should be taken never to allow the incision to extend far enough to the inner side to cut any fibers of the internal lateral ligament, since this is a fault that leads to weakness of the knee lasting for months or years, and is still frequently met with in cases which have been operated on by the old, large J-shaped incision. In removing the whole cartilage great care should be taken that no tags of cartilage are left projecting from the attachment to the coronary ligament, as these frequently give rise to continued symptoms, due to nipping or adhesions. No movement of the knee must be allowed after the incision has been made, as this may favor the entrance of air. It is not until the stitching is complete and pads placed over wound that the knee is straightened. If the operation is performed with a tourniquet around the thigh no vessels need be tied, and if elastic pressure is applied before the tourniquet is removed there need be no fear of bleeding into the joint. A knee cage is presented which is useful in protecting thickened retropatellar pads of fat, and emphasis is placed on the importance of providing for the restoration of the quadriceps muscle, which is wasted and weakened in all these injuries to the knee.

3. Convalescent Paratyphoid and Dysenteric Cases Considered from the Preventive Standpoint.—I. Walker Hall, D. C. Adam, and R. E. Savage have reported their findings in a large number of typhoidal and dysenteric convalescents examined during the last eight months, the investigations in each case consisting of the estimation of the agglutination content of the blood, the microscopical examination of the stools, and cultural isolation from the urine and feces. The cases grouped themselves into three batches. The first extended from September to December, 1915, and contained some acute and subacute infections. There were 297 cases in this group, convalescent from four to twelve weeks, and bacilli were present in the excreta in 3.7 per cent. The second group covered the period from December, 1015, to February, 1916, and comprised cases of early convalescence. There were 156 of these and bacilli were found in the excreta in 1.3 per cent. The cases comprising the third group came in from February to May. There were 217 cases, all apparently fit for work again, and bacilli were not present in the excreta of any of these. The above groups were all paratyphoid convalescents. There were 605 dysenteric convalescents examined, and bacilli were found in the excreta of 1.1 per cent. In the paratyphoid cases *E. histolytica* was present in 10.06 per cent.; in the dysenteric convalescents, in 6.68 per cent. The fact is brought out that in convalescents from dysentery, typhoids, paratyphoids, and probably other conditions, there is protozoal infection to an equal extent. The average time required for the disappearance of *E. histolytica* from the feces was 22.9 days, but one case has yielded positive findings for 125 days already. It was found that the date of disappearance of the bacilli from the excreta of typhoid and paratyphoid convalescents varied from eight to fifteen weeks from the time of the onset of the attack, and in the dysentery convalescents the time of disappearance of the bacilli varied from eleven to fourteen weeks from the time of onset of the disease.

4. Treatment of Scabies by Sulphur Vapor.—John Bruce and Stanley Hodgson say that in the treatment of a considerable number of cases of scabies the ordinary treatment by sulphur ointment is slow. For the past twelve months they have given sulphur dioxide gas a trial and have found that it meets their requirements. The treatment is given in a cabinet constructed along the lines of a home Turkish bath. The seat provided for the patient consists of three narrow cross-bars placed 30 inches above the level of the floor. This enables the fumes to reach all portions of the buttocks and nates. The patient is first well scrubbed and then placed in the cabinet and allowed to remain for fifty minutes. The writers have treated over 200 cases and have had about 2 per cent. returns, and in these instances they think some article of clothing escaped disinfection.

5. The Economical Use of Solutions of Costly Alkaloids for Ophthalmic Purposes.—N. Bishop Harman recommends the following as an "ophthalmic solvent" for cocaine, etc., since it is more satisfactory in the preservation of solutions than others in common use:

Distilled water	1 pint
Methyl salicylate	2 grains
Oil of gaultheria	2 minims
Tincture of iodine	2 minims

The mixture is well shaken, poured into a stoppered bottle, and left for forty-eight hours, when it is ready for use. As watery solutions are wasteful and unsatisfactory, the solution may be thickened with gum arabic until the solution is so viscid that it will cling in a fair round drop on a small lacrymal probe. It has been found that cocaine, atropine, and homatropine are equally effective in this gummy solution, and the economy of their use is noteworthy.

Le Progrès Médical.

July 20, 1916.

Sulphohydrargyric Medication. — Loeper, Bergeron, and Vahram refer to the great number of so-called rheumatic ailments among the soldiers, at least one-eighth of all who are invalided from active service being of that type. But while exposure, cold, dampness, fatigue, and trauma may be responsible and may play some part in the genesis of these affections, infections and anomalies of metabolism are even more at fault. It must not be forgotten that these causes of rheumatism act upon a syphilitic soil. In a special research the authors have found forty-one cases of rheumatism in the causation of which syphilis played a predominating rôle. This material represents about one-third of all the doubtful cases. The diagnosis of syphilis was based on positive work, coexistent lesions of syphilis, history, and the success of antiluetic measures. Certain cases of frankly syphilitic and tabetic arthropathy are not included in this series. Of this series twenty-five cases were in the tertiary stage, early or late. Syphilis appeared as an arthralgia four times, as polyarticular arthritis eight times, as "white swelling" four times, as hydarthrosis five times. Arthritis sicia was present in eleven patients and deforming rheumatism in ten. Two patients were probably heredosyphilitics, and twenty others denied infection. When syphilis is thus completely masked by rheumatoid lesions, a combined plan of treatment appears indicated. The authors obtained two complete cures with neosalvarsan alone and six others with injections of biniodide of mercury. Still others yielded to ordinary mercurial treatment by mouth. Finally there were cases refractory both to salvarsan and mercury. Since colloidal sulphur is now being widely tested on ordinary rheumatism, the authors made use of a colloidal association of mercury and sulphur. No combination of any sort results. In twenty cases thus treated seventeen showed improvement. There were five complete recoveries. The manifestations following the injections were slight and sufficiently like those following the injection of sulphur alone. We have, in fact, a new form of "mixed treatment" for these hybrid cases.

Le Progrès Médical.

August 5, 1916.

Cancer of the Stomach; Metastasis to Cerebellum; Terminal Meningitis.—De Fortunet and Cade sum up their remarkable case as follows: The patient was but 31 years old when he appeared with cancer of the stomach. Instead of the rapid evolution of the growth which is usually anticipated at such an age, its course had been extremely torpid and its actual onset was probably several years earlier than the earliest symptoms. Throughout the patient's disease he remained in good health until near the end. The nervous phenomena which announced the metastasis were extremely complex and conflicting. The course was rapid and suggestive of meningitis, although fever was absent; it also suggested generalization of a meningoencephalitic process. Cytological examination of the cerebrospinal fluid showed a slight opacity and increase of tension. The cell content was rich, comprising polynuclears, lymphocytes, endothelia, and especially large cells regarded as coming from a neoplasm. Autopsy showed cancer on the posterior aspect of the stomach, submucous infiltration, extension to pancreas, lymphatic generalization, a secondary nodule seated superficially in the inferior portion of the left lobe of the cerebellum. In the same locality there was purulent meningitis. The gastric neoplasm was of the extreme scirrhous type. The patient, a soldier, had been interned for a supposed tumor on the anterior aspect of the stomach. It was readily palpable, hard, and irregular in shape. Patient vomited continuously, and his general condition was bad. Examination failed to reveal thoracic anomalies, ascites, melena, etc. Aside from the tumor there was a gland paquet in the supraclavicular region. He had complained of his stomach for the past five or six years; nevertheless he had kept up with his duties until the time of transfer to the hospital. A diagnosis was made of the malignant growth of the stomach, inoperable. A few days after his internment nervous manifestations supervened, all the extremities becoming paralyzed and contractured. A comatose state next set in. Death occurred even before a clinical diagnosis could be made, although study of the punctate led to the opinion of a neoplastic meningoencephalitis independent of autopsy finds.

Systemic Disturbances from Pyorrhea Alveolaris.—B. P. Rivers, Jr., intimates that gastric ulcer and appendicitis as well as postoperative pneumonia may sometimes be traceable to Rigg's disease. Aside from these local infections a general run down state may have the same cause and disappear after thorough cleansing of the teeth. The symptoms presented by a single patient, a woman of forty, comprised the following: loss of appetite, bad taste in the mouth, excessive flow of saliva, pain in the stomach after eating, burning sensation in the empty stomach, morning nausea. Every afternoon she felt feverish, languid and tired. There were frequent attacks of constipation and diarrhea and much flatulence. There had been loss of weight. The mental state was poor, melancholic. The mouth was in a very bad shape because bleeding gums prevented the use of the tooth brush. She had recurrent attacks of tonsillitis. Blood tinged pus could be squeezed from the gums. The woman could not do her work as school teacher and believed herself about to die in a short time. Cases like this are not uncommon.—*Kentucky Medical Journal.*

The Energy Index of the Circulatory System.—Barach states that changes in the activity of the circulatory system are accomplished by the adjustment of three factors, maximum pressure, minimum pressure, and pulse rate. Since these are measurable factors a calculation based on the triad should indicate the total energy expenditure of the circulatory system. The product of such a calculation based upon this triad should indicate the total energy expenditure of the circulatory system. The product of such a calculation, which I term the energy index, under normal conditions represents a kinetic force *per minute* equal to not over 20,000 mm. Hg. pressure.—*American Journal of the Medical Sciences.*

Book Reviews.

THE INTESTINAL PUTREFACTIONS: CLINICAL STUDIES OF ENTEROCOLITIS. By CHARLES FREMER RECKHAM, M.D. Price, $2.00. Providence, R. I.: Snow & Farnham Company, 1916.

THE intestinal putrefactions have been greatly in evidence during recent years and their study has been elaborate and painstaking. A good deal has been learned on the subject and perhaps a good deal has been conjectured. However, that intestinal putrefaction is responsible for many conditions of ill health cannot be denied and therefore it is well that physicians and surgeons should be acquainted with the best means of fighting it. Dr. Fremer has written a practical book, which contains a considerable amount of valuable information, a book which should prove useful for reference.

PLAGUE. ITS CAUSE AND THE MANNER OF ITS EXTENTION—ITS MENACE—ITS CONTROL AND SUPPRESSION—ITS DIAGNOSIS AND TREATMENT. By THOMAS WRIGHT JACKSON, M.D., Member American Red Cross Sanitary Commission to Serbia, 1915; Lately Captain and Assistant Surgeon, U. S. Volunteers; Lately Lecturer on Tropical Diseases, Jefferson Medical College; Member Manila Medical Society and Philippine Islands Medical Association, etc. With bacteriological observations by Dr. OTTO SCHÖBL, Bureau of Science, Manila. Illustrated. Price, $2.00. Philadelphia: J. B. Lippincott Co., 1916.

THE author of this work writes with authority since for two years he was in charge of all plague suppressive measures in Manila. The book in as far as it is a personal one is of great value and extreme interest and contains such an amount of odd facts in connection with the rat problem as to give it a status as a faunal authority. The author lives strictly up to his title, so that the pathology and symptomatology are practically excluded. The work should doubtless be classed under the head of sanitation and should prove to be most valuable to all who have to do with public health matters.

BLOOD PRESSURE—ITS CLINICAL APPLICATIONS. By GEORGE WILLIAM NORRIS, A.B., M.D. Assistant Professor of Medicine in the University of Pennsylvania; Visiting Physician to the Pennsylvania Hospital; Assistant Visiting Physician to the University Hospital; Fellow of the College of Physicians of Philadelphia; Member of the Association of American Physicians, etc. Second edition, revised and enlarged. Illustrated with 102 engravings and one colored plate. Price, $3. Philadelphia and New York: Lea & Febiger, 1916.

DR. NORRIS' work on blood pressure is the second edition in less than two years. On October 24, 1914, the first edition was reviewed in these columns and the one just issued has been thoroughly revised, and contains several notable additions. In fact, the somewhat voluminous literature on the subject has been sifted and the author has incorporated the salient features in his present work. Books dealing with blood pressure are welcome as they all add something to our incomplete knowledge of the matter for the significance of the variations in blood pressure is not altogether understood as yet. There is a certain amount of confusion between cause and effect. However, works like the one before us, written concisely and clearly, will serve to elucidate the obscure points or, at any rate, will present all that is known concerning blood pressure in easily intelligent language. The chapter dealing with blood pressure in arteriosclerosis is, perhaps, especially worthy of attention. The work is well got up and adequately illustrated and may be recommended as likely to be of practical use to the busy practitioner.

THE JOHNS HOPKINS HOSPITAL REPORTS. VOLUME XVII. Baltimore: The Johns Hopkins Press, 1916.

THIS volume comprises eight monographs, each of which merits a separate notice. The most compendious of these is the Statistical Experience Data of the Hospital from its inception in 1892 to 1911 by the well-known statistician Hoffman. There are 72 classifications of figures. Nearly 44,000 patients have been admitted, of whom nearly 10,000 were colored. Winternitz in a paper on primary cancer of the liver reports five cases from the hospital records. There appears to be over 150 cases on record, yet the disease is extremely rare in extensive autopsy material. Cancer of the bile ducts is included, and constitutes over one-fourth of the total. Two articles deal with thrombosis —"Free Thrombi and Ball Thrombi of the Heart," by J. H. Hewitt, and "Venous Thrombosis During Myocardial Insufficiency," by Sladen and Winternitz. Two further articles, largely experimental, deal with leucemia—"Benzol as a Leucotoxin," by L. Selling, and "Leukemia in the Fowl," by H. C. Schmeisser. The two remaining papers are valuable anatomical contributions—"The Origin and Development of the Lymphatic System," by Florence R. Sabin, and "The Nuclei Tuberis Laterals and the So-called Ganglion Opticum Basale," by E. F. Malone. The volume is richly illustrated; aside from numerous text figures, charts, etc., there are twenty-three special plates, comprising numerous colored and halftone figures.

A TREATISE ON BLOOD PRESSURE IN OCULAR WORK WITH SPECIAL REFERENCE TO FACTORS OF INTEREST TO REFRACTIONISTS. By EUGENE G. WISEMAN. Illustrated with 19 engravings. Rochester, N. Y.: John P. Smith Printing Co., 1916.

THE author of this book does not appear to be a physician and his book is frankly written to enlarge the usefulness of the optometrist. He expects to be criticized bitterly for his effort, although it does not appear by whom; since if he is not a graduate physician there can hardly be any medical censorship. The book considers in succession the general subject of blood pressure determination, the relation of ocular to general pathology, and the use of blood pressure tests in optometry. The latter section is quite original in conception and execution. Incidentally a table of 100 cases of retinitis and retinal hemorrhage in nephritics is given with blood pressure finds. The author has gone extensively into the classical literature of ophthalmology and general medicine.

THE ENDOCRINE ORGANS. An Introduction to the Study of the Internal Secretions. By Sir EDWARD A. SCHÄFER, LL.D., D.Sc., M.D., F.R.C., Professor of Physiology in the University of Edinburgh. Price, $2.50. London and New York: Longmans, Green & Company, 1916.

THIS book is founded upon the Lane medical lectures delivered by Sir Edward Schäfer at Stanford University, California, in the summer of 1913. These lectures have been revised and published with several appropriate illustrations. The aim of the work is to supply a concise account of our present knowledge of the internal secretions for the benefit of students and practitioners who may be desirous of obtaining more information regarding them than is afforded by the ordinary textbooks of physiology, but have not the time nor opportunity to peruse extensive monographs or consult original articles. The Edinburgh professor has well succeeded in this aim. No one is better fitted to speak authoritatively on the internal secretions than he, and his little work will prove immensely useful to both students and practitioners.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice for Students and Practitioners. By GEORGE G. DE SCHWEINITZ, M.D., LL.D. (University of Pennsylvania). Professor of Ophthalmology in the University of Pennsylvania; Ophthalmic Surgeon to the University Hospital; Consulting Ophthalmic Surgeon to the Philadelphia Polyclinic Hospital, the Philadelphia General Hospital, the Orthopedic Hospital, and the Infirmary for Nervous Diseases. Eighth Edition. Philadelphia and London: W. M. Saunders Company, 1916.

DE SCHWEINITZ'S Diseases of the Eye had become a household word with members of the medical profession, and its editions have been so numerous that there is little left to say concerning the work. In this, the eighth edition, chapters have been revised in accordance with the latest developments in ophthalmology and the treatment thereof during the past three years. The metric equivalent of the doses of the remedies and the strengths of the solutions has been substituted for the old mode of measuring. Several new subjects are dealt with for the first time, including Clifford Walker's method of testing the visceral field; anaphylactic keratitis; family cerebral degeneration with macular changes; the ocular symptoms of diseases of the pituitary body. A portion of the chapter on iritis has been rewritten and additions and alterations are numerous throughout the book. A number of new illustrations have also been inserted.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

(Special Report to the MEDICAL RECORD.)

(Concluded from page 439.)

Tuesday, May 9—Second Day.

THE PRESIDENT, DR. ROWLAND G. FREEMAN OF NEW YORK, IN THE CHAIR.

Report of Committee on Vaginitis. — Dr. J. C. GITTINGS, Dr. SAMUEL McC. HAMILL and Dr. C. A. FIFE presented this report which was the result of an investigation which had been in progress several years. It included a summary of the replies to a questionaire sent to a large number of hospitals and homes for children, and formed the basis of a set of recommendations which were submitted for the approval of the society. After a thorough discussion of the subject the Society unanimously adopted the following resolutions which were to be embodied in a letter to health officers: (1) That cities be required to provide adequate hospital and dispensary facilities for the care and treatment of children having vaginitis. (2) That matrons be placed in charge of girl's toilet rooms in public schools. (3) That toilet seats embodying the principle of the U-shape be used in all schools and that the toilets be of proper height for different ages. (4) That city and state laboratories be empowered and equipped to make bacteriological examinations for physicians when patients cannot afford to pay a private laboratory fee. (5) That educational literature on the subject of vaginitis be prepared and distributed to mothers through the medium of physicians, hospitals, dispensaries, health centers, municipal and visiting nurses. That asylums for children and day nurseries be licensed, and that the license be not granted unless: First, the institution has adequate facilities for the recognition of gonococcus vaginitis; and second, that the institution exclude children having this disease if they could not be properly isolated.

It was further recommended that the American Pediatric Society address a letter to hospitals which should contain the following recommendation: (1) That separate wards be maintained for the treatment of children with vaginitis who were also suffering from other diseases. (2) That microscopic examinations of smears be made before admission to the general wards of the hospital. In securing smears extreme care should be taken to observe rigid antiseptic precautions. (3) That observation wards be provided. (4) That individual utensils be provided. (5) That single service diapers be used, at least for girls, or that diapers be sterilized in an autoclave at 15 pounds pressure for five minutes. (6) That nurses be required to make daily inspection of the vulva of each child at the time of bathing, and report immediately the slightest suggestion of a discharge. Other recommendations governing the detail of hospital routine and the prolonged observation of cases were adopted.

Certain Phases of the Vulvovaginitis Problem.— Dr. B. K. RACHFORD spoke on this subject, emphasizing and enlarging upon the points brought out in the recommendations and discussing specially the attitude of the laity toward this form of infection. He said that at present the very name "vaginitis" struck terror to the average individual and carried with it a stigma of disgrace that was to be deplored. He urged that efforts be made to lead the laity to a recognition of the fact that vaginitis in the child and in the adult were different. A proper attitude in respect to this form of infection would be an important step towards its prevention and elimination.

Provocative and Prophylactic Vaccination in the Vaginitis of Infants.— Dr. ALFRED F. HESS of New York read this paper. He said that in the institution with which he was connected their efforts were directed toward preventing the admission of infected infants, in attempting in many different ways to avoid the spread of the infection, in diagnosing the cases at the very earliest possible moment, and, finally, in resorting to every means to effect a cure. There was no doubt that vaginitis might be due to other organisms than the gonococcus. Tests had been carried out by Dr. Edwin Langrock that showed that pus cells might be found in the smears taken from infants during the first 48 hours of life and that these must not be regarded as pathological but as a probable reaction of the external tissues to the inevitable invasion of bacteria. They had found that the fundamental cause of vaginitis must be considered to be the latent carrier, some healthy infant who harbored the gonococcus. During the past five years autopsies had been performed on four infants who had vaginitis while in the institution. They all showed the same pathological condition. Macroscopically the vagina appeared negative, as did the body of the uterus and appendages. The only abnormal condition was redness of the tip of the cervix, so that we must regard the average gonococcus infection as a cervitis rather than a vaginitis. The degree of vaginitis in children who applied for admission to the institution was about 50 per cent., indicating that the disease was not particularly associated with child-caring institutions. In order to overcome the danger of the latent carrier they had, during the past year, administered three injections of gonococcus vaccine to infants soon after they were admitted to the institution. The object of these injections was provocative, to see if they would bring to light a latent infection. The dosage was entirely empirical. At the present time they were giving 100, 200 and 400 millions. Usually two injections were sufficient to bring about a reaction. During the past year these provocative injections had led to the discovery of eight new cases during the first week or two after their admission to the institution. The vaccine was found to be valuable, not only for diagnostic measures, but to a certain extent for prophylaxis. It had been used in about 100 infants and by it they had been able to change the entire nature of the vaginitis in their institution and as a result they had a nonclinical type of the disease. There was not only an acquired susceptibility to gonococcus infection, but also a natural susceptibility and a well defined natural immunity. This immunity was rare and in many instances not absolute.

Some Early Symptoms Suggestive of Protein Sensitization in Infancy. — Dr. B. RAYMOND HOOBLER of Detroit presented this communication. After referring to the work of Dr. Talbot in respect to the action of foreign proteins in causing asthma and that of Dr. Schloss in respect to their relation to eczema and gastrointestinal disturbances, said that he had made observations and had collected considerable data concerning the early symptoms of protein sensitization in infancy. He also reported on the symptoms that were observed in guinea pigs sensitized to foreign proteins. In these the first symptom of protein sensitization was peripheral irritation; the reward was characterized by convulsions, and the animal either died in this stage, or immediately following a convulsion. When this second stage was not reached the animals usually made a complete recovery. These symptoms were quite similar to those seen in a human being sensitized to a foreign protein; this sensitization was characterized by the appearance of a rash, urticarial or erythematous, vomiting, great muscular weakness, and in rare instances speedy death. Patients having this condition might be classed in three groups according to the intensity of the symptoms, whether mild, moderate, or severe. The degree of intensity of the symptoms depended upon the quantity and frequency with which the foreign protein was injected. There may also be a family predisposition to some form of sensitization in the father, mother, or grandparents to the protein of egg, milk, oatmeal, fish, or some other food. It was important to know whether one was dealing with a patient with such a hereditary tendency. The skin manifestations which apeared first might be the form of the mildest erythema, or an intense urticaria, or there might be single wheals like an insect bite, or again it might be of the miliary type, the class of eruptions formerly classified as intestinal rashes. There might also be vasomotor disturbances, as sneezing snuffles, or dry cough, as in infants who had many colds and never showed any pathological lesion; these were frequently showing the first symptoms of anaphylaxis. Other symptoms were asthmatic attacks which appeared and then disappeared as suddenly as they had come, recurrent attacks of acute indigestion, fretfulness, irritability, and sleepness. Fortunately all these symptoms did not usually appear in one child. Sometimes one and sometimes another of these symptoms would be premonitory. At times the symptoms persisted throughout life and sometimes they disappeared later in life. Certain nutritional disorders of a biological character might be of this nature. Many of these symptoms were symptoms of other diseases, but when one got this group of symptoms and they recurred from time to time they should

be suggestive of anaphylaxis and it was important to have this condition recognized early.

Dr. Oscar M. Schloss of New York said that it was only rational if they assumed that the acute explosive attacks were of anaphylactic origin to believe that there were milder types which bore a definite relation to them but were not so marked. Many of the milder disturbances might suggest sensitization to a food protein, yet there was no definite evidence that such was the case. Many more experiments would have to be made before one could make definite statements on this phase of the subject. The question of heredity in connection with protein sensitization was of great interest. In the majority of cases reported and in those he had seen the parents or others in the family had shown some allied condition. Usually the treatment of desensitization which he had described gave good results.

Dr. Fritz B. Talbot of Boston said it should be remembered, in discussing this problem, that the condition of anaphylaxis which gave symptoms was a relatively rare one. In looking over hospital records he had found that there were relatively few cases of asthma, but a considerable number of skin cases that might be due to anaphylactic action. He had been able to find few cases of erythema due to anaphylaxis, but he believed that all urticarias were due to some form of anaphylaxis. Miliary rashes he was unable to connect with any anaphylactic phenomena. Rough skin might be due to anaphylaxis; it had seemed to have such a connection in one case and also with deficiency of thyroid secretion. Some of these cases gave a definite skin test, but they did not always get well when one took out the food that gave the skin reaction. The respiratory symptoms, common colds and snuffles, Dr. Talbot said, he would put down to adenoids. Other symptoms which were mentioned in connection with the respiratory system he would diagnose as bronchitis or croup. Some symptoms of indigestion were of anaphylactic origin, but he thought this was one of the last things in connection with anaphylaxis that they would be able to prove. Several of his patients had volunteered the information that when they took a protein to which they were sensitized they had the sensation that it stayed in the throats, and some said that it gave them a shivering sensation.

Calcium Metaholism in a Case of Hemophilia.—Dr. D. Cowie and C. H. Laws of Ann Arbor presented this report. They stated that the subject upon whom the observations were made was a hemophiliac and gave a family history of bleeding. They found that by administering large doses of calcium the calcium content of the blood could be raised but as soon as the calcium was discontinued it immediately dropped. The conclusions they drew from this work were that in this hemophiliac the calcium content of the blood was below normal: that by feeding calcium the amount of calcium in the blood could be increased appreciably, and that during this time the coagulation time was lengthened.

The Calcium Content of the Blood in Rachitis and Tetany.—Drs. John Howland and McKim W. Marriott presented the results of this investigation. They reviewed the theories that had been advanced in respect to rickets and calcium metabolism, and said that there had been no studies made to show whether calcium was present in sufficient amounts in the blood of rachitic patients. They had advised a method by which they could determine the amount of calcium in one-half c.c. of blood serum, and had determined the calcium content in the blood of 11 cases of rickets and a number of controls. They had found in the greatest number of instances a value between 10 and 11 mg. per 100 c.c. of blood serum. In those having rickets there was in some instances a reduction of calcium, but they never found less than 9 mg., and often ten or nearly 11, so they thought that they could say that rickets did not depend upon an insufficiency of calcium, but primarily on some condition in the bone. It had also seemed that some calcium disturbance was related to the onset of tetany. They therefore determined the amount of calcium in the blood of seven infants with tetany by means of accurate technique and all showed a marked reduction in the calcium content of the blood. They found that in general the figures ran between 6 and 7 mg. of calcium per 100 c.c. of serum, though in one instance it was as low as 5 mg. They also made the determination in two children with no active symptoms of tetany, but who gave an electric reaction, and in one of these there was a moderate reduction of the calcium and in the other none. When the child lost the evidences of tetanus the calcium content of the serum became normal. The findings in children with convulsions were almost the same as in dogs that developed tetany after thyroidectomy, in that the calcium content was somewhere between five and seven mg. per 100 c.c. of serum. It seemed that the parathyroid exerted a distinct effect on the calcium in the blood.

Dr. L. Emmett Holt said the findings of Dr. Howland were very well borne out by the effect of magnesium sulphate administered hypodermically in tetany. He had given calcium chloride by the mouth in large doses, but the results were slow in manifesting themselves. During the last two years he had been administering magnesium sulphate hypodermically and the results manifested themselves in from fifteen to twenty minutes. One did not need to repeat this oftener than once in twenty-four hours. One should use the anhydrous salt which was twice as strong as Epsom salts.

Early Morning Toxic Vomiting in Children.—Dr. Thomas S. Southworth of New York read this paper in which he directed attention to the vomiting of children which not infrequently occurred in the early morning either before or soon after the first feeding. This he believed was of toxic origin since the vomitus after the long night period contained no food residue unless a morning feeding had been given. It was sharply distinguished from the vomiting of undigested and fermenting food from failure of gastric digestion, which usually occurred later in the day. The cases, one of which was related as typical, had neither the characteristic histories nor clinical symptoms and course of recurrent vomiting, which was another toxic type. In the recurrent type the toxemia was probably of gradual and cumulative evolution, brought to a head by constipation or some unusual factor. Elimination was slow and vomiting prolonged. Fever was not constant. In the type under consideration with early morning vomiting fever was a usual accompaniment, often rising sharply, and there was an acute putrefactive process in the intestine with absorption and attempted re-elimination by the gastric mucous membrane. It was assumed that this toxic material accumulated in the stomach during the hours of slumber when reflexes were more or less deadened and asserted its presence in vomiting after awakening. Purgation resulted in foul stools often containing mucus. After the stomach was emptied by one or two acts of emesis at short intervals there was not the same tendency to recur which obtained in the recurrent type. The extreme caution in the resumption of feeding often displayed after attacks of recurrent vomiting frequently led to under-nutrition in children whose attacks occurred at rather short intervals. A slightly greater care was demanded in the acute toxic type of intestinal origin, especially in the summer months because of the intestinal condition, but with care and reasonable feeding might be promptly inaugurated. The author believed early morning vomiting without food residue from the previous day to be a sign of value as indicating an acute toxemia arising in the intestinal tract.

Dr. T. DeWitt Sherman asked Dr. Southworth if he had had gastric analyses made of the vomited material at any time and whether it showed achylia of hyperchlorhydria and whether there might be a neurotic element involved.

Dr. Fritz B. Talbot asked Dr. Southworth if he had tested for acetone in the early morning urine. He said he had quite a number of instances of this kind and invariably found acetone.

Dr. Isaac Abt of Chicago said that the vomiting might be the effect of something outside the gastrointestinal tract. The chronic alcoholic vomited because he had a nasal pharyngitis. It was possible that a pharyngitis might have had something to do with the production of the vomiting in several of these cases.

Dr. Southworth said he had made no such examinations and it was probable that some of these children might have had hyperchlorhydria. If there was a definite odor of acetone an examination of the urine was made. As to Dr. Abt's question, if he had seen these cases there would have been no question in his mind that they were as stated. A child coughed a great deal because of the presence of mucus in the pharynx, but the type of case referred to had no cough which could have been the cause of the early morning vomiting.

A Study of the Etiology of Chorea.—Drs. John Lovett Morse and Cleaveland Floyd of Boston presented this communication which was read by Dr. Morse. He said this study was undertaken primarily to determine, if possible, the parts which syphilis and bacterial infection played in the etiology of chorea. A

review of the literature seemed to show that there was very little evidence in favor of the syphilitic origin of chorea and much against it. In their investigation of 26 cases of chorea there was nothing whatever in the history of 21, or 81 per cent., of these cases to suggest syphilis. In the others there was a history of miscarriages. The blood of three of the children in whose families there was a history of miscarriages gave a negative Wassermann test. None of the children showed any of the stigmata of syphilis. Of the 25 children in this series, 21, or 84 per cent., gave a positive skin reaction to tuberculin, yet it would be absurd to assume that tuberculosis was the cause of chorea in these 21 children. The conclusion, therefore, seemed justifiable that syphilis seldom, if ever, played an active part in the etiology of chorea. This series of cases confirmed the general belief as to the frequency of the association of chorea with rheumatism and endocarditis. Seven, or 37 per cent., had had rheumatism in the past or in connection with the chorea; six of them had acute endocarditis, and six chronic valvular lesions, a total of 12, or 46 per cent. The tonsils were normal in but 11 cases, or 42 per cent., and had been removed on account of disease in four others. The teeth were normal in but seven of these patients; pyorrhea was present in two, and definite pus pockets were found in three others when the teeth were extracted. A review of the literature showed that the results thus far obtained from blood cultures were inconsistent and inconclusive. Dr. Morse said that during the past year he and his associate had made a study of these 26 cases of chorea in the acute stage of the disease with a view to determining the presence of an infecting agent in the blood stream and cerebrospinal fluid, the frequency with which it could be obtained, and its cultural characteristics. In every instance the cultures as well as the smears from the cerebrospinal fluid were negative. Blood cultures were negative in all but five instances. In one case a small bacillus, diphtheroid in type, appeared. This was a Gram negative organism and was not pathogenic for rabbits. Diplococci were found in one case, but no organisms were cultivated. In both of these instances the tonsils were enlarged and the teeth carious. In another case positive blood cultures were obtained after ten days of incubation and this patient had endocarditis and had had several attacks of rheumatism. Autopsy in this case showed a general septicemia and cultures from the heart's blood and the knee joints gave a good growth of streptococci. The fact that the organism taken from this patient caused lesions in the brain and meninges of rabbits similar to those found in the brain and meninges of this patient at autopsy suggested that it was also the cause of the chorea in this child. The absence of organisms in these cases might be explained by the fact that most of them were mild or only moderately severe in type. It might also be possible that the failure to detect the organisms more often in the blood or spinal fluid might have been due to the fact that they were only temporarily present in the blood stream and tended to locate themselves in the meninges, endocardium, or joints. While there was much that pointed to a microorganism or group of microorganisms as the cause of chorea the bacterial origin of chorea was not as yet proven.

The Effect of Subcutaneous Injections of Magnesium Sulphate in Chorea.—Dr. HENRY HEIMAN of New York, presented a brief report on several cases of chorea treated by subcutaneous injections of magnesium sulphate. He said the effect of this agent seemed to be entirely negative and that they could not hope to give any relief in chorea by the administration of magnesium sulphate subcutaneously.

The Prognosis and Treatment of Banti's Disease in Children.—Dr. EDWIN E. GRAHAM of Philadelphia read this paper. He stated that the juvenile form of this disease tended to run a more acute course than the adult form. If not treated or if treated only medicinally it was almost invariably fatal. Under surgical treatment the prognosis was rather more favorable than otherwise, the outlook depending upon the duration of the disease at the time the spleen was removed. If done early splenectomy was attended with slight mortality, and in uncomplicated cases a cure might be expected; but when the disease was complicated by other affections of chronic infectious nature, the value of the operation was questionable. Splenectomy was even more advantageous in children than in adults. After the removal of the spleen in most cases the blood picture more or less approached normal, but in a few cases it might vary greatly, so that five years might elapse before the count became normal. When Banti's syndrome was well established the prognosis was most unfavorable even though splenectomy was performed. If an abundance of iron was supplied to the system after the removal of the spleen which was the organ in which metabolism took place, polycythemia would take place in many cases, and an increase in red cells was always noted at varying intervals after operation; therefore in splenic anemia iron was undoubtedly indicated both theoretically and practically. Splenectomy was both useless and dangerous in cases in which the hemoglobin was below 30 per cent., and the red cells below 2,000,000. The operation should as a rule be attempted only when there was no edema, no parenchymatous nephritis, and no serious degenerative change in the liver, and while the patient was still able to go about. In severe cases blood transfusion done shortly before the operation seemed to increase the ability of the child to withstand the shock of the operation. Dr. Graham reported in detail a case of splenectomy in a child nine years of age in which recovery ensued.

Dr. HENRY KOPLIK said he thought there might be some question whether all the cases reported as Banti's disease were really such. He cited an instance of a patient who as a boy had jaundice and an enlarged spleen. Operation was refused. The boy had grown to manhood and was now an engineer. He was now in apparently good health though he still had an enlarged spleen and liver.

Wednesday, May 10—Third Day.

Familial Icterus in the New Born.—Dr. ISAAC ABT. of Chicago made this contribution. He stated that familial icterus had nothing in common with Buhl's or Winckel's disease. There was no evidence to prove that it was a septic process. It was not present at birth, in none of the cases reported was there a history of birth injury, and it did not seem to be due to the toxemia of pregnancy. One might say that the children were in a sense defective and very soon after birth became incapacitated to carry on extrauterine life. The disease usually began on the second day of life and rapidly increased in severity. The symptoms were those described by Pfannenstiel, namely, catarrhal condition of the mucous membrane, sometimes with bloody discharge, frequent catarrhal stools, bile pigment in the urine, and meningeal irritation. The disease occurred in successive pregnancies. Occasionally several normal children would be born and then several would die in a few days after birth as the result of grave and progressive icterus. The disease bore no relation to syphilis and had nothing in common with family jaundice. Isolated instances of this condition had been reported from time to time, but the writer had encountered examples of familial icterus in the new born in two families. The first occurred in an Italian family in which there was nothing in the history of the parents or grandparents in any way connected with the condition in this infant. The mother had borne five children, two of whom were living and three dead. The two eldest children had always been well; the third baby seemed strong and robust at birth, developed jaundice on the second day and died on the third day. The history of the fourth and of the fifth, the case he had observed, was the same. The second case occurred in a Russian family. The mother, 23 years of age, had borne six children. The first child had chronic nephritis and was 11 years of age. The second child was living and well. The third pregnancy resulted in miscarriage. The fourth child became jaundiced on the second day, was seized with convulsions, had frequent stools, became worse, and died on the third day. The fifth child gave a similar history. The sixth child became jaundiced on the second day, its condition grave on the third day, but on the fifth day an improvement was noted, the jaundice gradually disappeared, and the baby was now a year old and well.

Dr. WILDER TILESTON of New Haven called attention to the fact that in these cases there was a yellow icterus staining of the base of the brain which was never seen in jaundice and which might be correlated with the nervous symptoms.

Dr. T. DEWITT SHERMAN of Buffalo said that poisons had been mentioned as a cause of jaundice and the question had occurred to him whether jaundice and allied conditions might be due to the poison of chloroform administered to the mother at the time of labor, since they knew that chloroform produced hyaline and fatty degeneration and this effect was concentrated on the liver.

Measles, Pertussis, and Pneumonia.—Drs. P. J. EATON and E. B. WOODS of Pittsburgh reported a group of cases which appeared simultaneously in one family chiefly because it showed the peculiar mix-up of infectious disease that might be possible. Two children in a family were about half way through whooping cough when a third child came down with measles, then whooping cough, followed by a chest deformity, which gradually disappeared. One of the two children having whooping cough contracted measles, which was followed by pneumonia, while the other did not; the latter child was watched very closely. The measles cases were treated by cool, fresh air and vaccines. Dr. Eaton stated that it was his custom to administer vaccines to children who were exposed to measles.

Scarlet Fever and Measles Occurring Simultaneously.—Dr. D. J. MILTON MILLER of Atlantic City presented this paper. He said he reported these cases not because of their great rarity but because they were interesting. There was an impression that if a child was suffering with one infectious disease he was immune to others, but this was a mistake. Patients suffering with one infectious disease seemed to be more susceptible to other infections. This seemed to be especially true of measles, pertussis, and scarlet fever. It was quite usual when one of these diseases occurred to have it followed at short intervals by another or they might be concurrent from the outset. In scarlet fever and measles the diagnosis was very difficult. The case presented had the usual symptoms of measles. On the tenth day a characteristic scarlatinal desquamation was observed, and a complicating otitis media followed. Three sisters of the patient contracted measles but not scarlet fever. One of these children who was not isolated did not contract scarlet fever. One of the sisters who never came in contact with the patient contracted measles.

Dr. MATTHIAS NICOLL of New York emphasized the fact that the character of the desquamation in scarlet fever was not always typical. He had seen sheet desquamation in measles, though it was rare.

Dr. MILLER said he felt convinced that his first case was one of scarlet fever, as the peculiar eruption at the finger nails was present and he had never seen this in any other disease than scarlet fever; his diagnosis rested to a great extent on that.

Observations on Measles.—Dr. CHARLES HERRMAN of New York presented this communication. He stated that the deaths reported as due to measles gave an inadequate idea of the real number caused by this disease. A large number died from complicating bronchopneumonia, especially between the ages of one and two years. This was suggested by the parallelism between the curve of morbidity from measles and the curve of mortality from bronchopneumonia between one and two years of age. In a series of 300 secondary cases of measles which he had observed, the fever appeared on the tenth or eleventh day from the time of infection in 56 per cent.; catarrhal manifestations on the eleventh or twelfth day in 60 per cent.; the tonsillar spots on the ninth to the thirteenth day; the Koplik spots on the eleventh or twelfth day in 54 per cent.; the eruption on the twelfth to the fourteenth day in 67 per cent. In 7.2 per cent. the catarrh was present on or before the tenth day; the Koplik spots in 12.8, and the tonsillar spots in 34 per cent. In 4 per cent. of the cases in which the tonsillar spots were present as early as the seventh day and in a few cases the tonsillar spots were present in patients who did not show the Koplik spots. The presence of the tonsillar spots would be found valuable in schools, hospitals, and asylums, in detecting and isolating the patients early. Infants under two months of age were absolutely immune. At eight months this immunity had gradually disappeared. This gradual disappearance was shown by a longer period of incubation. In infants between five and eight months the disease was usually milder. This was also shown by the fact that only 41 per cent. of these lost weight, whereas of those between eight months and two years 76 per cent. showed such a loss. The immunity was probably conveyed through the placental circulation; only those infants whose mothers had the disease seemed to acquire it. Infants between three and five months who had come into intimate contact with measles and did not contract it, sometimes were not infected when exposed later in life.

Dr. HENRY KOPLIK said that five days before the appearance of the eruption in measles a febrile movement and the Koplik phenomenon might be observed. There was absolutely no other reaction during this time except the slight fever.

Dr. S. MCC. HAMILL of Philadelphia asked Dr. Herrman if he implied that it would be a good thing to expose children under five months of age to measles.

Dr. HERRMAN, in closing, said he had not said that it would be a good thing to expose children under five months of age to measles because one could not be absolutely sure that they would not contract the disease. He would not like to put himself on record as advising exposure of a child to an infectious disease. What he had brought out in his paper would explain why children from five to eight months of age had the disease in a mild form.

The Energy Metabolism of a Cretin.—Dr. FRITZ B. TALBOT of Boston presented this study. He said that a typical cretin, three years and 8 months of age, was studied in the respiratory chamber devised by Benedict in the Laboratory of the Carnegie Institute at Washington. They found his basal metabolism per kilo body weight was 40½ calories per square meter body surface, 898 calories per 24 hours (Lissauer). In the absence of normal data in children of the same age, this metabolism was compared with that of a normal eight months' baby and a normal ten months' baby. It was found that the metabolism of the cretin was decidedly lower than that of the two normal babies. Unfortunately results after treatment with thyroid had not been sufficiently accurate to use. These results were consistent with those of Magnus Levy and the more recent work of Dubois in Lusk's Laboratory. The practical application of these findings was that the cretin required less food than children with sufficient thyroid activity and after treatment with thyroid extract would require more food than before treatment.

The Bacteriology of the Urine in Healthy Children and Those Suffering from Extraurinary Infection.—Dr. HENRY F. HELMHOLTZ of Chicago reviewed the various theories as to the mode of infection in pyelitis in children and said he thought a study of the bacteriology of the normal urine and urethra might throw some light on this problem. With this object in view he had examined catheterized specimens taken from thirty infants and from thirty-one girls over two years of age. The urine was collected by a very careful technique. It was found that in 119 specimens taken from 61 different individuals, 61 were sterile, and 58 contained bacteria. Of those from 24 normal infants 13 were sterile and 11 contained bacteria. In specimens from girls over two years of age 35 were sterile and 27 contained organisms. The number of bacteria found in the first series was considerably larger than in the second. This might be explained by the fact that in the older children one could cleanse the urethral orifice much easier and could introduce the catheter directly into the urethra. The bacterial flora was practically the same in both series, Gram positive staphylococci and pseudodiphtheroid organisms predominating; the former were present in practically every case in which any organisms were found. The writer concluded that it might be assumed on the evidence given that organisms of the colon group were not normal inhabitants of the female urethra and that in extra-urinary infections occurring in the first two years of life the colon bacilli were frequently found in the urethra, that was in about one-third of the cases. In girls over two years of age the urethra was almost free from organisms and entirely free from organisms of the colon group.

Oxycephaly in Two Brothers.—Dr. W. W. BUTTERWORTH of New Orleans reviewed the literature of this subject and said the classical symptoms of oxycephaly were exophthalmos, pain, and some disturbance of vision. It was a rare occurrence to find this condition in two brothers with a history of a similar condition in the grandfather. These children were not mentally deficient. The condition had been variously attributed to ossification of the sutures, defective bone development, and a hydrocephalic condition in infancy. The *x*-ray pictures showed a mottling of the inner plate of the cranium and *x*-ray pictures of the other bones showed that enlargement of the condyles of the large bones was not unusual and that there was some enlargement of the bones of the face.

Meningitis in the New Born and in Infants under Three Months of Age.—Dr. HENRY KOPLIK of New York presented this communication. He said that meningitis in the new born might be secondary to general sepsis or it might occur as a primary infection. The symptomatology in the primary condition was very obscure. The signs by which meningitis was recognized in older children were not applicable to these babies.

There was no rigidity, no bulging, no Babinski, and no condition of muscle clonus, so that it was not to be wondered at that the diagnosis was difficult to make. He had sought for some characteristic symptoms. He had found that the convulsions might be simple or there might be only slight twitchings of the extremities. Again, there might be only one convulsion with very high fever 105° F. or over, and then this might remit or subside. After the disease had lasted for a week or ten days the temperature came to a lower level and might run along at about 100° F. or slightly above. Bulging of the fontanel was not present; in some cases there seemed to be a depression. Macewen's sign was very difficult to determine in new born babies. Some gave the signs of fluid in the head and some did not. It was only later in the disease after a week or ten days that one could get the signs of fluctuation, and the increase in the quantity of fluid could be detected by the bulging and by the tympanitic note over the temple. The trauma incident to difficult labors made the diagnosis more difficult in some instances. In some infants the disease was very severe and in some the symptoms were so mild that even the mother did not notice them until the child was two and one-half to three months old. The results of lumbar puncture in these cases was very interesting. In a series of twelve cases the streptococcus was isolated four times, the pneumococcus three times and the meningococcus three times; two were secondary cases. One case showed very distinctly that the meningitis was secondary to arthritis. In the secondary cases the streptococcus was found in the blood. The other case which he had observed began with a pyelitis and later developed a colimeningitis as a secondary infection. The fate of these babies was disheartening; they were all fatal sooner or later. Only one out of the twelve was still alive and that one had a marked hydrocephalus. Newborn babies did not bear lumbar puncture well. In discussing the modes by which infection might take place, Dr. Koplik suggested that during resuscitation by the suction method infection might be conveyed if the attendant was a meningitis carrier, and it might also be the result of trauma or of putting the fingers in the infant's mouth.

The Use of Salt Solution by the Bowel in Infants and Children.—Dr. Edwin E. Graham of Philadelphia presented this paper in which he said that his experience with the Murphy method of injecting saline solution by slow proctoclysis in certain conditions in children had led him to believe that it was of much more value to the pediatrist than most of them were aware of. In the acute infectious diseases toxemia might be greatly influenced by the employment of the Murphy drip. It was also of value in uremia and suppression of urine and generally speaking for toxemia from any cause, whether it was autointoxication, mineral poisoning, or septicemia. If nephritis with edema was present the administration of salt solution by this method was unwise, although in a few such cases it had apparently been employed with success. Dr. Graham said he had been greatly impressed by the results of the Murphy drip in profuse diarrhea due to intestinal infection. In employing this method there were several points to be observed: The catheter must be introduced 4 or 5 inches into the bowel; there must be a good return flow, and the water must be kept at a temperature of about 110° F. The water should have a drop of about 12 inches. It was a good plan to allow it to flow for an hour and then allow the patient a rest of one hour. If slight edema made its appearance the treatment was to be discontinued. The solution should be carefully prepared; to say a teaspoon of sodium chloride to a pint of water was exceedingly inaccurate.

A Case of Disseminated Sclerosis.—Drs. George N. Acker and Joseph S. Wall reported this case. Dr. Acker stated that the patient was a colored child 4½ years of age, who came to the out-patient department of the Children's Hospital on March 2, 1916, complaining of "nervousness." The family history was negative. The child's trouble had come on gradually and she had grown progressively worse. The chief symptoms presented were shaking of the body, nystagmus, exaggeration of all the reflexes, rapidity of pulse, but not enlargement of the heart. Ten days later her symptoms were aggravated and her mental condition seemed dulled. The drinking test gave rise to a typical volitional tremor. There were marked elbow and wrist jerks and ankle clonus was present in both extremities. The heat and cold sense were apparently normal except in the right thigh where there was some dissociation of the senses. The writers were of the opinion that the case fell into the category of disseminated sclerosis.

Dr. Joseph S. Wall of Washington reported on the present condition of the child which, he said, was, on the whole, changed but little from that recorded in the paper.

The Danger to Hospital Efficiency from Diphtheria Carriers.—Drs. Samuel S. Adams and Frank Leech of Washington, D. C., made this contribution. They emphasized the point that there must be team work on the part of all connected with the hospital from the highest authority to the humblest employee. Among the numerous details that were requisite for the proper administration of a hospital it was important that every hospital have a well-trained medical superintendent who should have exclusive control over all matters connected with the hospital. The members of the medical staff should be medical men who had been promoted from dispensary work. Provision should be made for follow-up work not only for the hospital but for the out-patient department. Efficiency experts should be engaged from time to time to check up the work and criticise the same, from the president of the Board of Directors to the orderly. The writers then described a diphtheria epidemic in the hospital with which they were connected which had greatly hampered the work of the hospital for a number of weeks. The occurrence of two cases of diphtheria led to a culture of every individual in the house with the result that 51 positive cultures were found out of a total of 100, including employees, nurses, and internes. The hospital wards were closed for a period of three weeks to the reception of new patients. At present they had reduced the number of positive cultures to seventeen. A search for the source of infection seemed to point to a nurse in the baby ward who had suffered from sore throat. There were twelve babies in this ward and eight gave positive cultures. To prevent the occurrence of such outbreaks they felt convinced that all institutions for the care of sick children should be provided with a suitable detention ward for the detention of all new admissions. Cases when admitted should have nose and throat cultures taken and be placed in the detention ward for five days. If it was impossible for financial reasons to provide a detention ward, cubicles should be provided in each ward and proper nursing technique carried out to prevent the dissemination of minor contagions. Illness in internes and nurses should be immediately attended to. Visitors to ward patients should be restricted to adults only, and such visitors admitted as infrequently as possible. Tests of the virulence of diphtheria carriers should be made, thus relieving ourselves at once of a large number of cases which it would be otherwise necessary to isolate.

The Schick Reaction in Infants.—Drs. Henry L. K. Shaw and William E. Youland of Albany presented this communication. They stated that there was no question of the accuracy of this test in detecting the individual susceptibility and immunity to diphtheria. A review of the results of the Schick test as reported by various observers in cases under one year of age, showed a variation of from 0 to 40 per cent., and from one to two years of age the variation was from 15 to 65 per cent. The writers had made an investigation among ninety-five infants under two years of age in two infants' institutions and two hospitals in Albany. In making the tests they used the standard diphtheria toxin diluted so that 1 c.c. contained one-fifth the M. I. D. and 0.1 c.c. of this diluent was used in making the test. The procedure of Park and Zingher of heating one-half of the diluted toxin at 70° C. for three minutes was used for the purpose of control. The reactions were read daily and the final interpretation made on the fourth day. In practically no case did a typical pseudo reaction occur. In some cases the reaction did not appear until the third day, though it appeared more frequently on the second day. In 66 children under one year of age they found 47 per cent. positive, while of 29 children between one and two years of age 58.6 per cent. were positive. These results were remarkably similar to those of Park and Zingher. From their experience with this group of cases it would seem that when virulent diphtheria bacilli were found in infants having no antitoxin in their tissues, a careful examination for diphtheritic rhinitis should be made, as they had five cases in which, without such examination, it would have been overlooked.

State Medical Licensing Boards.

STATE BOARD OF EXAMINATION QUESTIONS.

Ohio State Board of Medical Examiners.

June 6, 7, 8 and 9, 1916.

(*Concluded from page 398.*)

PRACTICE.

1. Describe the symptom complex of uremia; tell how you might suspect it to be impending in a given case, and what treatment you would employ in an effort to avert it.

2. In what diseases should one be on the lookout for acute endocarditis, and how would you recognize its occurrence?

3. Give symptoms of cancer of the liver involving the neighborhood of the hepatic duct.

4. Given a case of a man of sixty-five of alcoholic history, with edematous ankles, dyspnea, and cough with occasional bloody expectoration, albuminuria, and blood pressure of 150 (sys.); what would be your presumptive diagnosis?

(*b*) Trace the prognosis of the case from the primary condition.

5. In an instance of alleged hematemesis, give other possible sources of the blood, and tell how you would recognize the origin in a given case.

6. Describe your treatment of a case of pulmonary tuberculosis, moderately advanced, involving chiefly one side, with a temperature of 101° Fahrenheit, and subject to occasional hemorrhage.

7. Give symptoms and treatment of a case of influenzal pneumonia.

8. Give symptoms of acute myelitis, differentiating it from multiple neuritis.

9. Mention some indications of cerebral syphilis. How would you make a positive diagnosis? Briefly outline the treatment.

10. How would you treat a case of acute articular rheumatism?

DERMATOLOGY, SYPHILOLOGY, AND DISEASES OF EYE, EAR, NOSE, AND THROAT.

1. Describe psoriasis. Give treatment.

2. Of what disease is the occurrence of pruritus ani a frequent sign?

3. Upon what evidence would you base a belief that a patient is cured of gonorrhea?

4. Describe signs and symptoms of congenital syphilis.

5. Outline an approved treatment of syphilis.

6. What are the dangers of acute suppurative inflammation of the middle ear?

7. Describe trachoma. Give treatment.

8. Describe tuberculous laryngitis.

9. Give treatment of acute suppurative inflammation of frontal sinus.

10. Give treatment of nasal polypi.

OBSTETRICS.

1. When would you be justified in inducing premature labor?

2. How would you diagnose the existence of pregnancy?

3. What are the symptoms of fetal death?

4. State the indications and contraindications for the use of the curette and describe the technique of this operation.

5. Name the stages of labor and describe the management of the third stage in detail.

SURGERY.

1. Shock: (*a*) Cause; (*b*) Symptoms; (*c*) Outline treatment.

2. Acute Suppurative Appendicitis. (*a*) Diagnosis: (1) Subjective and objective symptoms; (2) Differentiate between this and similar abdominal disorders; (3) Preliminary treatment. (*b*) Operation: (1) Surgical technique; (2) After treatment; (3) Prognosis.

3. Colles' Fracture: (*a*) Diagnosis; (*b*) Pathology; (*c*) Treatment.

4. Hip-Joint Disease: (*a*) Diagnosis; (*b*) Treatment—surgical, mechanical; (*c*) Prognosis.

5. Gunshot Wounds: (*a*) Give rule regarding probing; (*b*) Give rule regarding immediate operation; (*c*) In a gunshot wound of the knee what would be your course of pursuance?

ANSWERS.

PRACTICE.

1. *Symptoms of uremia.*—Headache, insomnia, convulsions, vomiting, delirium, dyspnea, amaurosis, and coma. Uremia may be suspected from the presence of nephritis, a urinous odor of the breath, scanty urine, and increased arterial tension.

The patient should be put to bed; croton oil (1 minim) may be administered; vensection and dry cupping over the kidneys may be tried; diaphoretics are useful.

2. *Endocarditis* is apt to occur during or following rheumatism and scarlet fever. The signs and symptoms may be negative; but there is generally some alteration in the character of the heart sounds, and dilatation of the heart may be present; the pulse rate is often increased. The sounds heard depend upon the valve affected, and since the mitral valve is the one most commonly involved there is apt to be a systolic murmur heard best at the apex and transmitted to the left axilla.

3. *Symptoms of cancer of liver.*—Pain, tenderness, and a sense of weight in the hepatic region; emaciation and weakness; cachexia; jaundice, vomiting, and fever.

4. The case is one of cardiac decompensation, following endocarditis (which may have been due to rheumatism, scarlet fever, or some other infection). The prognosis of endocarditis is good so long as compensation is maintained; but is unfavorable when compensation is ruptured.

5. In a case of alleged hematemesis other possible sources of the blood are: The blood may have been swallowed (as in epistaxis, after tonsillectomy, pulmonary hemorrhage). The main question is to differentiate between *hematemesis and hemoptysis:*

Hematemesis.	Hemoptysis.
1. Previous history of gastric, hepatic, or splenic disease.	1. Previous history of pulmonary troubles.
2. Blood is vomited.	2. Blood is coughed up.
3. Blood is dark colored and not frothy.	3. Blood is frothy and bright red.
4. Blood may be mixed with food.	4. Blood may be mixed with sputa.
5. Giddiness or faintness usually precedes vomiting.	5. Sensation of tickling in the throat usually precedes.
6. Nausea and weight in epigastrium.	6. Dyspnea and pains in the chest.
7. Often followed by melena (black, tarry stools).	7. Is not usually succeeded by melena.

(Hughes' *Practice of Medicine.*)

6. *Treatment of pulmonary tuberculosis:*—"By day the consumptive should be, short of actual fatigue, as much as possible in the open, and at night the windows should be widely open top and bottom. Where there is fever he must keep to bed; but when possible the bed should be outside, and where that is not possible the windows must remain open in presence of fever or any other acute symptom. In ordinary circumstances he should sleep alone. A stuffy bedroom with several people in it means rapid deterioration for the patient, and infection for the rest. *Sanatorium treatment* is not yet possible for all, nor, except in incipient cases, and in the rich, can it be continued long enough for cure; but it reduces the disease to a quiescent stage, and trains the patient in the habits he must afterwards continue. Sea voyages undoubtedly do good in many cases of early phthisis, the comparative sterility of the air contributing to the result; but no consumptive who is not a good sailor should be sent on such a voyage, nor any one who is unable to travel in comparative comfort, or who must travel alone. In the later stages sea voyages are contraindicated. If change of climate is decided upon, the place selected should be sunny, and should give facilities for the open-air life. Either a dry cold climate may be chosen or a warm one, according to circumstances. In the earlier stages cold dry air is best. High altitudes are, however, unsuitable for those with a tendency to hemoptysis. Adjuvants to the open-air treatment are *exercise* and *dietetic treatment.* The consumptive should wear wool or flannel next the skin, but should not be overloaded with heavy clothes. Tepid baths, followed by brisk rubbing, are of benefit, and much good is done by carefully graduated exercise, which promotes a regulated auto-inoculation. The food must be nourishing

and varied, and ample in quantity, systematic overfeeding, indeed, being advocated by many. Everything must be done to combat the very common anorexia and dyspepsia.

Medicinal Treatment is (*a*) *General.*—Creosote or guaiacol, cod-liver oil, and tonics, such as the hypophosphites and arsenic, are the principal remedies. (*b*) *Symptomatic.*—The following symptoms call for special treatment:—(1) The *cough.*—As this is a persistent and constant feature of the disease, avoid rushing at once to cough mixtures. A common exciting cause of the nightly cough is the changing from a warm room to a cold bedroom; or again, tickling of the fauces by the uvula. A useful combination is that of morphine, spirits of chloroform, and dilute hydrocyanic acid. For laryngeal and bronchial irritation, inhalations of tincture of benzoin or creosote are of much value. (2) The *night-sweats.*—Picrotoxin, aromatic sulphuric acid, atropine, and oxide of zinc are the favorite remedies. Atropine gr. 1/100 to 1/80 in pill at night, is the most reliable. (3) The *diarrhea* is usually best controlled by mineral astringents, in combination with opium. (4) *Fever* should be treated by rest, fresh air, quinine, and cold sponging, or, if need be, the cold bath. Antipyrin, etc., may be occasionally used. *Hemoptysis* demands rest in bed, quiet, light food given cold, ice to suck, injections of morphine and atropine or inhalation of nitrite of amyl." (Wheeler and Jack's *Handbook of Medicine.*)

7. Lobar pneumonia. "*The first stage* is characterized by sudden onset with chill, a sharp pain in the side, rise of temperature, a short and sharp cough, rusty-colored, viscid sputum, and dyspnea. There may be headache, insomnia, scanty urine with diminution of urea, chlorides, phosphates, and sulphates, insomnia, and herpetic vesicles on the face, and there is always an increase in the number of leucocytes in the blood. Physical examination will reveal diminished expansion, impairment of the normal percussion note, feeble or suppressed respiratory murmur, moist or dry râles, crepitation, and sometimes a pleural friction sound.

In the second stage the dyspnea is more marked; the face is more or less livid in color; the temperature is high (104°-105° F.); and the pulse increases in rate (110-120), its tension and fullness lessening with the progress of the disease, and growing feeble and intermittent. Headache, delirium, and various other nervous symptoms may be present. Expansion is diminished and vocal fremitus is exaggerated upon the affected side. There is dullness with increased resistance over the consolidated lung, and auscultation detects bronchophony or bronchial breathing over this same area.

The third stage is ushered in by a sudden drop of temperature on or about the fifth or ninth day, followed by a natural sleep, free sweating, and relief from suffering. In this stage the subcrepitant râle (râle redux) is heard in the midst of the bronchial breathing, together with numerous moist râles. Dullness may persist for some time, but usually by the twelfth or fourteenth day the lung has returned to its normal state."

Treatment: "Consists in rest in bed, milk diet, and the administration of fractional doses of calomel followed by a saline in the early stage. The nervous symptoms and temperature may be controlled by applying ice-bags or compresses wrung out of cold water (60°-70° F.) to the chest or by the use of the warm or cold wet-pack. The heart and pulse should be sustained by the administration of alcohol, strychnine (gr. 1/60-1/20), atropine, caffeine, strophanthus, and nitroglycerin. Digitalis may also be employed. Inhalations of oxygen afford temporary relief when the dyspnea and cyanosis are extreme. In young, vigorous, and plethoric adults, with hyperpyrexia and a high-tension pulse, bleeding may be beneficial in the first 48 hours. Convalescence should be guarded, and tonics, stimulants, etc., will be found very useful in this period of the disease." (*Pocket Cyclopedia.*)

8. *Acute myelitis* is generally of rapid onset, the feet and legs become heavy and numb, twitching and convulsions may occur, the flexors are more affected than the extensors, walking is difficult, paraplegia develops, there is usually some fever, there may be girdle sensation at the level of the lesions, anesthesia of bladder and rectum are common, the reflexes will be absent if the lesion extends completely across the cord, priapism is common.

In *multiple neuritis* the onset is slower, the sphincters are rarely involved, the sensory disturbances are more severe, the extensors are more involved than the flexors, atrophy of the affected muscles rapidly supervenes, the mental condition is frequently affected.

9. *Indications of cerebral syphilis:* Headache, usually worse at night; insomnia; vertigo; hemiplegia, and aphasia; tendency to improvement and relapse; there may be paralysis or unconsciousness, optic neuritis. The diagnosis is made by a Wassermann reaction, which must be positive.

Treatment consists of inunctions of mercury (either the ointment or the oleate) or intramuscular injection of a mercurial salt; potassium iodide, either alone or in combination with mercury; sulphur baths are said to aid the elimination of the mercury from the system. Small doses of salvarsan have been recommended by some.

10. "*The treatment of acute articular rheumatism* consists in rest of the parts, and the patient should lie between blankets. The joints should be enveloped in soft wool or flannel. Restricted diet is essential. Fractional doses of calomel (gr. ¼ every hour for 6 hours) should be administered, followed by a saline purgative. Salicylic acid or its derivatives may be given in full doses, and diuretics are especially indicated. Hyperpyrexia may be controlled by phenacetine (gr. 5.). During the convalescence, tonics are of decided advantage. Locally, lead-water and laudanum or belladonna liniment may be used. The diet should be carefully regulated." (*Pocket Cyclopedia.*)

Dermatology, Syphilology, and Diseases of Eye, Ear, Nose, and Throat.

1. *Psoriasis* "is a common chronic inflammatory disease of the skin, characterized by variously sized lesions, having red bases, covered with white scales resembling mother-of-pearl. It affects by preference the extensor surface of the body. The lesions are infiltrated, elevated, clearly defined, covered with white, shining, easily detachable scales which, upon removal, reveal a red, punctate, bleeding surface. The eruption is absolutely dry, and itching is usually absent."

"*The treatment* consists of the internal administration of arsenic, cod-liver oil, oil of copaiba, or potassium iodide, and the use of local applications. The scales should be removed by soap and water, alkaline baths, or oily substances. Ointments containing salicylic acid (3 per cent. to 10 per cent.), tar (℥ 1 to ℥ 1 of ointment), ichthyol (℥ 1 to ℥ 1), chrysarobin (gr. 20 or 30 to ℥ 1), ammoniated mercury (gr. 15 or 20 to ℥ 1), etc., are very beneficial, and should be used after the scales have been removed." (*Pocket Cyclopedia.*)

2. Pruritus ani is a frequent sign of hemorrhoids, diabetes mellitus, thread-worms, and fissure of the anus.

3. A patient may be considered cured of gonorrhea in the continued absence of discharge, gonococci, and shreds.

4. *Signs and symptoms of congenital syphilis.*—Impeded breathing, snuffles, necrosis of nasal bones, erythematous rash on buttocks, general atrophy with a wizened "old man" appearance, fissures of lips and angles of mouth, mucous patches in the mouth, condylomata, hemorrhages under the skin, onychia, enlargement of spleen, prominent forehead, Hutchinson teeth, interstitial keratitis, periostitis, and gummata of the internal organs.

5. *Treatment of syphilis.*—Intravenous or intramuscular injection of Salvarsan in dose of 0.5 gram, to be repeated twice at intervals of a fortnight. Intramuscular injection of calomel or administration of mercury with chalk by mouth. Iodide of sodium or potassium must also be administered during the second year. This may be combined with the mercury by the administration of the protiodide of mercury. Sometimes mercury may be given by inunction. The patient must have his teeth attended to, use a mild antiseptic mouth-wash, and should give up alcohol and tobacco. Calomel or iodoform may be used as a dusting powder for the chancre.

6. *The dangers of acute suppurative inflammation of the middle ear* are: Chronic purulent otitis media, perforation of ear drum, boils of external auditory meatus, ankylosis or necrosis of ossicles, mastoiditis, facial paralysis, meningitis, thrombosis of lateral sinus, abscess of brain or cerebellum.

7. *Trachoma* is an inflammatory condition of the conjunctiva, accompanied by hypertrophy, granule formation, and subsequent cicatricial changes.

Etiology.—It is caused by contagion from another eye, being transferred by means of the secretion.

Treatment "consists in an attempt to reduce the inflammatory symptoms and secretion, and to check and remove hypertrophy of the conjunctiva, thus shortening

the duration and diminishing the liability to conjunctival cicatrization and to sequelæ. This is accomplished either by the use of certain irritating applications or by mechanical (surgical) means.

Irritating applications.—Sulphate of copper in the form of a crystal or pencil is the favorite local application. Nitrate of silver (1 or 2 per cent. solution), gylcerole of tannin (5 to 25 per cent.), and the alum stick are also employed.

Mechanical (surgical) treatment includes expression, grattage, excision, curetting, electrolysis, *x*-rays, and galvanocautery." (May's *Diseases of the Eye.*)

8. *Tuberculous laryngitis* is generally secondary to pulmonary tuberculosis. The mucosa of the larynx is swollen, and small tubercles may be found on the vocal cords. The tuberculous masses caseate and ulcerate; the pharynx, epiglottis, and trachea may become involved by extension. The signs and symptoms are those of the primary tuberculosis, with the addition of hoarseness, dyspnea, and dysphagia.

9. *Acute suppurative inflammation of the frontal sinus* is treated by opening the sinus by an incision along the inner part of the eyebrow, and then by trephining and curetting the wall of the cavity; the infundibulum is enlarged, and a drainage tube inserted for a few days; the cavity is then washed out daily, through the nose, till all discharge has ceased.

10. *Nasal polypi*, if mucous, are to be removed by a wire snare; if they recur, the bone should be curetted; if there is much bleeding, the nasal cavity is to be packed with gauze for twenty-four hours. In case of fibrous polypi these must be scraped away; but treatment is only possible in the early stage.

OBSTETRICS.

1. Conditions that justify the induction of premature labor: (1) Certain pelvic deformities; (2) placenta prævia; (3) pernicious anemia; (4) toxemia of pregnancy; (5) habitual death of a fetus toward the end of pregnancy; (6) hydatidiform mole; (7) habitually large fetal head.

2. *Positive signs of pregnancy:* (1) Hearing the fetal heart sound; (2) active movement of the fetus; (3) ballottement; (4) outlining the fetus in whole or part by palpation; and (5) the umbilical or funic souffle. *Doubtful signs of pregnancy:* (1) Progressive enlargement of the uterus; (2) Hegar's sign; (3) Braxton Hick's sign; (4) uterine murmur; (5) cessation of menstruation; (6) changes in the breasts; (7) discoloration of the vagina and cervix; (8) pigmentation and striæ; (9) morning sickness. *Subjective signs of pregnancy*, in the order of their appearance, are: Cessation of menstruation, morning sickness, increased frequency of urination, active fetal movemets. *Objective signs of pregnancy*, in the order of their appearance, are: Softening of the cervix, changes in the mammary glands, discoloration of the vulva and vagina, pulsation in the vaginal vault, Hegar's sign, active fetal movements, ballottement, palpation of the fetus, intermittent uterine contractions, hearing the fetal heartbeat, rate of growth of the uterine tumor.

3. *Symptoms of death of the fetus* during the later months of pregnancy are: Cessation of the signs of pregnancy, the abdomen and uterus are both diminished in size, the fetal heart sounds and movements cease, there is no pulsation in the cord, the mother's breasts become flaccid and occasionally secrete milk. If the fetus has been dead for some time crepitus of its cranial bones may be elicited.

4. *Curettage is indicated:* (1) For removal of placental débris (2) in hemorrhagic endometritis, (3) in some forms of dysmenorrhea (membranous), (4) for diagnostic purposes, (5) in some cases of puerperal sepsis, (6) sometimes to check hemorrhage, due to fibroids. *Contraindications:* (1) The least suspicion of even the possibility of pregnancy; (2) menstruation; (3) acute endometritis; (4) malignant disease of the uterus or vagina; (4) acute pelvic inflammation.

Technique.—All antiseptic and aseptic precautions are necessary, the patient should be in the dorsal position, the vagina is to be disinfected, and the cervical canal dilated; a speculum is introduced into the vagina and the cervix is drawn down with volsella; the uterine cavity is irrigated with creolin or lysol; a curette is inserted to the fundus and moved down to the internal os; the operator should begin at one cornu and go in the same direction all around till he reaches the starting point, and if necessary repeat till no more spongy or hyperplastic tissue appears; the fundus should be scraped separately by moving the curette along it from side to side; in going toward the fundus no scraping should be done, and care must be taken not to perforate the uterus; should this happen no fluid must be injected; otherwise the uterus and vagina are again irritated, and one or more strips of iodoform gauze are inserted into the cavity to act either as a hemostatic plug or as a drain, which is diminished with two days' interval and withdrawn on the sixth day. A hemostatic tampon should be placed in the vagina and withdrawn the following day. If any fever arises, the tampon is at once removed and the vagina douched with antiseptic fluid every three hours. If not, the vagina is only swabbed with the same every day, and packed loosely with iodoform gauze. After the final removal of the gauze the antiseptic douche is given twice a day until there is no more discharge. The patient should remain in bed for a week.

5. Labor is divided into three stages: The *first stage* begins with the commencement of labor, and ends with the complete dilatation of the os uteri. The *second stage* begins with the complete dilatation of the os uteri, and ends with the birth of the child. The *third stage* immediately follows the second, and ends with the expulsion of the placenta and the beginning contraction of the uterus.

In the *third stage of labor* the physician should seize the fundus of the uterus through the abdominal wall and knead and rub it until it contracts vigorously; then he should press it down in the direction of the axis of the pelvic inlet. This should last for about a quarter of an hour after the child is born. The placenta, after it is expressed, should be carefully taken by the physician so as to be sure that it is *all* expelled; at the same time care must be taken that no particle of membrane remains behind. Fluidextract of ergot may be administered. The *dangers* are: hemorrhage; retained placenta or clots or pieces of the membranes and sepsis.

SURGERY.

1. *Shock* is the name given to a sudden and general depression of the vital powers; due to some strong stimulation (such as injury or emotion), acting on the vital centers in the medulla and producing vasomotor paralysis. Shock is *primary* when the symptoms appear promptly; it is *secondary* when the symptoms don't appear for several hours (often observed after railway accidents, intoxication, etc.)

Symptoms of shock.—The blood pressure is lowered considerably; the pulse is very compressible, rapid, short, and often difficult to count; the respirations are quick, sighing, and irregular; the skin is cold, clammy, and pale; perspiration may be profuse, but other secretions are diminished; body temperature is subnormal; muscles are relaxed; and reflexes are diminished.

Treatment.—Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant, and give a hot saline infusion; morphine, hypodermically, may be necessary for the relief of pain. Adrenalin solution is administered into the arterial system.

In surgical operations *shock may be largely prevented* by reassuring nervous patients, keeping the patient warm, the avoidance of the excessive catharsis, and semi-starvation that often prevails before operation, the administration of strychnine and atropine before operation, the avoidance of delay and undue handling of parts during the operation, prompt checking of hemorrhage, and by using the utmost gentleness.

2 *Acute suppurative appendicitis* begins suddenly with pain about the umbilicus or right iliac fossa, vomiting, constipation, and slight fever. There is some tenderness at or about McBurney's point, a spot at the junction of the outer and middle thirds of a line joining the umbilicus and anterior superior iliac spine, and rigidity of the right rectus muscle.

A well-marked swelling is usually present, and the pulse steadily increases in frequency. There is also a steadily-increasing leucocytosis. A persistently high temperature, or a subnormal temperature with an increasing pulse-rate, are strong indications as to the presence of pus. Three terminations may occur: 1. The attack may subside, leaving the pus shut up. 2. The abscess may point and discharge itself into the bowel or on the surface, or it may track upward along or behind the colon, and form a subphrenic abscess. 3 The localized abscess may burst and cause general peritonitis. The rectum should always be examined, as a collection of pus may be felt in Douglas's pouch.—(From *Aids to Surgery.*)

Diagnosis.—This is made by the sudden and severe

abdominal pain, unilateral rigidity of lower part of abdominal wall, tenderness over McBurney's point, with nausea, vomiting, fever, and leucocytosis.

In *distended gall-bladder.*—The pain is more severe and sudden, and is in the region of the liver; it radiates to the right scapula and toward the umbilicus; chills and sweats are common; also vomiting, and sometimes symptoms of collapse and jaundice; all the symptoms come on more suddenly. In *gallstone colic.*—The pain is excruciating and is in the region of the liver; it radiates to the right scapula and toward the umbilicus chills and sweats are common also vomiting, and sometimes symptoms of collapse and jaundice; calculi may be found in the feces. In *ulcer of the pylorus*, the pain is in the epigastric region, may radiate to the left shoulder, and is increased by taking food (usually about one to three hours after a meal); vomiting may occur from one to four hours after eating; hemorrhage may be present; the acidity of the gastric contents is above normal, owing to excess of free hydrochloric acid. In *renal colic.*—The pain is in the region of the affected kidney; it radiates down the thigh; there are intense rigors, retraction of the testicle may be present, also history of previous attacks or of calculi; the urine may be scanty, suppressed, or bloody. In *acute peritonitis.*—Both thighs are flexed, pain and tenderness are more general and are increased by movement, vomiting is frequent, the abdomen in general is distended and is tense and tympanitic.

Salpingitis is diagnosed by: A dragging sensation in the neighborhood of the affected tube; colicky pain, which is increased on exertion or even on standing; abdominal tenderness; menstrual disorders, as amenorrhea, metrorrhagia, dysmenorrhea, menorrhagia; dyspareunia; there may be septic symptoms and peritonitis; sterility generally ensues. On examination there will be found a fulness in Douglas's pouch and one or both lateral fornices; in these latter will be felt either the tubes, distorted and possibly adherent, or a sausage-shaped tumor, which is very painful; the uterus is retroverted or retroflexed, and may be bound down by adhesions; there may be an intermittent expulsion of pus accompanied and preceded by a burning pelvic pain. In *ovaritis* the pain is not localized, but spreads to the vagina and rectum; it is usually worse just before the menstrual period, which sometimes affords relief; on vaginal examination the ovary is found to be tender.

Treatment.—"Where pus is present or suspected, the abdomen should be opened over the swelling, and in most cases it will be found that there are adhesions to the anterior abdominal wall, shutting off the abscess cavity from the rest of the abdomen. A finger should be gently inserted to feel for and remove a concretion or the appendix; but no prolonged search should be made for the appendix for fear of breaking down the adhesions. A large rubber drainage tube should be inserted, and the cavity will soon become clean and heal by granulation. If, when the abdomen is opened, no adhesions to the anterior abdominal wall are found, the cavity should be protected with gauze packing. The abscess will then be found among a mass of matted omentum and intestine, and can be opened by gently separating them. A drainage tube is inserted and the gauze packing is left in for three days. By that time firm adhesions have formed and the peritoneal cavity is safe from infection.

"When general peritonitis is present, the abdomen must be opened and drained and the appendix removed; but these cases are almost always fatal.

"In any case in which the symptoms are excessive, especially with a rapidly increasing pulse rate, an operation should be done, as this gives the only chance in cases where there is suppuration without adhesions, especially in those cases due to perforation or gangrene.

"*Operation for removal of the appendix.*—An incision is made at right angles to a line (at the junction of the outer and middle thirds) joining the umbilicus and anterior superior iliac spine, one-third being above and two-thirds below it. The cecum is found, and the anterior longitudinal band is traced down to the appendix, which usually comes off from the inner side and runs inward and downward. If not found there it should be looked for in the retrocecal pouch or on the outer side of the cecum. The meso-appendix should be ligatured and cut through, a collar of peritoneum turned back, and the mucous and muscular coat ligatured near the base and cut off. The peritoneum should be stitched over the stump, and then the stump should be invaginated into the wall of the cecum by running a purse-string stitch around it."—(*Aids to Surgery.*)

Aftertreatment.—This is mainly negative. "The patient should be fed by nourishing enemata, and water should be supplied by continuous proctoclysis, which may be repeated whenever thirst reappears. In case of severe shock subcutaneous injection of from 500 to 1000 c.c. of normal salt solution should be administered. In suppurative cases the Fowler position is indicated. In cases of *nausea* or *vomiting* or *gaseous distention* of the abdomen, the pharynx should be cocainized and gastric lavage should be practised. This should be repeated whenever these conditions recur. In case of pain, from 10 to 30 drops of deodorized tincture of opium dissolved in 100 c.c. of normal salt solution should be given by rectum as often as necessary to keep the patient comfortable. So long as no nourishment is given by mouth, opium given in this manner is perfectly harmless. It is well for the patient to chew gum in order to prevent parotitis."—(*Cyclopedia of Medicine and Surgery.*)

3. *Colles' fracture* is a transverse fracture at lower end of radius; it is due to falls on the outstretched palm. The line of fracture is about an inch above the wrist, and runs obliquely downward from behind. The lower fragment is driven backward and upward, and rotated to the radial side, carrying the hand with it into the position of abduction and leaving the tip of the radius at the same level as, or higher than, the tip of the styloid process of the ulna. The internal lateral ligament of the wrist is ruptured or the styloid process torn off. The fracture is usually impacted, the upper fragment being driven into the lower. The deformity is characteristic, *viz.:* (1) The hand is abducted; (2) the styloid process is on the same level as, or lower than, the tip of the radius; (3) the upper end of the lower fragment projects above the back of the wrist; on the front is a corresponding depression, while above it the upper fragment projects forward. Union occurs readily, but it is common to get deformity and adhesions about the site of fracture. *Treatment:* Disimpaction and reduction are brought about by grasping the hand by the "shaking-hands" grip, extending and adducting the hand and lower fragment. The arm is then fixed on a splint. It is very important in this fracture to start massage and passive movement not later than the end of the first week, to prevent stiffness. Union is firm in three weeks.—(*Aids to Surgery.*)

4. Hip Joint Disease.—*Symptoms of first stage:* Night cries, lameness in the morning; a slight limp; tendency to become tired on slight exertion; wasting; spasm; pain; swelling and deformity (either real or apparent).

Symptoms of second stage: Abduction; limping; pain, which is worse at night; apparent lengthening of the limb; abscess; atrophy of thigh muscles; flexion of thigh; effusion into hip joint; and there may be crepitation in the joint.

Symptoms of third stage: Flexion, abduction, and shortening of the limb; the joint may be dislocated or ankylosed, or suppuration may occur.

"The *cardinal symptoms* of hip-joint disease are the spasm, wasting, lameness, deformity (real and apparent), pain, and swelling. Careful attention to these will make the diagnosis easy. The tendency of the disease is toward recovery, but the prognosis is greatly influenced by the age, type of disease, complications, and treatment. Death usually occurs from amyloid changes in the viscera.

"*Constitutional treatment* consists of improved hygiene, good food, fresh air, and the administration of tonics, such as iron and the hypophosphites, and alteratives, such as cod-liver oil, iodine, and its salts. A change of climate is sometimes beneficial. Locally, iodine, blisters, hot-water bottles, or hot-water dressing may be applied.

"The *special treatments* consist of the mechanical treatment, treatment of the complications, and the surgical treatment. The mechanical treatment consists of recumbency for two or three weeks in uncomplicated cases, with fixation and traction. Continuous traction may be first obtained by Buck's or Savre's extension apparatus, made of adhesive plaster, later by means of a traction splint, with crutches, and still later by the traction splint alone, a high shoe being worn on the sound side, which in a year or two may be discarded. A modified traction splint may be made of plaster of Paris. Differences of opinion exist as to when the abscesses should be incised, but always the strictest asepsis or antisepsis is necessary. Irrigation of the cavities with sterile water, boric acid solution, or mercuric chloride solution, 1:4000, and the injection of sterile

iodoform oil, 5 to 10 per cent., are commonly resorted to. Osteotomy and fixation may be required for the deformity arising as a complication. The surgical treatment consists of aspiration, incision, erasion, and excison."—(*Pocket Cyclopedia of Medicine and Surgery.*)

5. GUNSHOT WOUNDS. Regarding *probing*, Da Costa says:—"The surgeon must not feel it his duty to probe in all cases. In many cases it is better not to probe at all. Explore for the ball when sure that it has carried with it foreign bodies; when its presence at the point of lodgment interferes with repair; when it is in or near a vital region (as the brain); and when it is necessary to know the position of the bullet in order to determine the question of amputation or resection. If the wound is large enough the finger is the best probe."

Regarding *immediate operation*, there is difference of opinion, some authorities holding that unless the bullet causes definite symptoms it should be let alone; others advocate its removal to relieve the mind of the patient and to obviate possible complications later on.

Gunshot wound of the knee should be treated conservatively, if possible; the wound should not be explored except to remove foreign bodies, loose fragments, etc. Incision may be necessary for such removal. The joint is irrigated with a weak antiseptic solution, drained, dressed, and immobilized. Suppuration calls for incision and drainage. If there is extensive laceration of tissue with much splintering of bone and interference with blood and nerve supply the condition may call for amputation.

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Mootgomery	Jan. 9
Arizona*	J. W. Thomas, Phoenix	Phoenix	
Arkansas	T. J. Stout, Brinkley	Little Rock	Nov. 11
California	C. B. Pinkham, Sacramento	Los Angeles	Oct.
Colorado	David A. Strickler, Empire Building, Denver	Denver	Oct. 2
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	Nov. 14
Delaware	J. H. Wilson, Dover	Dover	Dec. 12
Dist. of Col'bia.	E. P. Copeland, Washington	Washington	Oct. 10
Florida*	E. W. Warren, Palatka	Palatka	Dec. 5
Georgia	C. T. Nolan, Marietta	Atlanta	Oct. 10
Idaho*	Charles A. Dettman, Burke		Oct. 4
Illinois	C. S. Drake, Springfield	Chicago	Oct. 10
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 9
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Lebanon	Oct. 10
Kentucky	J. N. McCormack, Bowling Green	Louisville	Dec. 12
Louisiaoa	E. L. Leckert, New Orleaos	New Orleaos	Nov. 30
Maine	F. W. Searle, Portland	Portland	Nov. 14
Maryland	J. McP. Scott, Hagerstowo	Baltimore	Dec. 12
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	Sept. 12
Michigao	B. D. Harisoo, 205 Whitney Buildiog, Detroit	Lansing	Oct. 10
Minnesota	T. McDavitt, St. Paul	Minneapolis	Oct. 3
Mississippi	J. D. Gilleylen, Jackson	Jackson	Oct. 24
Missouri	J. A. B. Adcock, Jefferson City	Kansas City	Sept. 18
Montana*	Wm. C. Riddell, Helena	Helena	Oct. 3
Nebraska	H. B. Cummins, Seward	Lincoln	Nov. 8
Nevada	S. L. Lee, Carson City	Carsoo City	Nov. 6
N. Hampshire	Walter T. Crosby, Manchester	Concord	Dec. 18
New Jersey	A. MacAlister, Trenton	Trenton	Oct. 17
New Mexico	W. E. Kaser, East Las Vegas	Saota Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York Albany Syracuse Buffalo	Sept. 19
N. Carolina	H. A. Royster, Raleigh	Raleigh	June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 1
Ohio	Geo. H. Matson, Columbus	Columbus	Dec.
Oklahoma	R. V. Smith, Tulsa	Oklahoma City	Oct. 10
Oregon	B. E. Miller, Portland	Portland	Jan. 2
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia Pittsburgh	Jan.
Rhode Island	G. T. Swarts, Providence	Providence	Oct. 5
S. Carolina	H. E. Boozer, Columbia	Columbia	Nov. 14
S. Dakota	P. B. Jenkins, Waubay	Pierre	Jan. 9
Tennessee	A. B. DeLoach, Memphis	Memphis Nashville Knoxville	
Texas	M. P. McElhannon, Belton	Fort Worth	Nov.
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
Vermont	W. Scott Nay, Underhill	Burlington	Feb. 13
Virginia	J. N. Barney, Fredericksburg	Richmond	Dec. 12
Washington*	C. N. Suttner, Walla Walla	Spokane	Jan. 2
W. Virginia	S. L. Jepson, Charleston	Clarksburg	Nov.
Wisconsin	J. M. Dodd, Ashland	Madison	Jan. 9
Wyoming	H. E. McCollum, Laramie	Laramie	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Privileged Communications.—In an action for personal injuries, testimony of a physician as to whether the plaintiff was intoxicated was held to be excluded where the doctor was called to attend the plaintiff as a physician and became possessed of his information through his professional employment.—N. Y. C. & St. L., Indiana Supreme Court, 112 N. E. 762.

Therapeutic Hints.

Plantar Hyperhidrosis.—

℞ Acidi tannici, ʒj.
Aluminis, ʒv.
Aquæ, ℥xxx.
M. fiat lotio.
Sig.: Apply once or twice daily.

If a fetid condition exists, a foot bath containing potassium permanganate 1 1000 may be used for ten minutes every three days. In the meantime stockings may be powdered with the following:

℞ Pulveris talci, ʒx.
Bismuthi salicylatis, ʒj.
Zinci oxidi, ʒv.
Pulveris aluminis, ʒiiss.
M. fiat pulvis.—*Gazette des Hôpitaux.*

Treatment for Burns, Scalds, and Wounds.— Soubeyran prefers the following prescription for use in the treatment of scalds, burns, varicose ulcers, etc.:

℞ Balsami peruviani, ʒx.
Acidi picrici, gr. vij.
Paraffini mollis, ʒij.
M. fiat unguentum.

Care should be taken to protect clothing and bedclothes from the stains which the above drugs produce.—*Journal des Praticiens.*

Dandruff.—The following prescription, while not new, deserves repetition because of its ability to produce such excellent results:

℞ B. naphthol, gr. xx.
Bergamot oil, m. x.
Vaseline, ʒj.
M. fiat unguentum.

Apply to the scalp at night and thoroughly shampoo the scalp and hair in the morning with any good soap.—*Practical Prescribing and Treatment.*

Pneumonia Treatment.—

℞ Potassii iodidi, ʒj.
Creosoti, ʒss.
Spiriti recti, ʒij.
Extracti glycyrrhizæ fluidi, ʒiij.
Aquam ad, ʒvi.
M. sig.: A tablespoonful every four hours until the temperature reaches normal.

Trifacial Neuralgia.—

℞ Morphini hydrochloridi, gr. 1 6.
Antipyrini.
Potassii bromidi, āā, gr. ix.
Acidi citrici, ʒss.
Acidi tartarici, gr. xl.
Sodii bicarbonatis.
Sacchari lactis, āā, gr. LXXV.
M. et fiat chartula No. 1. Sig.: Take in a half glass of water.—*Nouveaux remèdes.*

An Easy Remedy for Constipation.—Bran biscuits made according to the following directions and eaten with meals until the desired action of the intestines is obtained will assist in the treatment of and in many cases entirely correct constipation: Bran 3½ oz., agar 90 gr. or ½ oz., eggs 2, salt to taste; put the agar into a small dish, cover with a cup of water and boil until dissolved; while this is still boiling hot, the *warmed* bran is stirred into it to make a thick batter; beat the eggs until very light and add to the batter together with a little sugar and the salt. Chocolate flavoring may be added if desired, and the mixture is then poured into gem-pans and baked.—*American Journal of Nursing.*

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SOME PRACTICAL NOTES ON BLOOD-PRESSURE*

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IN the course of somewhat slow observations (begun in the Hemenway Gymnasium, Harvard, 1913) on the relations of the mental process to the so-called "pressures" of the blood in the arteries (in reality, of course, there is but one every-varying pressure), such extensive variability was obvious in young and old, male and female, strong and weak, normal and abnormal, that it became almost a duty to report it to the rank and file of medical practitioners—men and women too busy, for the most part, to learn these matters for themselves.

Much as we have supposed we knew about the significance of blood-pressure, a confidence almost inevitable in such a situation, I, for one, am convinced that it is only now that we are beginning to be really sure that the expression, "her blood was up," means something—but then not too much!

The origin of the present fad in regard to blood-pressure appears to be, in part, the old-fashioned notion, almost a proverb, that one is as "old as one's arteries"; in part, the common fear or phobia of apoplexy, which is now very commonly known by the laity to be due to the "bursting" of an artery in the brain; partly from the attention given Metchnikoff's decadent theory as to a means of keeping the arteries elastic; and, finally, in part from the very wide medical advertising of blood-pressure gages. The universality of this fad is really worth noting; the topic always excites almost "popular" interest among laymen, and in some cases it has been unduly catered to. An illustration of this was in one of Dr. Evans' excellent and famous talks on health (published as syndicate matter in some of the newspapers of importance), in which he advised an old gentleman who was worrying about himself to secure an instrument and measure his own blood-pressure; theoretically, of course, this advice is all wrong. We should never advise any one who is worried about himself to make any such quantitative study of his "condition."

The first thing we come to in discussing the blood-pressure fad, as we know it at the present time, is the mode of action of the mechanism for locally changing the diameter of arterioles. Vasomotion, it is certain at the present time, is a very complex and elaborate set of adaptations, which *requires careful and extensive study before we can know anything worth while about the true meaning of blood-pressure.* And yet I boldly propose to suggest certain of my own more practical gleanings out of this great, and, for the most part, untilled field; this inconsistency is in part its own punishment.

The methods of taking blood-pressure we will not discuss here, as you are probably all familiar with them. I merely suggest that the auscultation method is the one now used. For the systolic readings, the Korotkoff sound is extremely exact, provided one uses as the indicator a constancy of rhythm—disregarding the first sporadic sounds so frequently observed. For the diastolic determinations, the Korotkoff sounds are far less accurate, but still by far the best means that we have, save in those cases in which (perhaps owing to a dilator-spasm in the artery?) the third and fourth-phase sounds wholly and suddenly disappear. In the forty-eight hundred measurements made by the writer, this phenomenon has been observed many times, and its occasion as well as its cause is an interesting physiologic problem in itself, especially in its psychologic relations (which are the particular interest of the present researcher).

The heart rate is taken just before the blood-pressure measurements are begun; always at the end of the sitting, and as frequently as is expedient throughout the series of measurements. With an inexpensive stop-watch this can be readily done and recorded in twenty seconds, so that these measurements do not at all disturb the series of systolic and diastolic measurements, both made every minute, or, if preferred, every two minutes.

Gradually to get down to our main thesis, there are at least two dozen *normal* things already appreciated as determinants of blood-pressure readings as they are commonly made by the average physician. These twenty-four normal modifiers and determinants may be merely mentioned, their order here not being significant. (1) First, there are the still unknown and very complex vasomotor changes, more or less important. (2) Emotional tones (pleasantness and unpleasantness), and especially anxiety. (3) Muscular tonus, especially of the lower muscle tissue of the upper arm. (4) The relative rigidity of the arterial wall, this essential hardening coming from the physiological vasoconstriction of the artery as well as from its pathological induration. (5) The either arched or broken-arched condition of the brachial artery at the moment. (6) The position of the individual, usually either standing, sitting, or reclining. (7) Whether the right or the left arm be measured. (8) The heart rate. (9) Movements of any part of the arm. (10) The recency of physical exercise, this feature being, in part, one of the local brachial agencies, and in part one of general nervous excitement; and into this

*The basis of remarks made to the Massachusetts Medical Society at its 135th annual session, June 6, 1916.

determinant comes to a considerable extent the degree of "training." (11) Vasomotor neurosis, which has been hinted at, if not described, by Consorti, Cassirer, and others, and which I personally suspect to be far more common and important than is realized. (See charts.) (12) The recency of eating, for Professors Weysse and Lutz[13] have shown that the systolic pressure, on the average, is eight millimeters higher after eating. (13) The time of day. The systolic-pressure mean progressively rises during the day, while the diastolic apparently falls as the autonomic tonus lessens during the day. (14) In women, the menstrual period must be considered, the pressure being higher just before and in atonic women lower just after. (15) Age; in general, the pressure more or less evenly increases[6] up to about 65. (16) Sex; the pressures range a few millimeters lower in females. (17) Atmospheric heat, with humidity, seems sometimes to have a marked lowering influence over blood-pressure. (18) Voluntary relaxation of the body (à la Hindu) readily lowers it to a very marked extent (see the charts). (19) Involuntary and chronic mild collapse of the psychomotor organism (commonly designated as a condition of being "run down"). (20) the integrity and adjustment of the measuring instrument. (21) Breath holding; as the chart shows, in one case the systolic blood-pressure was raised 119 millimeters of mercury in 2½ minutes. (22) The integrity of the heart, especially of the mitral and the aortic valves. (23) Thinking, at least excited activity of the cerebral cortex, irregularly raises the systolic blood-pressure, while widespread, unexcited, more general brain action frequently lowers it. (24) This (in some respects, in the long run, the most important of all, perhaps) is what I shall have to call *the algebraic local, or else central balance of the neurochemical pressors and depressors*. These substances are largely internal secretions, the best known of which are adrenin and pituitrin; the most obvious depressors (Beifeld and colleagues) are extracts of the pancreas and of the salivary glands,[1] and very likely extract also of the pineal gland, the epiphysis. According to Beifeld, the increased irritability of the vasomotor centers produces always a very great lowering of blood-pressure. The intimate connections and integrations of the internal secretions, being investigated by Professor Cannon and his colleagues, are obvious; on the one hand, consider the relationship of these irritator and depressor internal secretions to the increased pressure in the condition designated as dynamogeny (due in part to an increased amount of sugar and of adrenin in the blood); on the other hand, they may explain in part the effects of that important trained voluntary relaxation at which the Orientals and Hindoos are especially expert, and surely much needed in our supervital American city life.

There are six kinds of uncertainty, at least, which enter into every blood-pressure test, inevitably:

1. In the first place, there is to be considered always *the muscle tonus of the arm*. The arm is a fluid, but it is not the "perfect fluid" of physics, and, therefore, the relative rigidity of the muscles and of the other tissues of the arm is continually changing, and thus causing uncertainty in every measurement made by the present crude methods.

2. There is always uncertainty as to the *degree of tonus of the artery wall*, and that whether the arterial wall be hardened physiologically by active vasoconstriction, or hardened pathologically by actual but passive sclerosis. It is obvious that both of these cases would lessen the arterial variability and resiliency, and so tend to raise the blood-pressure measurements above what they should be. The pressure inside of the artery is not nearly so great as the gauge-readings actually indicate, as Brooks and Luckhardt[4] have recently emphasized; in sclerosis, the error, I should judge, may well be 100 per cent.

3. A source of error in all blood-pressure tests is *the varying shape of the arterial cross-section* at any moment. When the artery is round it consists of arches, and, therefore, is very resistant to compression; but when the arterial arch has been broken, the tube becomes much more easily compressible. It is a theoretical point, whose precise importance remains to be worked out.

4. *The training index* (whether the individual has been exercising recently or not) is always a probable source of uncertainty.[6] It is obvious from the records which I have shown that even a small degree of exercise very materially raises the blood-pressure. Another respect in which the physical-training index comes into the matter relates to the promptness of the reaction from the exercise-raised blood-pressure to the rest-normal, in that trained individuals show a very quick reaction thither, while in the untrained it is very slow. The climbing of a flight of stairs is violent exercise!

5. *The excitement index* of the individual is a large yet an almost continual source of uncertainty. Most common in medical experience is the mild anxiety, plus the general excitement of having a medical examination; but, above all, true anxiety, worry, especially a feeling of hurried, agitated worry. Any of these, and especially all combined, serve actually to increase blood-pressure very many (often forty) millimeters above what it physiologically or pathologically really is.

6. Another uncertainty is *the cerebration index of the individual* (as to whether he is thinking actively or not). Many of my records show distinctly that active thought of any kind, irrespective of emotional tone, distinctly lowers or raises the blood-pressure.

7. Occasionally there is a dilator spasm of the artery, which immediately stops the "water-hammer" Korotkoff sounds,[11] and so makes impossible any determination of the diastolic pressure.

8. At times, the still undescribed vasomotor neurosis, which "boosts" high the blood-pressure for weeks at a time.

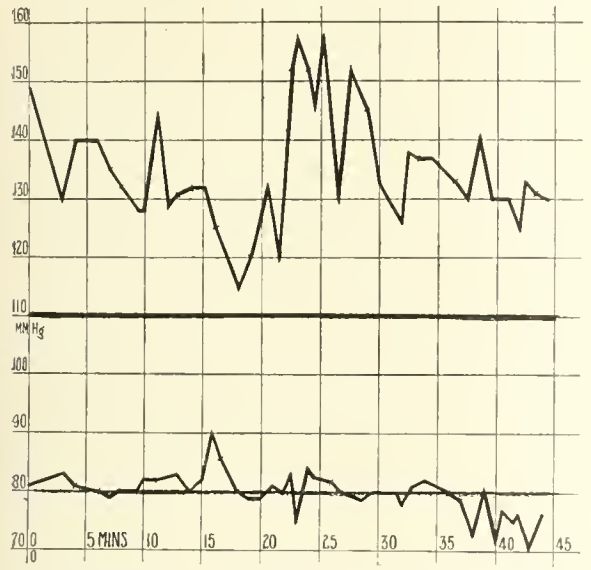
Whatever may be the explanatory physiology, one certainly finds at all ages a surprisingly large variability in the blood-pressure of the perfectly normal individual. I have been greatly surprised, as my measuring and experimental work has gone on, to see that this very wide variability, which naturally I thought at first to be exceptional, is not in reality exceptional, but common to all normal blood-pressure.

I have plotted 140 relatively continuous readings of blood pressure, systolic and diastolic, so far, ranging in time from a few minutes to something above one and a half hours; the figures of the protocols have been merely plotted. They represent a more or less chance selection of at least 4800 measurements of blood-pressure which I have personally made the last three years. I have arranged these charts in nine illustrative groups.

The first group, A, is to be used to exemplify the wide clinical initial variation, to show how widely the first measurement, made in a doctor's office, may vary in some cases from the mean at that visit;

often (and this, too, without any apparent cause whatever other than those noted) it is thirty or more millimeters.

Group *B* consists of three records, which show a progressive fall of blood-pressure from the initial



HEMOBAROGRAM 1.—This patient was a woman nearly sixty years old, normal, but typical of the Yankee women, who are always busy and usually worrying about something, imaginary or real. The variations here are wholly spontaneous, with a systolic maximum of 42 mm. Hg in 5 minutes and a diastolic maximum of 15 mm. Hg in 7 minutes. The diastolic curve shows the relatively small variation characteristic of the arteries after fifty years. The heart-rate remained about 60.

measurement. In one case, *B*1, with no apparent cause at all, except those already considered, there was a fall of 46 millimeters in 13 minutes. Do the rank and file of the country's clinicians outside the scientific societies discount such a change and give their patients, in any event, the great benefit of the great doubt? I should fear that they as yet do not do so.

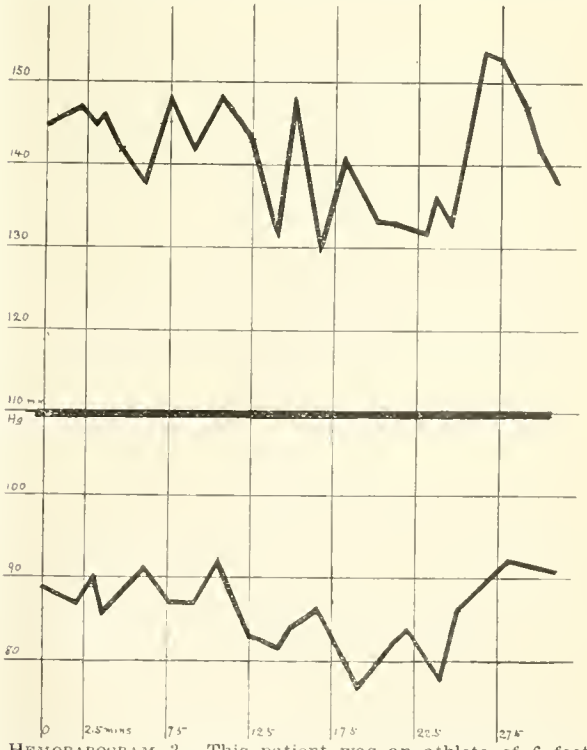
The third group, group *C*, demonstrates the extreme rise of systolic pressure during exercise, and the fall after exercise is concluded. For example, going rather fast up a single flight of stairs but not more quickly than many people habitually climb stairs, will make a rise of blood-pressure from 20 to 30 millimeters; and then add hurry, excitement, and anxiety—!

The fourth group, group *D*, demonstrates a few of my preliminary records of influence of some of the mental conditions on the blood-pressure. It may be seen even from these preliminary charts that the mental, especially affective, influences are both quick and powerful; 20 millimeters upward is no uncommon rise from a spontaneous, unpleasant thought or unpleasant momentary grief; 30 odd millimeters is often seen in records when the grief is recent and acute, for example, in the case of a young woman whom I quite unintentionally reminded of the recent death of her mother. But do observe that such memories (and others far different, but not less dynamic) are liable to come into the minds of patients in your own offices, at any instant, thus entirely destroying the significance of the measurement.

The fifth group, group *E*, of these blood-pressure records demonstrates how easy and powerful is voluntary relaxation, on one hand (lowering the pressure), and, on the other hand, holding the breath (which raises the pressure). The most noteworthy of all these particular records (Fig. 4) is that of a medical man in a suburb, a man in first-class physical condition and nearly fifty years old, who voluntarily reduced his pressure in fifteen minutes from his general basis of 135 to 111 mm. Hg; and then raised it in the course of two and one-half minutes of breath holding to 230. It is obvious that this marked lowering of blood-pressure by a voluntary relaxation might be used by unfit and unscrupulous candidates for life insurance to make a false reading, unless readings be taken seriatim, many times and systematically.

Group *F* of these records shows how very considerable the normal variation is at all ages, in both sexes, and in the diastolic as well as systolic. The systolic average variation is 15 or 20 millimeters at least, and the diastolic pressures vary only less. Especial attention is called to the record (Fig. 1) of a woman about 59, perfectly "normal" so far as is known, but of a type popularly known as "a nervous woman." Her systolic pressure spontaneously varied 43 millimeters within eight minutes, and her diastolic pressure 15 millimeters within seven minutes. In another case, a perfectly normal and beautifully trained athlete, nearly 42 years old (Fig. 2), showed a spontaneous diastolic variation around 13 millimeters within three minutes, and within seven minutes a fall of 18 millimeters. In an active girl of 16 2/3, the diastolic fell (as shown by ten measurements) (Fig. 2), 23 millimeters in fourteen minutes; and so on more or less in every one's arteries always, life without end!

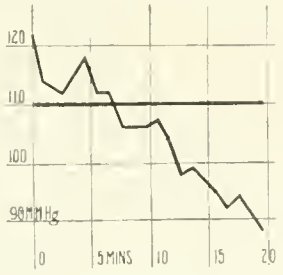
The seventh group, group *G*, shows that the systolic blood-pressure in nitrous-oxide anesthesia



HEMOBAROGRAM 2.—This patient was an athlete of 6 feet and 42 years, in fine condition. The heart-rate remained between 88 and 85. The first marked systolic variation coincided in time with the turning of his attention to the measurements being made. The last marked rise (21 mm. Hg) was due to the exertion of ascending a flight of ordinary stairs. In these charts the long rhythm of the arterial tension is obvious as well as a parallelism between the systolic and the diastolic series.

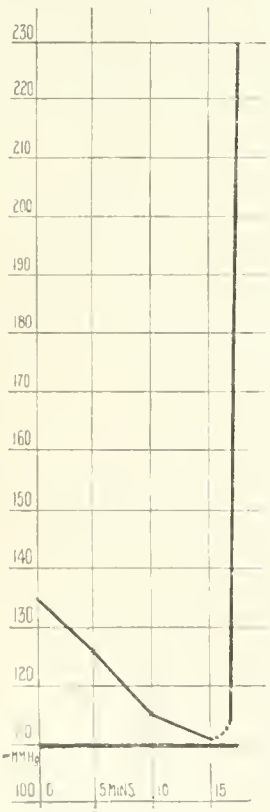
takes a small rise. The "authorities" differ in regard to this, most supposing that this anesthetic raises it to some extent. The work which I have done on this matter in the Forsyth Infirmary indicates that nitrous oxide produces a rise of blood-

pressure about equal to the exertion of going up a flight of stairs, but that it may be almost instantly reduced to normal, and kept at normal, by the proper admixture of oxygen. It seems to be agreed at the present time that nitrous oxide, mixed with oxygen,



HEMOBAROGRAM 3.—This systolic record was made from a normal girl of 10 years 4 months. It shows a fall of 34 mm. Hg. in 19 minutes; the heart-rate meanwhile stayed up to its initial 128 for seven minutes and then fell gradually to 104 at the end. The chute is plainly, in a way, an index of the patient's loss of apprehension and occurs in adults as well as in children!

produces no rise at all worth noting, and certainly no lowering. A chart in this group well shows how instantaneous is the control of the systolic blood-pressure by the addition of oxygen to this anesthetic. (Ether, as is well known, makes a marked rise in systolic; chloroform makes a marked fall, owing to its typical depression of the heart action. Cocaine produces a general rise of blood-pressure. It is possible at least that it produces this effect by its inhibition of the depressor[1] salivary secretion, thus allowing the adrenin or what not in the blood to raise the pressure.)



HEMOBAROGRAM 4. — A rugged doctor of medicine and athlete of 49 years 6 months. During the first 15 minutes he actively relaxed, muscularly, nervously, and mentally, and lowered his systolic brachial-artery tension 24 mm. Hg. Then he held his breath for 2.5 minutes and his pressure went up, very rapidly at last, to 230 mm. Hg, a rise of 119 mm. (July 19, 1915.) Not everyone could raise their arterial tension thus, but there are few who could not so lower it (often with great benefit) did they try.

Group *H* is a tentative set of records from mentally defective adults, morons, imbeciles, and idiots, as graded by the Binet, or, less often, by the coming-in point system of Yerkes. I am not ready to report this preliminary work as yet, but its psychologic interest is very great, and bids fair to furnish a key to the mental influences.

Group *J* of these records shows the least variation which can be found in my records made from normal persons. It is seen that even under these circumstances the systolic variation is, on the average, 8 or 10 millimeters at the lowest, and more or less rhythmic. There is obvious a tendency to a regular rhythm, with a double-vibration period of from two or five minutes. In general "all kinds" of rhythms are to be seen suggested in these hemobarograms, and it is as yet far too early to suggest either their numerical natures or their etiology. Inthis group, *J*, where the emotional, et al., variability is relatively small, the rhythms appear most plainly. Rhythm, of course, is inevitably inherent in all vegetative muscle, and its relation to the rhythmic action of the pressor and the depressor ductless glands has enticing interest for men in the promising vivisectional work, already so productive of useful knowledge.

A *summary survey* in brief of the charts shows:

1. Extreme and still unaccountable variations in the blood-pressure, both systolic and diastolic, in both adults and children.

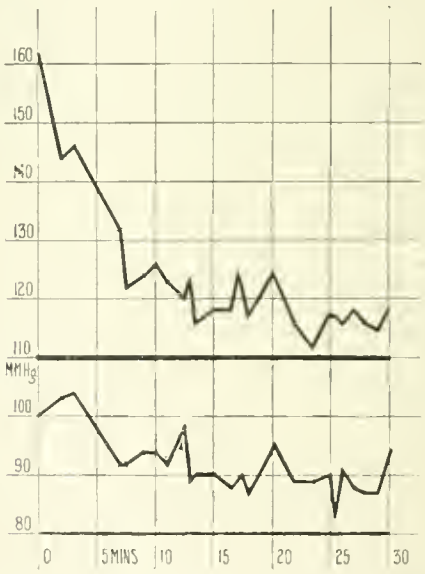
2. Blood-pressure is raised by tones of unpleasantness, and notably by anxiety.

3. In some cases, but by no means in all, it appears to be lowered by all relaxing pleasant feelings and pleasurable sensation.

4. It is raised by ideational brain action, especially by the voluntary work of the entire cortex.[9,10]

5. The blood-pressure appears to be an index of anxiety in the person's mind, conscious or subconscious, and may be so used, to some extent, for diagnostic purposes in psychopathology, etc.

6. The blood-pressure is, in general, as variable in adults as in children; in fact, the widest normal variation I have ever seen was in an individual,



HEMOBAROGRAM No. 5.—This is the thirty-minute record of a woman of 42 years who tests only 1.6 years on the Yerkes point-scale system of tests. When the cuff was first distended (170 mm. Hg.) she burst quietly into tears, emotionally shocked at the novelty of the painless sensation. Within the next 13 minutes her systolic brachial-artery tension had fallen to 46 mm. Hg., her diastolic 11 mm., her heart-rate falling meanwhile from 112 to 88, where it remained. Within seven minutes from the beginning she was in her usual good humor. This record, typical of the hemobarograms of mental defectives, is presented solely to illustrate the physiological "limit" of blood-pressure rise (due purely to office-apprehension) and its spontaneous fall under the more usual office conditions. Very many persons, both adults and youths, some of whom would "test up" rather better than 1.6 years Yerkes', show just this kind of blood-pressure phenomenon—however little the "rank and file" of physicians as yet realize it.

apparently normal, who was approaching the age of sixty.

7. There is a marked degree of reciprocity between different parts of the body.

8. The diastolic is as variable, in many cases, as is the systolic pressure.

9. The deliberate relaxation of the voluntary muscles readily and greatly lowers the pressure.

10. There are evidences of the frequency of a vasomotor neurosis[2-5] whose pressor effect is great and lasting enough to thoroughly mislead the clinician who mistakes it for the "anticipation of a nephritis," for arteriosclerosis, or for a sign of gout or of Raynaud's disease. Low blood-pressure sel-

dom has any sinister significance any more than has low heart rate.

11. Frequent suggestions, especially in the diastolic records, of a rhythmic pressure variation of from 15 to 30 millimeters in waves from ten to twenty minutes long.

But some of my readers certainly are asking, most naturally, two questions as they look back over this material.

First, "Is it not perfectly true, none the less, that each individual does have a consistent blood-pressure base or standard, whether there be such for every particular age or sex or not?" The answer is as obvious as the question: Certainly there is such a base for each person at any one time, but it is not easily determined in most cases.

The second question which might well be asked would be "Do not vascular (*i.e.*, interstitial) nephritis, arteriosclerosis, gout, obesity, Raynaud's disease, etc., have a high blood pressure, which stays up and stretches the arteries?" We may answer, with some promptness: Certainly, again, but with so many common idiopathic and wide variations, and with the likelihood of a perhaps purely vasomotor pressor neurosis, any one given measurement of this pressure is inadequate because uncertain.

There are certain theoretic corollaries which I may mention in regard to these observations: The need of a widespread, broad-minded study of vasomotion in its entirety, one of the very foundation functions of the intricate body marvel. Then we should know about the actual physics of the arm; more about the kinesthetic, perceptual, impulsive, emotional relations of the muscles of the arm and other parts of the body; and we should study the mental influence very much.

The blood-pressure in the brain is far more important than the very variable pressure in the arm, and means should be devised to measure the pressure there, where it is most important.

There are, too, certain practical corollaries or points which perhaps will interest the average practitioner more than do the foregoing theoretic desiderata:

1. Twenty minutes instead of one should be used in determining a blood-pressure, and the procedure should be carried out on several days, instead of on one day only, as is the common custom.

2. No one should interpret any measurement of the blood-pressure save as an algebraic balance of two dozen or so factors and modifiers.

3. A patient must not be acutely anxious or "scared." He must not be made to worry about anything, for anxiety raises the blood-pressure and may even sustain it indefinitely.

4. Keep in mind the frequent occurrence in persons of chronic-nephritis age of a pressor vasomotor neurosis—or at least something that acts like one.

In general, we may say, as a *conclusion*, too wide to be quite accurate, but perhaps, none the less, of some useful significance: Blood-pressure measurements, as they are taken at present by the majority of busy practitioners, are apt actually to be more misleading than significant; it is only by repeating the measurements each minute (or each two minutes) for a half hour or less, and on several successive days, care being taken in interpretation to avoid all known sources of high pressure, that one can be sure of having a significant set of measurements.

Addendum, August, 1916.—Extensive and substantial evidence derived from the numerous relatively continuous hemobarograms of this research, especially from their demonstration of the relative independence of the systolic and the diastolic pressures; from the muscular structure of the left lower heart (ventricle) and from its known volumetric movements; from the cerebral relations of the cardiac control in comparison with the autonomic neurology of the arteries; from the striking phenomena of the blood-tension observed in true emotions involving all parts of the body as compared with voluntary imitations thereof; from the observed relations of pressure to heart-rate; from the observed frequent vasodilator and vasoconstrictor "spasms"; from the phenomena of nephritic and sclerotic high diastolic tension; from Cannon's far-reaching work on adrenin, etc.; and from analogy—this evidence already makes it probable that the observed changes in the systolic pressure are chiefly due to variations in the size, and hence the systolic output, of the left ventricle, and that the diastolic variation in tension is primarily dependent on (arterial) vasomotion, the blood-pressure being always an algebraic balance of these two distinct but complementary sets of neuromusculo-glandular actions, and thus an index of the perfect integration of the organism.

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THE PATHOLOGICAL AND THERAPEUTIC BEARINGS OF THE ELIMINATION OF BODY HEAT.*

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In order to afford energy for the vital activities, oxidation of food and tissue material is constantly in progress in the living animal organism. Even when the body activities are at a minimum—during sleep—an unremitting supply of energy is required for carrying on the circulatory and respiratory functions. This constant oxidation results in continuous production of heat by the body, at the rate in the human adult per kilogram of body weight of from 1 to 4 calories per hour, according to the degree of muscular activity; or from 2,000 to 7,000 calories daily in a medium-sized subject of 70 kilograms (154 pounds) weight.

In order to maintain the temperature of the body at a uniform figure it is necessary that the heat generated be dissipated at a rate equal to that of its production. If the heat is dissipated more rapidly than it is generated, the body temperatlre will fall; if less rapidly, the heat produced must accumulate in the body and cause a rise in its temperature. A change of body temperature of 1° C. corresponds to 0.83 calory per kilogram of body weight. If the elimination of heat were entirely suspended, the body temperature would rise at the rate of over 3° F. per hour. These considerations indicate the constant necessity of proper elimination of the heat continually being generated by body oxidation.

The main means by which body heat or energy is discharged are three: (1) Radiation, conduction, and convection; (2) vaporization of water; and (3) external muscular work.

The elimination of heat by radiation, conduction, and convection is accomplished by the imparting of heat from the surface of the body to the surrounding atmosphere or other objects. This can be effected only when the temperature of the latter is lower than that of the body, and the rapidity of the heat discharge is proportional to the difference between the two. Ordinarily, the largest part of the body-heat elimination takes place by this way, about 75 per cent. of it being thus discharged under ordinary living and working conditions (temperature of 20° C.).

The loss of heat by evaporation consists in the absorption of heat by water when passing from liquid into gaseous form. Each gram of water vaporized and so excreted by the skin or lungs removes 0.59 calory of heat from the body. A large amount of heat is thus eliminated, the proportion varying according to the temperature and humidity of the air; ordinarily about 15 to 25 per cent. of the body-heat discharge occurs in this way.

The body energy gotten rid of in the form of external work accomplished (which can be measured in terms of heat) varies in proportion to the muscular activity of the subject, and ranges from zero to about 10 per cent. of the total heat discharge. As in the case of mechanical engines, only a fraction of the heat generated for the purpose reappears as actual work. For example, the mechanical efficiency of a steam engine is about 15 per cent.; that is, only 15 per cent. of the energy yielded by the burning of the fuel is converted into actual work. Similarly, the efficiency of the human body as an engine has been determined as from 9 to 24 per cent. It follows that for every calory of external work that is produced three to nine additional calories of extra heat are generated in the body and have to be eliminated.

An example of the relative magnitudes of the three main avenues of heat elimination is afforded by the calorimetric observations of Atwater and Benedict. The results of various tests made by them average (per diem per person) as follows (Bulletin 175, Office of Experiment Stations, U. S. Department of Agriculture, 1907, pp. 152, 179):

Table I

	Five Rest Experiments (10 Days)		Six Work Experiments (14 Days).	
	Calories	Per Cent	Calories	Per Cent
Heat or energy production (from oxidation of food and body material), as measured	2,258	....	5,179	....
Heat or energy eliminated, as measured:				
Heat of urine and feces given off	17	.8	21	.4
Given off by radiation and convection	1,741	76.7	3,856	74.0
Given off by vaporization of water	512	22.5	791	15.2
External muscular work measured	....	....	546	10.4
Total heat given off	2,270	100.0	5,214	100.0

In the foregoing experiments the temperature of the chamber occupied by the subjects experimented on was 20 deg. C., and the humidity of the contained air ranged mostly from about 50 to 70, averaging 67 per cent.

The cutaneous surface and the respiratory tract are the structures chiefly concerned in the elimination of heat. The body surface affords an extensive field from which heat may escape by radiation, conduction, and convection, and from which the evaporation of perspiration takes place. The respiratory activities involve vaporization of water and convection of heat out of the body by the warm expired air. A striking example of the participation of the respiratory apparatus in heat elimination is afforded by an overheated dog breathing with excessive rapidity; the widely opened mouth and expanded tongue increase the surface for heat discharge, and the increased air currents carry away much heat by convection and augmented evaporation.

In infancy the burden of heat elimination is relatively much greater and more urgent than in adults. Heat production in young infants proportionately to body weight is three times as great under similar conditions as in adults; a proportion which gradually diminishes during the years of childhood. The much greater amount of heat to be disposed of in them makes interference with their heat elimination much more potent for harm than in adults, and undoubtedly contributes largely to the increased morbidity and mortality of young children in hot weather.

Obesity exerts considerable influence on heat elimination. An abundance of subcutaneous fat, by relatively diminishing the body surface and interfering with radiation-convection and evaporation, lessens heat dissipation. Their heat discharge is so much more interfered with that obese persons suffer more distress in hot and humid weather than slender subjects experience.

The principal external conditions that influence heat elimination are (1) the clothing, (2) the tem-

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perature of the surrounding air or other media, (3) the humidity of the atmosphere, and (4) the movement of the air.

Clothing protects against and lessens the escape of body heat, and by varying its amount and character a considerable range of control and adjustment of heat elimination is possible. The physiologic action of clothing pertains largely to its influence on heat elimination. Clothing (like the hair and feather covering of animals and birds) owes its protective power against heat loss largely to the air imprisoned in its interstices, air being a poor conductor of heat. Dry, porous clothing is the best protection against cold. Water being a good conductor, damp clothing facilitates loss of body heat, and is less protective.

The temperature of the surrounding atmosphere and other objects or media influences heat elimination by both radiation-convection and evaporation.

The greater the difference in temperature between a body and the surrounding media, the more active is the transfer of heat from the warmer to the cooler. Consequently, the body gives off more heat in a cold than in a warm environment; and as the surrounding temperature rises, the heat loss by radiation-convection correspondingly diminishes. When the temperature of the air becomes as high as that of the body no further loss of heat by radiation-convection can take place.

Immersion in cold water actively removes heat from the body; and one of the chief effects of hydrotherapy relates to this action.

The effect of atmospheric temperature on the vaporization of water is the reverse of that on radiation-convection. At the lower temperatures there is less evaporation, and hence less heat loss in that way; while at higher temperatures vaporization and the resultant heat loss are proportionately increased.

As an example of the effect of varying temperatures on the distribution of heat loss between radiation-convection and evaporation may be cited the following results obtained by Rubner on the elimination of heat by a fasting dog exposed to different temperatures (Max Rubner, *Die Gesetze des Energieverbrauchs bei der Ernährung*, 1902, pp. 106, 193):

Table II

Temperature	Total Heat Given Off per Kilo of Body Weight	Heat Given Off By Radiation-Convection		Heat Given Off by Vaporization of Water	
C.	Calories.	Calories.	Per Cent.	Calories.	Per Cent.
7°	86.4	78.5	90.9	7.9	9.1
15	63.0	55.3	87.8	7.7	12.2
20	55.9	45.3	81.0	10.6	19.0
25	54.2	41.0	75.6	13.2	24.4
30	56.2	33.2	59.1	23.0	40.9
35	68.5	.....	.....	.....	.....

The humidity of the atmosphere influences the escape of body heat mainly through affecting the evaporation of water. In dry air, vaporization is favored; in humid air, evaporation is lessened; while in air saturated with moisture, escape of body heat by evaporation would be entirely prevented. A cold, humid atmosphere also favors heat loss, supposedly by the increased conductivity for heat of damp clothing or skin covering.

Movement of the surrounding air, even imperceptible air currents, greatly increase loss of heat from the body. The air envelope contiguous to the body, warmed by its heat and charged with its moisture, is thus continuously removed and replaced by cooler and drier air of greater heat-absorbing capacity.

Variations in the rate of heat elimination resulting from fluctuations in the external conditions and factors operative bring about through the action of the thermic nerve centers a series of compensatory and regulatory processes for the purpose of maintaining proper thermic conditions in the body, one significant manifestation of which is the maintenance of a uniform body temperature. The train of vital activities thus brought into play covers a wide field of the organic functions, and is of profound consequence to the organism for evil or for good. Within broad limits, the organism can accommodate itself to the variations in heat dissipation brought about by changes in the external conditions. Above and below these limits, pathologic consequences result, ranging from mere discomfort in the slighter degrees to fatal and fulminant overwhelming of the organism. Two opposite groups of conditions are to be considered, resulting respectively from (1) excess or (2) deficiency in body-heat elimination.

Excessive abstraction of body heat is brought about by insufficient clothing, immersion in cold water, exposure to cold air, and similar conditions. In order to check the excessive escape of heat, contraction of the superficial blood vessels takes place under the action of the nervous regulatory mechanism, blanching the skin and lessening the amount of blood at the surface, thus diminishing the radiation and convection of heat from the skin, the action of the sweat glands, and the consequent evaporation of water. The pulse and respiration rates decrease. Blood pressure increases, perhaps as a result of the contraction of the cutaneous vessels. The largest means of compensation for the excessive heat loss is the incitement of muscular activity, which greatly augments body oxidation and production of heat to replace that lost. The cold individual naturally and spontaneously engages in muscular action; he stamps his feet, or swings his arms, or otherwise actively exercises. In the passive, chilled, individual shivering or twitching of the voluntary muscles is a similar means by which heat production is increased.

The reaction of the organism to increased heat elimination involves powerful stimulating effects. The circulatory activities are stimulated, as shown by the increase of blood pressure. An increase in blood pressure of 10 to 30 mm. can be effected by transfer of patients and individuals from warm rooms to cold outdoor air, a stimulating effect much greater than drugs produce. The nervous system is markedly stimulated, partly from the direct action of cold on the superficial nerve terminals, partly perhaps from increased central circulation. Muscular activity is promoted. Metabolism is increased. General invigoration takes place. The purposive induction of these stimulating factors constitutes a powerful therapeutic agency.

When, in spite of all regulatory and compensatory reactions, the loss of heat exceeds the generation of body heat, the temperature of the body must progressively fall, leading eventually to fatal refrigeration. The treatment of such cases would consist in the promotion of muscular action, the application of external heat, hot drinks, and the like.

Decrease or deficiency of elimination of body heat is caused by high surrounding temperature, high atmospheric humidity, lack of movement of the air, and excessive clothing; and the conditions are relatively much aggravated when associated with muscular activity and increased heat production. When heat elimination is interfered with the thermo-regulating centers set up conditions to increase it. The superficial blood vessels dilate, bringing an increased volume of blood to the surface, where its heat can be dissipated by radiation and convection. The skin is flushed and warmed, and the secretion of sweat is greatly stimulated to supply water for evaporation. Blood pressure is lowered (perhaps from the dilatation of the vascular channels), and the pulse rate increases. The rate of respiration is increased, partly perhaps in correspondence with the pulse rate, partly also as a means for increasing heat discharge. Marked nervous depression occurs (partly perhaps from relative central anemia), as manifested by lassitude, malaise, weakness, headache, dizziness, nausea, faintness, syncope. Muscular activity is burdensome, on account of the great increase thereby effected in the production of heat to be gotten rid of. There is general depression and embarrassment of the body functions and activities. The proper action of the cooling apparatus is just as essential to the efficient working of the human machine as to that of an automobile; neither will run properly if overwarm.

When the rate of heat dissipation falls below that of heat production the body temperature must necessarily rise and pyrexia develop. These are the conditions that bring about the most intense manifestation of deficient heat elimination—heat stroke. With the atmosphere at a temperature as high as that of the body, and saturated with moisture, the escape of body heat by both radiation and evaporation would be entirely prevented, and the body temperature would rise at a rate of over 3° F. per hour, the rate of increase being accelerated by the increase of oxidation accompanying overwarming of the body cells. The concurrence of heat and humidity, especially if associated with muscular activity, is well known as the special inciting cause of heat-stroke, with its rapidly induced hyperpyrexia (up to 110° or 112°) and fulminant overthrow of the vital activities.

Body oxidation, or metabolism, runs closely parallel with heat elimination, as the abstraction of heat necessitates oxidation (under the control of the thermic centers) to produce heat to replace that lost. As heat dissipation is largely conditioned by the external temperature, there is a close correspondence between the surrounding temperature and body oxidation. External cold greatly increases body oxidation; metabolism decreases as the temperature rises, reaching a minimum at about 30° C., above which oxidation again increases (attributed to heightened metabolic activity of overwarmed cells). The influence of cold in increasing oxidation is to a certain extent independent of muscular activity, and affords a sanitary or therapeutic means of stimulating metabolism in cases in which exercise is inadvisable or impossible.

A potent influence is exerted by these conditions on the bodily vigor and disease-resisting power. The increase of morbidity and mortality, especially among children, in seasons of atmospheric heat and humidity, is well known. Continued exposure to the conditions that diminish heat elimination evidently lessens the power of disease resistance. On the other hand, the conditions that increase heat dissipation and metabolism are associated with heightened vigor, health, and recuperative power, as exemplified in the difference between sedentary and outdoor life, the energizing effects of open-air life and treatment, etc. It is a reasonable supposition that the basis of this relation and correspondence between heat elimination and body vigor is to be found in the amount of body oxidation, which is conditioned on the former. Oxidation is life. All vital energy and activity are derived from the combustion of organic material. The more we oxidize the greater is our activity and vitality, the more we live. The conditions that diminish body oxidation lessen vigor and disease-resistance; those that stimulate metabolism energize the organism and tend to the conservation of health and the cure of disease; and this applies to passive increase of metabolism caused simply by exposure to cold as well as to increase caused by muscular activity.

A familiar manifestation of deficient heat elimination is afforded by the oppressive and injurious consequences of hot and humid weather. The depression, the malaise, discomfort, and distress, and the difficulty of muscular exertion under such circumstances, are universal experiences; but of great concern to the clinician is the fact that these conditions materially increase susceptibility to the incidence of various diseases, aggravate their character, lower disease-resisting power, and increase the mortality, especially in young children. Purposive measures to promote adequate heat elimination should, consequently, constitute an important part in the prophylaxis and treatment of disease in hot seasons.

The discomfort and other injurious conditions that result from exposure to the vitiated air of stuffy, crowded, or badly ventilated rooms, is another manifestation of the effects of reduced heat elimination. The belief, long prevalent, that the evil effects of vitiated air are caused by chemical changes and contaminations has been found untenable; and it is now believed that it is interference with body-heat elimination caused by the increased temperature, humidity, and stagnation that also develop in occupied confined air that is responsible for these evil effects. The cooling action of the atmosphere is vitally essential to well-being and life, as well as its respiratory function; and it is the air that cools us, rather than the air we breathe, cool air rather than pure air, that is most concerned in ventilation and aerotherapy.

The treatment of deficient heat elimination and its resultant conditions would consist in abstraction of body heat, increasing the outlets for heat discharge, and minimizing body oxidation.

The most vigorous abstraction of body heat is effected by immersion in cold water, application of ice, and the like, as in the customary treatment of heatstroke and fever.

A slight cooling may be effected by the ingestion of cold substances. A glass of water (250 c. c.), swallowed at zero temperature (Centigrade), when warmed up to body temperature will absorb about 9 calories of heat, enough, if generally distributed, to lower the body temperature about 0.3° F. A hundred grams of ice (as in ice cream), swallowed, melted, and raised to body temperature, would absorb nearly 12 calories. The gains thus obtainable are perhaps inconsiderable, yet they afford an agreeable sense of cooling.

When the conditions are such as to interfere with

heat elimination, it is important that body oxidation (and hence the amount of heat to be gotten rid of) be reduced to a minimum. Muscular activity should, therefore, be minimized; and, theoretically at least, a scanty diet (especially of protein) would be advisable, in order to obviate the increase of oxidation involved in the specific dynamic action of the foodstuffs.

Since clothing lessens the escape of heat, reduction, and even complete removal, of the body coverings may effect a considerable increase in heat discharge, and should be borne in mind in alleviating the injurious effects of hot weather on ill patients, especially children.

Atmospheric conditions that interfere with heat elimination should be escaped from or corrected so far as possible.

The preferable and most effective course, when possible, is removal from hot cities or torrid localities to cooler places during heated seasons. The beneficial effects of such a change for invalids, children, and also the well, are generally appreciated.

When it is impracticable for the patient or individual to remove to a more salubrious place, the oppressive atmospheric conditions of the room occupied should be mitigated so far as possible. Great and frequently sufficient relief may be obtained by setting up vigorous air currents in the room with fans. Reduction of the temperature of the room air is not so easily accomplished. Methods have been devised for lowering room temperature through the agency of evaporation, and cooling beds with ice tanks. It is feasible, though expensive, to cool the air supply of buildings by refrigerating apparatus, humidity being also regulated; but such systems have been put in operation only to a limited extent. It is possible that the equipment of wards or rooms in hospitals capable of being refrigerated, in which very ill patients could, as an emergency measure, be placed in hot weather, would result in the saving of many lives, especially of children.

According to present conceptions, the primary purpose of the ventilation of buildings is the regulation of the temperature, humidity, and movement of the air, so as to provide optimum conditions for the heat excretion of the occupants. In the attainment of this essential object, with the exclusion of dust and of adventitious contaminations, a sufficient degree of air purity is likely to be incidentally achieved in ventilating systems. In ordinary places of residence and assembly, where physical activity is slight, a temperature of 68° to 70° F., with a humidity of 60-65 per cent., affords favorable conditions for body heat elimination; in industrial establishments where workmen are subjected to heavy exertion or high temperatures other arrangements would be indicated. In many dwellings, in winter, the temperature is kept too high, resulting in deleterious overwarming of the occupants. The matter of ventilation and heating is an important aspect of this subject, well worthy the attention of the sanitarian and therapeutist.

The therapeutic bearings of heat elimination relate not only to the removal of the injurious consequences of deficient elimination, but also to the utilization of the great therapeutic potencies of increased heat removal. Amplified heat elimination is a powerful circulatory, nervous, and metabolic stimulant, promotes muscular activity, and is generally energizing and invigorating. Our daily vigor, well-being, and efficiency are dependent on it, as is shown by the debilitating effects of hot weather and of sedentary indoor life as compared with the invigorating influence of outdoor life. The brilliant results of the open-air treatment of tuberculosis and other conditions are a demonstration of the therapeutic possibilities involved. The attempted explanations of the modus operandi of the fresh-air treatment on the basis of the chemical purity and properties of the air have never been convincing, and undoubtedly the true cause of the beneficial action of salubrious atmospheric conditions resides in their influence on the heat discharge of the body.

In general, the elimination of body heat, far from being an academic physiologic abstraction, is a process of fundamental importance to organic well-being, and has wide pathologic, therapeutic, and hygienic bearings. Without being directly appreciated, it sets up a train of vital phenomena that are very obvious and consequential. It affords a key to the understanding of subjects formerly obscure. It is well that its action and controlling factors should be clearly appreciated and purposely regulated or utilized.

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COINS AND MEDALS IN MEDICINE*

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Ancient history deals almost exclusively with affairs of State and gives us comparatively little insight into individual experience of its members, their joys and cares, pleasures and privations, how they dealt their "buried complexes" or adapted themselves to the "kinetic drive" of their day.

In an attempt to fill in deficiencies and make a complete and authentic story, the historian has drawn from many different sources of information, among others, numismatics.

The study of coins, medals, and jetons adds many facts to history, not only as a memorial of important events, but they furnish also likenesses of persons, as well as parts of legends and proverbs. As an example may be mentioned our own penny, with its inscription of "Not one cent for tribute, but millions for defense," or the Franklin penny, with "Time flies; mind your own business."

The material available for a study of coins and medals in medicine is enormous in amount and variety, and may be found in books and papers, as well as in collections which have not yet been studied and described. There is in the Museum of the Surgeon General's Library a rich and attractive collection of coins and medals waiting to be described and discussed from this point of view.

In this brief sketch an attempt will be made simply to call attention to some well-known coins and medals of interest to physicians, and to name some of the many interesting books dealing with this subject.

As an example illustrating the kind of information which may be derived from medals, Weber[1] mentions the one relating to Dr. Wenzel Beyer. He was the author of the first treatise on the thermal waters of Karlsbad in Bohemia. Being practically the first to recommend patients to take the waters internally, he must have enormously increased their utility. In this book above referred to, "Tractatus de thermis, Caroli IV, Etc.," Leip-

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zig, 1521, he wrote: "I have said that this water must be drunk. As, however, until now it has seldom been used for drinking, but more for bathing, what I have said will appear to many as something new."

Beyer was born at Elbogen near Karlsbad, as appears from the title page of his book, where his name is given as Venceslaus Payer de Cubito, that is to say, of Elbogen. Not much more would be known or surmised about Beyer were it not for the existence of two medals commemorating his death in 1526, examples of both of which exist in the Imperial Collection at Vienna. Like most German portriat medals of this time, they are doubtless the work of some goldsmith and are both cast and chased in silver.

The first one, of a diameter of 2.2 inches, bears on the obverse the portrait of Beyer, in profile to left, at the age of 38 years, with an inscription. On the reverse, in a bare landscape with one tree, is a steaming chasm, into which a horseman (Marcus Curtius) is about to plunge. In the foreground is a book, and upon that rests a skull; there are loose bones lying about, and in some specimens the date 1526 occurs in the field. The inscription is "Iam portum inveni, spes et fortuna valete." The more usual quotation is "Inveni portum; spes et fortuna valete! Sat me lusistis, ludite nunc alois." That is to say, "I have found the haven; Hope and Fortune, farewell. You have made sport enough of me, now make sport of others." It is said to be the translation of a Greek epitaph ascribed to Janus Panonius. The reverse type certainly suggests a reference to Marcus Curtius, the Roman legendary hero, who, when he heard that the chasm in the Forum could be filled only by throwing Rome's greatest treasure into it, mounted his horse and leaped into the abyss, declaring that Rome possessed no greater treasure than a brave and gallant citizen.

The second medal, two inches in diameter, bears Beyer's bust on the obverse, with a similar inscription to that on the obverse of the first medal, but the portrait is nearly a full-face one. The reverse represents a bier, standing on stony ground, with a decaying corpse stretched at full length upon it. Above this is the inscription: "Cum pariter Omnibus moriendum non tarde sed clare mori optandum."—"Since all alike must die, it is desirable to die not tardily, but illustrously." On the field of the reserve is the date, 1526.

Nothing seems to be known with certainty as to the cause of Beyer's death, but the reverse designs on these two medals, especially that referring to the legend of Marcus Curtius, suggest that his death was the result of (or at the time supposed to be the result of) an injury or disease acquired when examining the source of the great hot spring (Sprudel) at Karlsbad.

At the present day, close to this spring along the sides of the River Tepl, clouds of steam arise from the ground itself. The rocky ground on which the bier stands (in the second medal) probably represents the bed of the Tepl, and the book (on the first medal) is probably an allusion to Beyer's book on the Karlsbad Springs.

Beyer's patron, Count Stephan Schlick, to whom he dedicated the treatise in question, was hereditary lord of Elbogen and doubtless owned Karlsbad itself; therefore, Beyer's book, by increasing the use of the thermal waters, was probably of some financial service to the Schlick family, who apparently had these commemorative medals made. They are, as already stated, made in the ordinary manner of the period, that is to say, cast and chased, probably the work of some goldsmith patronized by the Schlick family. Count Stephan Schlick himself was one of those who perished with their sovereign, King Louis II of Hungary (and Bohemia), in the disastrous battle against the Turks (under Soliman II) at Mohacs on Aug. 29, 1526.

It was by this Count Stephan Schlick and his brothers that the large silver coins were issued at Joachimsthal, called Joachimsthaler, from which the words thaler, daler, and dollar are derived.

The correct explanation of the types on these medals is chiefly due to J. de Corro, who wrote an account of them in a Karlsbad Almanac published in Prague in 1841.

There are some Greek coins of the fifth century B. C. illustrating a medical and hygienic attitude towards preventable disease and death. Two silver coins of Selinus in Sicily date from about 466-415 B. C., and commemorate the freeing of Selinus from some kind of pestilence, probably malaria, by the drainage of the neighboring marshlands. One shows on the obverse Apollo and Artemis standing side by side in a slowly moving quadriga, the former discharging arrows from his bow. On the reverse is represented the river god Selinus, naked, with short horns, holding patera and lustral branch, sacrificing at an altar of Aesculapius, in front of which is a cock. Behind him on a pedestal is the figure of a bull, and in the field above is a selinon leaf. Apollo is here regarded as the healing god who, with his radiant arrows, slays the pestilence as he slew the Python.

On the reverse the river god himself makes formal libation to the god of health, in gratitude for the cleansing of the waters whilst the image of the bull symbolizes the sacrifice offered on that occasion.

The other of these two coins shows on the obverse side Heracles contending with a wild bull, which he seizes by the horn and is about to slay with his club. On the reverse the river god Hypsas is seen sacrificing before an altar, around which a serpent twines. He holds a branch and a patera. Behind him a marsh bird is seen departing. In the field is a selinon leaf.

It is said of this piece that here, instead of Apollo, it is the sun god Herakles, who is shown struggling with the destructive powers of moisture symbolized by the bull, while on the reverse the river Hypsas takes the place of the river Selinus. The marsh bird is seen retreating, for she can no longer find a congenial home on the banks of the Hypsas, now that Empedocles has drained the lands.

It seems that the philosopher Empedocles, who at that time was at the height of his fame, put a stop to the plague by turning two neighboring streams into one. The Seluntines conferred divine honor upon Empedocles, and these above-described coins still exist as a wonderful monumental record of the events in question.

The study of coins and medals adds something to our incomplete knowledge of the early epidemics, not only with regard to dates and places, but also gives hints of what was at that time believed with regard to the nature, cause, and methods of preventing epidemic diseases.

However, it is only since the sixteenth century that the knowledge of the varied nature of epi-

demics were "pests" or "plagues." Smallpox was described by a few physicians in the eleventh and twelfth centuries, but became generally known only in the sixteenth century. Scarlet fever and measles were differentiated from smallpox in the sixteenth century, but not from each other till 1627. In 1700 the difference became generally known, and in 1790 was entered in the official statistics.

Bubonic plague was not known as a specific disease in the Middle Ages. Only the particular form known as the "black death" was accurately described and characterized by its incomparable mortality.

Typhus has been known since 1584; malaria was known as a specific disease in 1600; yellow fever in 1635.

As examples of Roman coins[3] alluding to disease, may be mentioned several gold, silver, and bronze pieces of about A. D. 250-254, having on one side the head of the emperor, with his name and title around the margin, and on the opposite side Apollo standing with a laurel branch in the extended right hand, and inscribed about the margin, "Apollo. Salutari."

These pieces are considered to have been struck under Valerian, and seem to refer to the so-called "Cyprianic Pest," which was brought out of Ethiopia in the time of the Emperors Hostilianus and Trajanus Decius, numbering the son of the latter among its victims. The character of this pest is uncertain, but according to the writings of St. Cyprianus, it resembles exanthematic typhus with diarrhea. Of the next plague, the "Pest of Justinian," 531-580, buboes and petechiæ are expressly mentioned. Contemporaneous coins bear no mark referring to this epidemic.

Of the second and most severe outbreak of epidemics of oriental bubonic plague there is no numismatic memorial. It is said that during that grievous period of the "Black Death," 1346, till near the end of that century the coining of moneys was, as in the whole Middle Ages afterward, limited to immediate necessities of commerce and daily traffic. Only after 1390 appeared some memorial medals. Even after this time some of the most important epidemics passed without leaving behind any reminders on the coins. Perhaps many of the skilled artists were the victims of the plague. Perhaps the misery and depression were so great and universal that no one had the zest or desire to make any such souvenir.

In later years, that is in the 16th century, coins bearing some reference to plagues become more numerous. The "Wittenberger Pest-thalers" furnish a good example of the period. They consist essentially of a representation of Christ on the cross, a marginal biblical quotation, at the foot of the cross, worshippers, and on the opposite side the prototype—the serpent as lifted up on the cross by Moses in the Wilderness. Here also is the appropriate scriptural quotation. The distinct biblical motive in these pieces indicate that they were not mysteriously working amulets, but pious faith tokens. In striking contrast to these were "Pestpfennigs," which appeared in South Germany about a hundred years later. Instead of the scriptural figures appear wonder-working saints—Benedict and Zacharia with their spells and exorcisms, "Get behind me, Satan," "Drink the poison yourself," etc. Here we have a transition, or a relapse, to the amulet and talisman against disease and other evils, which still persist in our present day as good-luck pennies.

Coins and medals relating to smallpox and inoculation are numerous, but do not appear till after the practice had become established. Although something of the relation between cowpox and human smallpox had been known for years, and Lady Montague, as early as 1717, had caused her son to be successfully inoculated and in 1720 introduced the practice in England.

The first medal that I have found record of as relating to this subject were struck in 1756. This was ordered by the Count Tessin in honor of his wife, who introduced the practice into Sweden by having her children inoculated. Medals were also issued in nearly every European country in honor of Jenner and others who practiced inoculation.

There are medals referring to cholera, some commemorating the appearance of Asiatic cholera in certain cities, as, for example, one with the inscription:

"Berlin von der Asia. Cholera Enricht, D. 31, Aug., 1831—

(Humble yourselves now under the mighty hand of God.")

"Demutiget Euch Nun Unter Die Gewaltige Hand Gottes."

And another by the citizens of Goldigen "in memory of Dr. Kupffer and Rv. Schmidt, helpers in need."

There were numerous amulets to be worn for protection against disease. One appeared in Munich in 1836, bearing on one side the inscription: "This medal is to be worn in region of the stomach next to the skin."

The history of the touch pieces,[4] that is, coins used in connection with the ceremony of touching for the cure of *King's Evil*, forms one of the most interesting chapters in the history of medical numismatics. King's healing of the Evil probably began with the first king; for just as disease was attributed to evil spirits, so has healing in all times and nations been accorded a divine parentage; and since kings ruled by divine right, their powers were divine, so, logically, healing was early included among other attributes of sovereignty. Phyrrus, king of Epirus, in the early part of the third century B. C., cured disease of the spleen by the touch of the patient with the great toe of his right foot. Vespasian restored sight to a blind man, and Adrian cured the dropsy by the touch of his finger tips.

Coins were first used not directly as touch pieces, but as alms, when King Guntran, during the plague in Marseilles, gathered the people into the churches and bade them offer prayers, vigil and fasting, while he himself distributed his alms broadcast, and apparently the plague was stayed.

The first reliable record in French or English history of healing by royal hands is four centuries later, when Robert the Pious (996-1031), who gave each of the sick folk with his own hand a sum of pence, touched their sores, and made the imprint of the sign of the holy cross. The household accounts of Edward I show numerous entries of monies disbursed to persons sick of the King's Evil —a pence per head.

The circumstances under which a certain coin—The Angel—became definitely associated with healing by the royal touch, are very interesting. Crawford credits Henry VII with being the first to initiate the practice of giving to each applicant a golden Angel, a current coin of the value 6s. 8d. After a century of comparative neglect it was he who restored the currency to its original dignity. With

no just title to the throne by descent, and too proud to accept the crown as a mere king consort, Henry spared no pains to fortify his position by other means. To throw lustre on himself as a scion of the house of Lancaster, he even sought to canonize the pious imbecility of his Lancastrian predecessor Henry VI. The requisite miracles were forthcoming, wrought at his shrine, but it is said that in addition to other difficulties Henry's thrifty soul shrank from the expenditure of 1500 gold ducats, the least amount that would satisfy the legitimate expectations of a horde of greedy menials on so important an occasion. Thus minded, it is no matter for surprise that he should have desired to popularize a ceremonial which, in the eyes of the common people at least, stamped him as being the Lord's annointed.

It is important to consider briefly the origin of the Angel, because in spite of the generally accepted tradition, it suggests the possibility that its bestowal on the sick may have been initiated by Edward IV and merely revived by Henry VII.

The Angel was first ordered to be struck by Edward IV in 1465 A. D., but it does not seem to have been absolutely minted until 1470. Its name, "Angel," is derived from the figure, on the obverse, of the Archangel Michael piercing the dragon, surrounded by the words "Edward, Dei Gra. Rx. Angl. Et Franc." On the reverse was a ship with masts in the form of a cross surmounted by sunrays and surrounded by the legend: "By thy Cross save us Redeemer Christ." This is the first appearance of this legend on the coinage, and suggests an association with the ceremony of healing. There is, however, nothing to confirm this conjecture in the original warrant for its minting. Henry VI, during his brief restoration, 1470-1471 A. D., Edward V, and Richard III, all issued an almost identical Angel. On succeeding to the throne, Henry VII in his first issue of 1485 A. D., retained the same Angel with the essential modifications, but also issued an alternative form, bearing the legend: "And the angel said unto her, Fear not, Mary, for thou hast found favor with God," taken from the Noble of Edward III, which was much used as an amulet in battle. The double issue shows that from the commencement of his reign Henry VII proposed using the Angel in the ceremony of healing and considered the legend selectd by Edward IV appropriate for such a use. In 1489 he issued a second Angel with trifling variations and again with the same alternative legends.

The quaint old herbalist of later days, Nicolas Culpeper, has a jibe at physicians anent the Angel, that, like Balaam's ass, they will not speak till they have seen an "Angel"—an habitual fee.

James I seems to have been the first sovereign to have Angels specially minted for healing in addition to those to be circulated as current coin.

A document in the Public Record Office dated April 10, 1611, is a warrant to the Treasurer and Under Treasurer of the Exchequer, and shows that healing Angels were specially minted to his order. The omission of the cross from the ship's masthead and also a part of the inscription, is said to indicate the sceptical trend of his mind. Charles I used Angels specially minted for the purpose. These Angels bore the legend, "The love of his people is the King's safeguard." After 1634 no more Angels were minted.

Medalets were also used as touch pieces, for there is in the British Museum a bronze medalet about the size of the touch piece of Charles II. It has on the obverse a hand stretched out over four human heads, with the words "He touched them," and on the reverse a rose and thistle under a crown, with the words "And they were healed." And in the accounts of the Wardens of the Exchange and moneys within the Tower 1625-1642, there is to be found under date of 1635-6, Allowance of a payment to the chief graver for making token for the healing of the King's Evil, and delivered to William Clowes, Sergeant Chirurgeon at 2d the piece: these numbering 5500.

It is said that with the accession of the house of Hanover, the ceremony of healing, as a prerogative of the Sovereign, died a natural death in England, George I having declined to touch a sick child, but the touch pieces continued to be used, being passed from patient to patient.

In France healing by royal touch was practiced by Charles X, who revived the whole ancient ceremonial at his coronation in 1824. But who shall say the custom has entirely passed away? There is at least one good old physician in an Eastern city who, after prescribing for his patient, sometimes remarks that he, during his summer vacation, visited a famous shrine in Canada—he brought back with him some interesting little medals—would the patient like to have one—"Take it, then, perhaps it will help you!"

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GENERAL PRINCIPLES TO BE OBSERVED IN BONE TRANSPLANTATIONS.

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1. Most scrupulous asepsis is an absolute essential to perfect success. To assure with the greatest certainty that no infection be introduced into a clean field at the time the graft is transplanted, the operator, assistants, and nurses should all wear rubber gloves and the same scrupulous Lane technique should be employed as in operating on fractures, i.e., nothing that has been touched by the hand should go into the wound or touch the graft and all instruments and gauze wipes should be handled by instruments alone. It is advisable not to tie vessels but to allow the artery forceps to remain hanging in situ during the operation, after which they can be removed with little danger of bleeding. All sutures should be tied by means of clamps to avoid touching the suture with the hands. Instruments once used should be laid aside and reboiled before using again. Sterile towels should be clamped all about the edges of the wounds so as to exclude the skin from the operative field. All this applies both to the site of the graft as well as to the field from which the graft is removed. A new knife should be used after the skin is incised and the old one should be laid aside. Tincture of iodine

may be applied to the cut skin edges immediately after incision.

2. In general it may be said that all sinuses should be perfectly healed for two or three weeks before grafting is attempted so as to prevent infection of the graft. While infection does not necessarily mean the death of the whole graft, yet the danger that it may entirely die is very great. Lewis has demonstrated in two cases that a transplant may be inserted into an infected area with the object of acting merely as a mechanical support to prevent deformity, even if it is necessary to remove it later. In some instances such grafts may remain viable and hasten convalescence.

3. The graft should be taken living from the same individual who is to receive the graft (*i. e.* an autoplastic or autogenous graft), if the best and surest means for success are followed. If this be not possible, which is very rare, then it should be taken from as near a blood relative as possible. Animal bone should never be used, because such a graft will be absorbed, owing to the changed serological and chemical relations. If taken from another individual, syphilis should be ruled out by the Wassermann reaction, as well as tuberculosis should be excluded.

4. A living graft should be transplanted *always* with as much periosteum covering it as possible. *Without* the periosteum the life of a graft has proved to be uncertain. Its retention will insure success if asepsis be attained and immobilization maintained. The question of just what the function of the periosteum is is an academic one. Practically the periosteum seems necessary for success in the greatest number of cases. Less important for success but still advantageous is to have endosteum also on the graft, for the whole of a thing is greater than any of its parts. The value of marrow seems to be small; according to some authorities, it is disadvantageous.

5. The success of a graft seems to depend upon a speedy adherence of the periosteum to the surrounding parts that the blood supply may be as quickly established as possible. Effused blood will prevent this adhesion, hence bleeding and oozing should be checked to the greatest extent possible. In addition a blood-clot about a transplant does not permit of a permeation of serum into the bone and also prevents vascularization. Lewis gives several instances in which hematomata caused absorption after graftings. On account of the subsequent oozing a tourniquet had better not be employed.

6. No drain should be used, since this predisposes to infection.

7. A motor saw is of inestimable value in bone-grafting operations. The best is Albee's motor saw made by the Kny-Scheerer Co., New York.

8. In taking a graft from the tibia, its crest should not be employed, for this is the strongest part of the bone and its removal will predispose to subsequent fracture. Before this was appreciated, McWilliams had two fractures of the tibia from whose crests grafts had been taken, while other fractures have been reported, thus, Dyas reports such a fracture, also Rhodes, while Morris reports two cases. At a recent meeting of the American Roentgen Ray Society six cases were shown of fractures of the tibiæ following the removal of bone for transplantation. If the crest is used the limb should be strengthened by a plaster splint for several months after the transplantation, as new bone in such a defect is but slowly reformed.

9. All foreign non-absorbable material, wires, nails, celluloid, horn, rubber, etc., should be avoided as implants unless under very exceptional conditions. Encircling wires will erode the bone and a fracture will result. These non-absorbable foreign bodies tend to irritate, if not invite suppuration, and often produce sinuses which will usually require their removal to cure such sinuses. Chromic gut or kangaroo tendon should be used to fix the graft in position.

10. When the head of the humerus, or radius, or femur is fractured and dislocated and the joint is opened, then the head should be replaced and attached to the freshened lower fractured surface, even though the head be dead, provided it is still aseptic.

11. A graft increases in size according to the demands put upon it by the organism. Experience has taught that it is unnecessary to laterally fill up a defect completely with a graft. It is essential to fill up a defect vertically, leaving to nature to do the remainder.

12. After transplantation absolute immobilization is essential for success. This should be maintained for at least three or four months, or longer if roentgenograms show its necessity.

13. The periosteum of the bone into which the graft is inserted is an important element and should be preserved and brought into contact with the periosteum of the graft or over the ends of the same, if possible.

14. The inlay graft in the treatment of fractures is to be preferred theoretically to the intramedullary splint, since endosteum comes in contact with endosteum while the periosteum of the graft can be sutured to the periosteum of the bone. A much more successful method of treating non-union in fractures than a Lane plate is the bone graft. The intramedullary splinting has, however, given good results in the hands of many surgeons, particularly Murphy.

15. Transplantation of long bones with their joint surfaces has been successfully performed, as has been the case with half joints and with whole joints in a few instances. In most instances, however, the transplantation of joints has not been better in results than those accomplished by resections.

16. A suggestion by Huntington seems valuable. He has found that the periosteum of a graft may be preserved in situ during operation by wrapping the fragment closely with zero catgut. Before closing the wound the strands of gut are divided and removed or cut short.

17. In operating on comminuted fractures, whether simple or compound, replace the fragments, if possible, in their original positions. If this be not possible, fragment the pieces, retaining all the periosteum possible on the fragments and replace them about the fracture spot.

18. The site from which a free graft may be obtained seems to depend upon the individual preference of the surgeon. The majority seem to have used the tibia, while the fibula has been preferred by fewer others. In a few instances grafts have been taken from ribs, clavicle, scapula, crest of the ilium, and bones of the hands and feet.

19. Do not transplant a graft into the midst of dense connective tissue, since the nourishment of the graft will suffer. Excise the connective tissue and check the bleeding by packing before inserting the graft.

20. The bed into which the graft is to be trans-

planted should be prepared first. Then the graft is obtained and placed in its new bed just as quickly as possible that its cells may not suffer from lack of nourishment for any longer period than is absolutely necessary to make the transfer. In order that blood and serum contained in the graft be not washed away, theoretically it were more scientific not to immerse the graft in salt solution, but to wrap it in gauze wet in salt solution if there is to be any delay in its transfer. This will prevent the drying out of the graft by evaporation.

33 East 63d Street.

STATE MEDICAL SERVICE AS CONTRASTED WITH THE PANEL SYSTEM FOR THE CARE OF INDUSTRIAL WORKERS.

By A. C. BURNHAM, M.D.,

NEW YORK.

When a popular English dramatist, writing a decade ago, prophesied the State control of medical care for the individual, his statements were made the butt of many derisive remarks and, as it happened, the comments of the medical profession were the most bitter.

It is a well-recognized fact that the physician is a member of one of the most, if not the most, conservative of professions. Only a short résumé of medical history convinces one that in the medical profession there is an overdeveloped sense of conservatism, not to say obstinacy, which makes its appearance upon the introduction of radically different methods of treatment and new social developments. From a medical point of view this is perhaps right and proper, for it is only by this spirit of conservatism that useless, and in many cases harmful, methods of treatment are kept within reasonable limits, and the exploitation of the public by means of spurious "cures" is made more difficult. If in this process the advancement of medical science is somewhat delayed the final results are probably beneficial.

In respect to the socialization of medical service, however, the situation has been handled much less satisfactorily. The medical profession is today in many respects where it was twenty years ago. While science has progressed, the economic aspects of the practice of medicine have remained practically stationary, and it is only within the last few years that the social and economic aspects of medical service have begun to impress themselves upon the profession in general.

With the conservatism for which it is noted the profession has combined an ignorance of non-medical affairs which is inexcusable, the result being that they now find themselves face to face with a condition which is easily comparable with the State control of all medical service as foreseen by the English dramatist and which is called "sickness insurance," or better, "health insurance."

In Germany more than thirty years ago the insurance of the industrial worker began with workman's compensation insurance for industrial accidents and the limits of this insurance have gradually increased until the benefits are now open to almost every wage earner in the entire country for every case of accident or ill health occuring during the period of employment. It includes not only the wage worker but his family and dependents as well.

In England the Insurance Act has been in force since January, 1913, nearly 15,000,000 persons being included under its provisions. Upon its introduction the British Medical Association accepted the terms of the act and in July, 1913, it was estimated that nearly 20,000 physicians (about 90 per cent) were employed by the State in the administration of the law. It has been estimated that over $20,000,000 was paid in fees to physicians on the panels, the average amount being a little over $1000 to each physician.

If a similar law is to be enacted in New York State, and such a law has already been introduced in the State Legislature, it is evident that before the medical profession undertakes the State service it would be wise to examine into the relations between the physician and wage earner under the English act, thereby attempting to settle upon the plan adapted to the best interests of those parties most concerned, namely, the physician, the insured employee and the State.

With the introduction of the act in England physicians who were willing to treat patients under the act were placed upon a panel and patients were allowed to choose their own physician, the proviso being made, however, that the choice must be made for a period of not less than one year. Physicians are paid a per capita fee of seven shillings a year, this being understood to include ordinary medical care but not to include surgery or any special treatments. No limit is placed upon the number of patients on a given physician's panel, nor is any limit placed upon the amount of attention which the insured may demand.

Recent records are unreliable for purposes of forming an opinion as to the working of the law, principally because of the war which has dislocated industries and thrown the medical profession in confusion since August, 1914. At that time the act had been in force nineteen months and numerous articles had appeared in the *British Medical Journal* in praise and criticism of the law. At that time the discussion centered almost entirely upon the determination of the best system for the care of the insured.

The panel system had been found wanting and something more was required to accomplish the desired ends. Immediately two opposing camps sprang up; those who believed in the retention of the panel system—with improvements and additions it is true—but in the main, the old panel system; and those who believed that the best ends would be served by the inauguration of a State health service along the lines of medical service in the army or navy.

Sir John Collie,[1] a strong advocate of a system of State medical service, says in part: "Under the panel system many physicians are overworked. One physician stated that during one week he treated 320 people for colds. This was less surprising when it was shown that this same man with his five partners had 7000 workmen on their panel. Dr. Cox stated that during the year 65 to 70 per cent of those on the panel make some call upon their physicians. A Dr. Salter stated he saw on an average of 168 patients a day. Allowing nine hours a day, this worked out 3¼ minutes per patient of which 1¼ minutes were taken up in clerical work. The patients were obliged to wait an average period of over two hours."

It is apparent that a system such as the above is far from ideal. It was believed, before the

1. Collie, Sir John: A State Medical Service vs. A Panel System. *British Medical Journal*, August 8, 1914.

panel system went into effect, that because the panel included almost all of the practising physicians, the workmen would be more or less evenly divided among the panel members. This, however, has not proven true. Physicians began to be divided into two classes, those who, so to speak, specialized in panel cases, and those who were willing to undertake little or none of the insurance practice. The inconveniences to the physician were many. The clerical work was considered excessive, the work was exacting, and vacations were difficult to secure. When treatment is contracted for during the entire year for less than two dollars per capita it becomes a hardship to devote the required time to this type of practice unless the number of patients under the physician's care is sufficient to guarantee a yearly income of at least fifteen hundred or two thousand dollars. That is to say, it may be very difficult to secure treatment for fifty or a hundred patients, even when they can be easily handled in addition to a physician's regular private practice, while it is comparatively easy to secure a man who will devote his entire time to the care of this type of practice when the quarterly check amounts to five or six hundred dollars.[2]

An additional disadvantage of the panel system is seen in the giving out of disability certificates. Physicians become very lax in this respect and a certain type of workmen flocks to the man who has the reputation of giving many disability certificates. To quote further from Sir John Collie: "It has been said by one who is a strong advocate of the panel system that it is good because 'medical men compete with one another for increasing remuneration by pleasing the patient which makes the administration of the act so difficult.'" Once inaugurated in America, the panel system will find as many adherents as it has found in England, and it will have as many, if not more objectional features.

It may be, and indeed has been, urged that a State medical service is socialistic in character. This may be true, but, if it is, then the system of State insurance is socialistic, and so are many of our modern institutions. We have to do to-day, not with scholastic discussions of what constitutes a socialistic medical service, but rather what type of service is best adapted to the so-called socialistic institutions of the present. State health insurance is surely destined to a trial in the United States before many years have passed, and when it does come it would be well to find the medical profession prepared.

The profession is handicapped by division in its ranks and by lack of organization in dealing with economic problems. The point has not yet been reached where a State medical service for the entire population is either wise or advisable; but the nationalization of the medical services to the industrial army is urgently called for. Such service should include, in order to make an arbitrary boundary, all wage workers earning less than one hundred dollars monthly. Whether the medical service should be whole-time service exclusively, or whether it should include part-time workers in addition to the whole-time staff, can be decided later.[3] "There is, however, one sine qua non in such a service," writes Sir John Collie, "and that is the medical officer must be well paid, have a good position, and the number of patients allotted to him must not be excessive. I have yet to learn that salaried whole-time medical officers of health are not enthusiastic, progressive and capable and that the fact of their not being paid by fee has militated against their attaining their deservedly high position. The salaries for whole-time services would be graduated and there would be as in the army and navy, positions of increasing responsibility and remuneration." He further outlines the State service as having facilities for laboratory examinations, X-rays, etc. Consultants and hospitals would be easily available. The service would entail regular hours and regular holidays, more time for the enjoyment of the home, more time for postgraduate study, and a permanent freedom from anxiety caused by fluctuations of income; in fact, entire freedom from the commercialism of the present system.

Even were these facts given under a lesser authority than the above they would be striking enough to demand consideration, but they are emphasized because of their potency rather than because of their origin. They represent the trend of thought in a country where state insurance under the panel system has had a trial of more than a year, and the result is unsatisfactory to all parties concerned. The patients are dissatisfied because the service is inadequate; the physicians are dissatisfied because the pay is small and the clerical work is arduous; and finally, the State is dissatisfied because the expenses are high (especially for drugs) and because of the belief that the periods of disability are unduly prolonged. To the outside observer it is apparent that science is not being advanced to the same extent it is in the army medical service or as it is in the very excellent medical services of the Board of Health in most of the larger American cities.

If changes in medical customs and practices are wise and advisable, it is desirable that the suggestions for such changes come from, rather than be forced upon, the medical profession.

In an address before the Associated Physicians of Long Island, Rubinow states the whole situation clearly and concisely, saying in reference to social insurance, "In this the medical profession is hopelessly behind the times. In its worst phase private medical practice is medically from twenty-five to fifty years behind the present status of medical practice and surgical skill. In its best phase it is a luxury which, like automobiles and private yachts, can be purchased only by the selected few. The socialization of medical service has been woefully delayed as compared with other functions of lesser importance, but at last it is on its way. The purpose it must accomplish is twofold—improvement in quality and cheapening of cost. These purposes cannot be easily accomplished in the face of obstinate opposition from the medical profession."

It were wise if the profession as a whole were more interested in the subject of medical economics. Are we really as scientific as we claim to be if we allow many of our efforts to go to waste because of lack of organization? Concerted action and co-operation will do more to advance medical science and the wellfare of man than will even the best type of individual effort. Consequently it is advisable that organizations composed of medical men throughout the United States combine to lay

[2] Sir John Collie mentions one physician who had 2,800 patients on his panel and who worked from 9 A.M. to 11.30 P.M. 365 days in the year.

[3] The writer has published elsewhere a plan for a State medical service which he believes to be open to few objections.

before the law makers what we, the profession, consider the ideal provisions for the medical administration of an industrial health insurance law.

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SPEECH, ITS CULTURE AND REFINEMENT; WHAT IS DONE FOR IT IN HOLLAND.

By N. J. Poock van Baggen,

The Hague, Holland.

My readers, did you ever meet with that certain handsome young lady, dressed by a first-rate Paris dressmaker, smart and "Ciln soignée" from top to toe, who moves about so gracefully and looks so extremely distinguished and refined? Fascinated by so many charms you are only too happy to obtain an introduction and to be allowed to speak to her. When she opened her lips to respond to your modest flattery, I noticed a sort of bewildered look in your eyes, which bye and bye changed into an ironical smile. What was the matter—this outwardly distinguished and refined young person betrayed only too distinctly her low origin both by her voice and accent.

Poor young lady! She had spent so much for her general refinement and culture, and only forgot an essential matter: the culture and refinement of her speech.

Sometimes you go to church, I suppose. Going home you want to think over the beautiful words which the clergyman uttered, but it is too much for you. You got a bad headache while listening to the sermon. You overstrained yourself in the effort to understand the speaker, and you came to the conclusion that the sermon failed to make the desired impression because of the fatiguing resonance of the clergyman's voice and his want of distinct articulation.

And the clergyman himself . . . He did his utmost effort to make himself understood in the spacious church; but before he had finished half of his sermon, he had the desperate feeling that his voice was losing its clearness and became hoarse and indistinct. He came home with a sore throat and the unpleasant feeling that his audience had not come under the spell of his eloquence. Yet he had carefully meditated his subject and his sermon was well prepared. He only never thought of training and preparing his voice for its strenuous task. And this is the same case with ever so many speakers. How often does it not occur that, in the midst of an electioneering campaign, the candidate is forced to renounce speaking at a meeting because his voice has given out entirely. And no wonder! What fighter, gymnast, pianist, violinist or any other performer will go in for a performance without having thoroughly prepared and trained his muscles by appropriate and efficient exercise? They know too well that their success depends on the readiness of their muscles for the task. While in the United States, I noticed that the public speaker, as a rule, never thinks of getting his voice ready for the work.

The American speaker does not seem to realize that the voice and speech is the result of the action of a complicated and delicate set of muscles, which need more than any of our muscles to be properly trained when we demand a great exertion of them. Yet the speaker who masters the right employment of the voice will meet with the pleasant experience that his voice lasts till the end of his task. Serenely, in full possession of his faculties, he faces his audience, who follows with pleasure his intelligible and comprehensible speech.

It is a matter of course that the training of the voice includes its refinement. Vicious accents, as for instance the nasal twang, disappear altogether or are diminished sensibly when the muscles become more supple and tractable by their exercise.

How do we train the voice? I mean the fundamental training, which has in view the exercising and strengthening of the muscles used when speaking and singing and the furthering of the harmonious co-operation of the different groups of muscles.

When we observe a speaker or singer, we notice that, before he begins to produce a sound, he inhales more or less deeply. This inhalation procures him the provision of air which he uses as the motor power to put his instrument into action. We can compare this inhalation with the work which the bellows blower does for the organist. Without the necessary provision of air the organist is unable to play his instrument. Only after the bellows are put in action and he has the management over a sufficient quantity of air or, what is here the same, a sufficient quantity of motor power he can draw sounds from his instrument.

Exhaling, the speaker or singer uses this provison of air to make the tented vocal cords vibrate. This vibration engenders the sound, which we call "the voice." From the voice box the voice or sounding breath is driven into the pharynx, the mouth, and the nose. Those parts assume by means of the articulating muscles the different attitudes and shapes necessary for the formation of vowels and consonants, which as such leave the mouth and reach our ear.

The sonorous vibrations of the voice cause the co-vibrations or resonance from the partitions of the vocal instrument, i.e., of the thorax, the larynx, the pharynx, the mouth, and the nose with its cavities. This co-vibration or resonance gives the tone, its characteristic quality or "timbre," its brilliancy, and its fullness.

From the above results we learn to distinguish in the speaker and singer four elements: (1) A motor element (the breath); (2) a vibrating element (the voice); (3) a forming element (the articulation); (4) a resonant element (the co-vibration of the walls of the vocal instrument).

Thus for the training of the speaker and singer we consider in the first place the breathing. If the breathing is faulty and weak, it is corrected and strengthened by appropriate exercises, after which the pupil is taught how he can best use his breath on behalf of his voice and articulation.

Secondly, the articulating muscles are examined and the different vowels and consonants reformed so far as necessary. Nearly at the same time the amelioration of the action of the vocal muscles is undertaken; while finally the resonant element is developed.

Normal speech and singing depend on the faultless action and the exact harmonious co-operation of the four elements. This co-operation is so strict that even the least deviation of one of the parts is of direct influence on the other elements.

A faulty articulation, for instance, impedes the action of the vibrating element and requires a greater effort on the part of the breathing muscles; while, on the other hand, a wrong use of the breath thwarts the distinct pronunciation of the vowels and consonants as well as the voice production. And also a non-developed resonance or

gaps in this element are an important impediment to the clearness and purity of the voice.

Very many times I have been asked in America if, when I speak of the training of the voice, it is elocution that I mean.

It is not. The training of the voice precedes the lessons of the elocutionist. This training is given by what we call here the "leeraar in het methodisch spreken," which means: "Specialist or expert in normal speech and voice hygienics."

The sphere of action of the expert implies not only the training of the healthy voice but also the treatment of all the voice afflictions which appear after serious diseases of the throat such as diphtheria, angina, etc., and after those affections caused by the too general misuse of the voice as well as by speakers as by singers. Most of the time the expert is also specialist for correcting speech impediments and for gymnastics of the respiratory organs.

The expert works in combination with the medical specialist in diseases of the throat and respiratory organs. No serious expert begins his work before the patient has gone through a judicious medical examination.

The studies of the student-specialist for voice hygienics include the exact anatomical knowledge of the vocal instrument, the pathology of the throat and of the voice, the diagnosis, the modes of treatment, and the application of the exercises in the different cases, tone production, acoustics, and phonetics. If he goes in for the breathing and the speech impediments, he studies also the diseases of the respiratory organs and the central and peripheral speech affections, their origin and treatment.

With regard to the treatment of the voice, affected through misuse or illness, I can say that I have found it nowhere so complete as in Holland. During my investigations regarding the care for the voice and the culture of speech in the different countries, I have been astonished to find that in some countries this special treatment is altogether unknown, as for instance in France and in the United States; while in other places, as in Berlin, it was introduced by Dutch specialists and received with general appreciation.

Since the last twenty years the culture and refinement of speech in Holland has largely improved. The conservatories for singing at Amsterdam and at the Hague, as well as the school for actors and actresses have long had their own expert specialist and every pupil is obliged to go through a severe treatment for general voice hygienics and purification of the accent.

Particular care is also given to the training of the voice and the refinement of the speech of the teachers. To every Dutch training school for teachers is attached nowadays a specialist for voice hygienics who is salaried by the government or by the municipality to which the school belongs. Moreover, in the large towns, as in the Hague and Amsterdam, the municipality has appointed a specialist for voice hygienics, who gives courses free of charge to the teachers of the municipal schools. Those courses were started to combat the throat disease (the same as clergymen's sore throat) to which the teachers, in the exercise of their profession, are so frequently subject.

When the teachers suffer from the throat the visiting physician of the school examines them and, if necessary, sends them to the courses for voice hygienics. For the teachers with a healthy voice those courses are not obligatory but on his (or her) demand, he (or she) can follow the course. Generally all the teachers of the municipal schools take a course because it gives them a better chance for an appointment and for promotion when they have a well-trained voice and refined speech.

It is a matter of course that those trained teachers exert a favorable refining influence over the speech of their pupils. I have often noticed that the young teachers, who have followed the course take pleasure in correcting the speech and purifying the accent of the children, who are under their care and demand from them a faultless pronunciation.

Besides the care for the voice and for the refinement of the speech in general, the speech defects are specially attended to.

In every town of some importance there is nowadays a specialist for speech impediments, attached to the public schools and salaried by the municipality. In the large towns, as Amsterdam and the Hague, the specialist has a staff of assistants. They visit the public schools regularly and at the request of the teacher examine the pupils who suffer from any speech defect. After the diagnosis is made the children go to the municipal institution, where they receive free of charge the treatment which their case demands.

Some years ago the specialists for voice hygienics in Holland founded the Dutch association for the speech culture, which meets regularly. In those meetings special cases are discussed, and in particular the measures to be taken to further the general culture and refinement of speech are advocated.

The influence of the refinement of speech is not merely external. I have explained above how speech is produced by the action of some groups of muscles. Those muscles are stirred by the vibration of the nerves. They vibrate under the impulse of the action of the brain, which is the utterance of the soul. Thus speech comes from the soul to go to the soul.

And so the culture and refinement of speech mean the smoothing down of the obstacles which hinder the free communication of the souls.

The culture and refinement of speech mean the furthering of the better understanding between mankind; and that better understanding between mankind is what we require nowadays, essentially; there is no doubt about that.

Plaats 16.

MEDICAL EDUCATION IN CHEMISTRY.

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That the average physician possesses but little if any applicable knowledge of chemistry is lamentably self-evident. To one trained in chemistry, and especially trained in the applicability of chemistry to medicine, this general lack of information on a subject so vital to efficient understanding of the reactions of the body is prominently apparent.

This elemental deficiency in education is shown by the absence of reported productive discussion, in either council or publication of the needs of the physician for a well-grounded knowledge in the application of the principles of chemistry to medicine.

Personal conversation with several physicians of more or less successful practice has invariably brought the information that they "never knew chemistry and never could understand it anyhow."

This lack is also obvious when one glances over the examination questions asked in chemistry by various State Boards. To what practical use can a physician put the formula for common salt? Why should he know a test for ferrous salts? Of what value to him is the knowledge of the names and structures of three hydrocarbons? This is high-school chemistry and belittles the value of the science in the eyes of the young graduate instead of showing him that there is a definite correlated knowledge of chemistry which he is expected to know as capable of direct application by his profession.

Then turn to the requirements of the Association of American Medical Colleges as set forth in their Constitution and By-Laws. Here again lack of scientific viewpoint obstructs the vision and confuses the desired end, due in its entirety to improper conception of the science and hence inability to so plan a curriculum as to bring out the coördination necessary for just appreciation. The unnecessary and pedagogical redundancy requiring 192 hours of premedical training in college grade chemistry (not to mention that required in high-schools), presumably inorganic and organic, and then requiring 180 hours of inorganic and 75 hours of organic chemistry during the medical course is so obviously an example of the lack of perception of values as to require no further comment. And then to top it off only seventy-five hours are given over to instructing medical students in the applications of chemistry to medicine, that is, physiological chemistry.

This, however, does not constitute or imply a lack of appreciation of the value of the science of chemistry to medicine. In fact the mere inclusions of the subject in both premedical and medical courses show that it is a valued adjunct to the profession. The very requirements of the Association of American Medical Colleges show this appreciation, not only by the generous time alloted to the subject, but also by the equipment demanded and the fact that research is encouraged and expected.

The constant occurrence of articles in the scientific journals founded on chemical studies of both normal and pathological organisms; the establishment of laboratories in hospitals for the chemical study of the cases at hand and the routine analytical procedure as follow-up of the treatment; the employment in these hospitals of chemists trained in medical research; the trend of medical schools toward preferring men trained in the science and especially in the practical applications of the science to medicine, to instruct their students, rather than employing as teachers practitioners whose only excuse for teaching lies in the desire to be connected with a medical school and thus enlarge at one and the same time their prestige and their practice; the establishment by medical schools of laboratories for research along chemical lines and the requirements that the instructors be capable of contributing something to the advancement of medicine; the many institutions devoted to medical research alone; the eagerness with which the average physician grasps these discoveries and applies them to his experiences, especially at present evident in the use of the glands of internal secretion; all of these and many more bear fruitful evidence that in spite of the general lack of definite information there is specific appreciation of the value of chemistry to medicine.

Now, what are the causes of the general lack of knowledge of the practicability of chemistry as applied to medicine?

In the first place the study of biochemistry or the chemistry of the living organism is comparatively recent. That is, the accumulation of evidence of a chemical nature relating to the processes of life has not been sufficient, until within the last few years, to warrant the application of the principles evolved. Consequently the training of medical students has been along the lines of straight chemistry with but little, if any, practical application, and the subject was looked upon, and justly so, as a waste of time. It is only within recent years, and even then at only a few of the more advanced medical schools, that advantage has been taken of the progress in chemistry in its use for medicine and the subject given its full value. Hence we have the majority of physicians possessing a false conception of the science and exerting their influence upon the minds of the present-day medical student to make difficult the instillation of its practicability.

Moreover, the insufficiency of the premedical training along the lines of definiteness, adds to the difficulties of imparting understandable information. This is encouraged by the lack of scientific attitude and understanding in the profession generally.

Chemistry as largely taught either is in the hands of some practitioner whose chemical training has been received from other similarly situated individual, or else is in the hands of a chemist whose training has omitted the medical viewpoint. The former lacks chemical understanding; the latter, medical understanding. From the first man the student gets neither chemistry nor its application. From the second man the student gets chemistry but no practical usage.

Another cause for the present day inadequacy of chemical knowledge is the type of questions asked by State Boards. By the very fact of their impracticableness they cast their shadow upon the subject and thus oppose a barrier to progress by removing incentive. As the chairman of one State Board said to me recently, "Chemistry is the last subject to be given out, and it is always shoved off on someone because no one wants it." And I say no one wants it because the average physician has no understanding of its applicability to his profession.

Furthermore, there is a certain group of physicians who, having specialized in one branch of medicine, have had no opportunity to keep up with the progress made in other lines, and because of their lack of preparation and improper instruction fail to see the importance of chemistry. These men, otherwise broad-minded, by derogatory statements exert an inhibitory influence upon the minds of the younger and less experienced men, who, revering the older and wiser heads, imbibe their point of view and bring to the subject a wholesome contempt that is the part of youthful prejudice.

The sum total of lack of preparation, impractical instruction, impractical State Board examinations, and unappreciative critics has tended, and at the present time tends, to bring disrepute upon a subject that, if properly understood, is an invaluable practical asset to the physician.

A little intensive thought will make clear why a greater appreciation is due the subject, why a better understanding is necessary, and how much the medi-

cine of to-day is dependent upon the fundamental principles of chemistry.

Anatomy teaches how the body is put together. Physiology teaches how it works; but Biochemistry teaches why it works. The *how* is only controlled by an understanding of the *why*.

The body, composed as it is of an indefinite number of units called cells, is a vast chemical factory each unit of which has a purpose of its own and the successful carrying on of whose function is governed by the laws of chemical reaction. It is thus obvious that a knowledge of the *why* of bodily activities is ultimately grounded upon a knowledge of the principles of chemistry. And as both structure and mechanism are but supplementary to motive power, so a knowledge of chemistry is a prime essential to the understanding of the living organism.

The maintenance of life depends upon an adequate supply of energy-producing material to the body and the removal of the products of its combustion. Hence a correlated knowledge of the chemical nature of what goes in, what changes it undergoes during its passage through, and in what forms it is excreted is essential to the understanding of bodily processes. Without this information the physician lacks just as much and even more of being adequately prepared to deal with the human body as if he knew nothing of anatomy or any other kindred subject.

If this were all it would be sufficient to command not only a deep respect and appreciation of the value of chemistry to medicine, but to also show the necessity for a greater understanding. But this is not all.

The work of Dakin on body oxidations, of Knoop on fat decomposition, of Moore and Rockwood on fat absorption, of Jones on nucleic acids, and of Folin on protein metabolism are but a few of the innumerable examples that could be cited wherein Biochemistry has opened up new views for medicine and afforded a working basis for future treatment that can be equaled by no other science.

The development of microchemical methods for the analysis of urine, blood, and feces has put into the hands of the physician rapid, easy, and accurate means for studying body processes and following through pathological progress to its completion. Combining the use of these methods with an understanding of the causes giving rise to the results obtained affords the clinician invaluable diagnostic measures. It is accordingly obvious that those schools whose aim it is so to train their students that on entering the practice of medicine they shall be equipped to take their place in the front ranks of their profession, must take cognizance of the value of biochemistry and so incorporate it into their course of study that it becomes second to none in importance.

Admitting then that the average physician does not understand the practicability of chemistry for his profession; that present methods of curriculum planning fail to allow opportunity for the development of this understanding in the medical student; that the present type of State Board questions in chemistry fail to demand a careful knowledge; and that in view of the usefulness of the science to medicine radical reformation is needed, the following suggestions are offered for consideration:

The premedical requirements should be definitely outlined. The progressive medical schools of this country are requiring of their students a two-year college course as a premedical requisite. Without undue elimination or too strenuous endeavor on the part of the student the following courses could well be required before granting admittance to medical schools: One year in general inorganic and physical chemistry, one year in organic chemistry, and one half-year in quantitative analysis. With a foundation of this sort any intelligent medical student is ready to commence the study of biochemistry and is capable of understanding its applications. The requirements of the Association of American Medical Colleges as regards chemistry in medical schools should be changed.

With a foundation as outlined above, or even with the present requirements of the Association, it is not only unnecessary but even a waste of time to include in the medical curriculum inorganic and organic chemistry. It is a waste of time, because in the first place the student is supposed to have had these subjects before entering upon the study of medicine, and in the second place because the purpose of the medical school is the study of the human body. Nay, more, it is a wicked waste of time. For here we are clamoring for a fifth year of medical training and claiming that four years is too short, and then valuable time is filled up with repetition. Change this, eliminate the elementary branches in chemistry from the medical curriculum and apply the time thus released to the study of biochemistry.

This is not a plea for more time for chemistry in the medical schools, but is a plea for more time for its practical application and the elimination of subjects properly supposed to be taught in the premedical course.

Concomitantly with these changes there must come a recognition of the responsibilities of the State Board Examiners as regards chemistry. They must realize that what a student knows is what he thinks he is going to be asked on examination, and not what his instructor has tried to teach him. From the standpoint of the teacher this is pernicious; but how eradicate it? We cannot teach all men the value of high ideals. We can tell the student that the deeper his knowledge goes the better service it will be to him. But with all the present day struggle of competition, the rush and hustle, and the crowded curriculum, the average medical student has but little inclination to dig deep and find the sweet water of knowledge. Rather he is so thirsty, so hurried, that he drinks from the braken surface pool of information, content in having assuaged his thirst for the moment, not considering that the more wholesome water of learning lies deeper, only awaiting his efforts to obtain it.

It is not a difficult thing to set a high standard of questioning that will be reasonable and at the same time demonstrate the practicability of the subject. For instance, why not find out if the young doctor knows the sources of the acetone bodies in the blood and urine, or why gelatine is an imperfect food, or what becomes of the nitrogen we eat, how and in what form it is excreted? Even the physical chemistry of indicators as applied to the determination of urinary acidity would not be too intricate. Nor to know something of the mechanism for the maintenance of the neutrality of the blood. Should he not know that cane sugar is not utilizable as a food when injected intravenously and why?

Why not be logical? Why not look the proposition squarely in the face, admit the incongruities, and eradicate the present absurd condition? Why continue to hamper the future medical student by a dogmatic clinging to moss-grown ideas?

Let the attitude of the physician be to *cure*, not merely to relieve. And just as the understanding of the *how* and the *why* of the cure rests upon a knowledge of the reactions of the body, and as this knowledge is firmly based upon a knowledge of chemistry, so does the efficient education of the physician depend upon an efficient instruction in the applicability of chemistry to medicine, which can be obtained only by a broad-minded acknowledgment of the present systemic deficiencies and an earnest attempt to bring about the necessary changes.

Medicolegal Notes.

Use of X-Ray in Diagnosis.—In an action for malpractice it appeared that the plaintiff fell off a ladder about 15 feet, injuring his ankle. He was given a hypodermic injection to relieve the pain, taken to a hospital, placed upon an operating table, and the defendant and another doctor made an extended examination of his ankle, spending over half an hour in doing so. They diagnosed the injury as being a severe sprain. The ankle was placed in splints and the patient placed in charge of a nurse, who was instructed to pour liniment upon it. The case was then given over to the defendant. Three or four days after the injury the splints were removed, the foot placed on a pillow with a sandbag to support it, and the nurse was directed to massage the ankle and move it as much as the patient could stand. This was done each day. He remained under the defendant's care in the hospital 17 days. At the time he left he was unable to bear his weight upon the injured foot without pain or to walk without crutches, and finally the foot remained fixed in such a position that the front part of the foot was left at a downward angle from the normal position. Two months after the injury he suggested to the defendant he would like an *x*-ray taken. This was done by another doctor. It disclosed that the fall had caused a slight impacted fracture of the forward part of the astragalus and a rupture or raising of the periosteum on the posterior portion of this bone. A fluid exuded which afterwards hardened into a bony substance and formed a wedge between the articulation of the tibia and astragalus, thus causing the abnormal position of the foot. Four physicians were called by the plaintiff. One of them, who took the *x*-ray pictures, testified that an *x*-ray picture taken at or about the time of the injury would not have disclosed the condition with reference to the periosteum or the effusion of the fluid; that the proper treatment for the impacted fracture would have been to keep the foot at rest by means of splints for six or eight weeks. He also testified that if, when the defendant examined the plaintiff's ankle and found swelling, mobility, no displacement, no dislocation, and no crepitation, his diagnosis in the first instance that his injury was a severe sprain would have been the diagnosis of an ordinary practitioner of the allopathic school of medicine in Omaha about that time, May, 1912. The other three witnesses called by the plaintiff testified substantially to the same effect, though one or two said that if the patient would stand the expense he would, in case of doubt, or under such circumstances, have had an *x*-ray picture taken. None, however, testified that this was the usual method. It was held that the testimony did not establish that the failure to have an *x*-ray picture taken as an aid to diagnosis constituted lack of reasonable care and skill under all the surrounding circumstances, and that if the plaintiff's case rested upon the claim of negligent diagnosis alone the evidence would not support a verdict in his favor.—Van Boskirk v. Pinto, Nebraska Supreme Court, 155 N. W. 889.

Prescriptions of Unusual Amounts of Narcotics.—The federal district court, N. D. New York, holds that under the exception in Section 2 of the Harrison Narcotic Law of prescriptions by physicians, a physician who issues a prescription for an unusually large amount of the drugs, which prescription shows on its face that the quantity prescribed is unreasonable and unusual, or a dealer who fills such a prescription or order issued by a physician, is guilty of an offense, unless the prescription indicates the necessity for such an unusual quantity.—United States v. Curtis, 229 Fed. 288.

Construction of Harrison Narcotic Act—Sending Medicine Through Mails.—The federal district court, S. D. Ohio, holds that, while the Harrison Narcotic Act of December 17, 1914, permits a physician in the course of his professional practice to dispense and distribute the mentioned narcotics to a patient by whom he is employed to prescribe, without being subject to the prescribed regulations, although he does not personally attend the patient, the act must be construed with reference to the known usages and modes of practice in the profession in which the prescribing for patients without personal examination is the rare exception and not the rule; and under the provisions of Section 1, requiring the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, to make all needful rules and regulations for carrying the provisions of this act into effect, the commissioner has authority to prescribe what shall constitute "personal attendance" and "professional practice" by a physician within the meaning of the act, and a regulation which denies the right of registration and exemption to one who, although a licensed physician, does not see most of his patients, who bases most of his prescriptions on their written statements sent to him through the mails, and who prescribes the same remedy for all alike, is within the power conferred and valid.—Tucker v. Williamson, 229 Fed. 201.

"Chiropractics" Is "Practising Medicine" in Utah.—Utah Laws 1911, c. 93, provides that any person shall be regarded as practising medicine who shall diagnose, treat, operate upon, prescribe, or advise for any physical or mental ailment or any abnormal mental or physical condition of another after having received or with intent to receive any compensation, or who holds himself out as a physician or a surgeon. The Utah Supreme Court holds that a "chiropractor," one professing a system of manipulations which aims to cure disease by the mechanical restoration of displaced or subluxated bones, especially the vertebræ, to their normal relation, who advertised as a "Graduate chiropractor—no drugs or surgery, or osteopathy—try chiropractic," and who endeavored not so much to cure ailments as to permit the natural "vital forces of the body," impeded by luxation of vertebræ, to proceed unhindered to any diseased part upon readjusting the displaced vertebræ with his bare hands, for which he received compensation, was "practising medicine" within the statute, since he "diagnosed" the symptoms of his patients by recognizing the presence of disease from its signs or symptoms in deciding as to its character, and thereafter treated them for compensation. "There are," the court said, "many ailments in their acute stages which, if correctly diagnosed and properly treated, yield most readily, but if not recognized and not properly treated become in their chronic stages most stubborn and unyielding. The defendant undertook to treat various ailments of children without even professing any knowledge of pediatrics, and many other ailments where knowledge of histology, biology, pathology, and other branches of science was essential to properly recognize and understand them. It needs no argument to show the harm that may result by anyone without knowledge of opththalmology attempting to treat some acute and virulent disease of the eye by attributing the cause of the disease to a subluxal vertebra of the neck causing "nerve pressure, or that the manipulation to reduce the pretended subluxation might itself do harm, but that in the meantime the disease, for want of recognition and proper attention, may have progressed to a stage where it no longer can be arrested."—Board of Medical Examiners of the State of Utah vs. Freenor, 154 Pac. 941.

Testing Cocaine.—In proceedings against a physician for unlawfully selling cocaine, the physician testified that he gave a person (who appeared to have been given to the use of cocaine and liquor) a powder composed chiefly of chloretone, and which contained no cocaine. This person's evidence as to whether he asked for cocaine was contradictory. Two physicians, both admittedly unfriendly to the defendant, testified that they tested the powder by tasting the contents only, and upon such test pronounced that it contained cocaine. Upon cross-examination each of these witnesses was shown a medical work and his attention called to the following statement: "Cocaine responds to all the general tests for alkaloids, giving precipitate for tannic acid, picric acid, solutions of iodine, etc., but these are not distinctive, nor, unfortunately, do we possess at the present time any one characteristic test for this alkaloid." Neither of the witnesses disputed the correctness of this statement. It was held that on such evidence a conviction could not be sustained.—Stadler vs. People Colorado Supreme Court, 147 Pac. 658.

MEDICAL RECORD.

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SPLENECTOMY IN PERNICIOUS ANEMIA.

THE occurrence of enlargement of the spleen in certain anemic conditions, such as hemolytic jaundice and Banti's disease, and the absence of any rational method of treatment led inevitably to the therapeutic removal of the spleen in some of these cases. The spleen has long been considered as the center for normal red cell destruction, and in some instances of splenectomy for rupture of the organ in otherwise normal individuals there followed the development of a polycythemia. A very definite improvement was seen in many cases of anemia associated with splenomegaly after the spleen had been removed and naturally that measure began to be adopted in the treatment of other more or less closely allied conditions. It was tried in a number of cases of pernicious anemia and the results were at first remarkable. The operation is a serious one and many of the patients in grave condition so that the mortality was rather high. But when the patient survived there followed a marked stimulation of the whole bone marrow and a remission in the course of the disease. With the appearance of the reports the operation became immensely popular and large numbers of spleens were removed, often, it is feared, without sufficient justification. Then reports began to tell of later deaths and recurrences and the method was decried as dangerous and of only temporary value. As usual the truth is somewhere between the two extremes.

The subject has been reviewed in two recent articles by Lee, Minot and Vincent and by Krumbhaar (*Jour. Amer. Med. Assn.*, 1916, Vol. LXVII, pp. 719-723). A critical study of the reported cases has shown the authors that the immediate mortality of the operation is probably much less than the apparent 20 per cent. if the cases are properly selected. A red cell count of less than 1,000,000 is apparently a rather strong argument against operation. A true estimation of the effect of splenectomy in pernicious anemia is somewhat difficult because the disease is characterized by the occurrence of remissions which may come on at any time and be marked and lasting. It is because of this fact that so many therapeutic measures have had such brief vogue in this condition. Still it is shown that a remission practically always follows the operation and that splenectomy is probably the greatest bone-marrow stimulant at our command.

So far there is little difference of opinion. It is in the later study of these cases that the important information is to be obtained. In about one-third the improvement extended over a period of two years although there was no evidence that there occurred any real cures. Better results were seen in those patients in whom the spleen was definitely enlarged and Krumbhaar points out the possibility that in the future it may be shown there are two or more distinct diseases which are now called by the one name and that splenectomy is indicated in one but not in the others. It is pointed out that transfusion also results in stimulation of the bone marrow and that it is a measure not serious in itself and which can be frequently repeated. For that reason it is generally preferred to the operation. Our lack of definite knowledge concerning many of the important factors in the problem prevents our arrival at any conclusions of much force.

At the present time it seems to be the opinion of the majority that splenectomy is more apt to have a favorable result in those cases with clinically enlarged spleens, icteroid appearance, and increased urobilin output (increased hemolysis) without increased resistance of the erythrocytes. While it is properly considered as an operation to be undertaken only as a last resort still the results are better in those patients in whom the disease has progressed for not more than a year and who still have a relatively good blood picture. The operation should be preceded by one or more transfusions and may be followed by them if necessary. It is probable that the next five years will see fewer splenectomies done for pernicious anemia than did the last three years, but the results will be much more favorable and it is possible that with increased knowledge it may become feasible so to select cases that a favorable result can be predicted with some surety.

ACUTE ANTERIOR POLIOMYELITIS IN SWITZERLAND.

THIS scourge is now existing in mildly epidemic form in portions of Switzerland. During the two years, 1914-15, 130 cases occurred. As 40 cases occurred in the Canton St. Gall, 36 of which were in 1915, the affection may be regarded as epidemic for that locality. The same may be said of the Cantons of Lucerne and Zurich, although the number attacked there was much smaller. The total of victims of the three Cantons was but 75. The fact that many of the cases appeared in the autumn of 1915 did more to justify the notion of epidemicity than the number of cases.

In the *Correspondenz-Blatt für Schweizer Aertze* for July 29 Androussieur gives his experience with the Lucerne cases. The smallness of the material in the community made it easy to trace the apparent contagion. Thus one boy of 6 was believed to have given the disease to a playmate aged 4, and the latter to have infected a brother aged 13. The incubation period was apparently two and three days respectively. The first victim contracted his disease from a source wholly unknown. The symptoms were much the same in all—headache, stiff neck, vomiting, marked sweating, pains in the limbs,

fever, etc. The disease ran a relatively mild course and the prospects of functional recovery seemed to be good. One patient made a complete recovery in two or three days. In a second group of ten cases a woman of 32 came down suddenly with high fever, headache, stiff neck, and profuse sweating. The symptoms went from bad to worse, death occurring on the sixth day with respiratory paralysis. A man aged 41 met the same death in four days. He came down suddenly with fearful abdominal pains, chills, and fever. He complained also of headache and weariness. Later he suffered from unbearable pains in the back. In a boy of 10 one of the first symptoms was follicular angina. In a youth of 16 the only symptoms at first were malaise, chills, and fever. The other phenomena developed very slowly. Another youth of the same age fell ill very suddenly with high fever, but at no time showed any cerebral symptoms, and several other children had the same type of disease.

Certain cases, not necessarily fatal or severe, showed rectal and vesical troubles during the disease. The fatalities were in cases which would ordinarily be termed Landry's paralysis. The two deaths made the mortality of the second group 20 per cent. In this group contagion could apparently be traced in half of the cases, either direct or through healthy carriers. The other five exhibited no epidemiological features. Through these cases it was possible to place the ordinary limits of incubation at from 2 to 7 days, but in two exceptions the length of this period was extended to 13 days and 5 weeks respectively. The epidemic lasted over three months and had its maximum in November.

During the past twenty-five years the author has treated 79 cases in the children's hospital at Zurich, nearly all in children under five years of age. From what we actually know of the virus it behaves much like the virus of rabies. A powerful toxin is produced, as shown by the changes in the nerve cells, *i.e.* it has a striking affinity for the latter. Epidemiologically it seems related to epidemic cerebrospinal meningitis.

ANESTHESIA AS A SPECIALTY.

In certain quarters the impression seems to prevail that any medical student or nurse who knows enough to pour ether out of a container drop by drop and watch a patient's respiration and pulse knows enough to give anesthetics. The presence of the surgeon too seems to be considered sufficient protection, for, ask the supporters of this system, would the surgeon let his patient die from the anesthetic?

The writer gave his first anesthetic in a large hospital in a large city. He had just been graduated from a class A medical school where he had seen about thirty administrations of an anesthetic, that is, he had witnessed about thirty operations at which he had been bidden to watch every move of the operator. He had never even assisted at the giving of an anesthetic, but nothing of this was asked of him. Instead he was given a can of ether and turned loose on a helpless child in an anesthetic room, with no help available but nurses. Fortunately the child lived through it and proficiency came with practice. Several years ago the leading surgeon in a large city—a man with a national reputation—was operating in a hospital where student anesthetists were the rule. The patient, an only son about twelve years old, died on the table from the anesthetic and the hospital and surgeon were sued. As a result a force of three expert anesthetists to serve in rotation were added to that hospital's staff.

No man can attend to two complicated procedures at one time. No surgeon can give his full attention to the operation in progress and at the same time be fully cognizant of the state of the anesthesia. It is not fair to the patient to be operated on by a man whose mind is only partly on his work, neither is it fair to submit anyone to a narcosis, stopping short only of paralysis of the vital faculties, induced by a non-medical person supervised by an occasional glance from a very busy man a few feet away. The technique of anesthetization can be acquired by practice by anyone, doctor, nurse, or student. But when we realize that the first sign of some difficulty with the patient may be so slight as to be observable only by a skilled anesthetist and yet so grave that immediate and appropriate treatment is required if the patient is to live, we at once realize that the knowledge of the expert is indispensable and should be available.

The expert anesthetist should have especial training in the diseases of the chest, he should be well versed in the particular drugs he uses, such as anesthetics, stimulants, and depressants of all kinds. He should, of course, be letter perfect in the mechanical details of his specialty and familiar with all the complications which may arise in the course of an anesthesia. Furthermore he should understand something of psychology and have a pleasing personality which inspires confidence in the patient. Possessing all these qualities such a man need never find himself idle. The surgeon who approaches an operation with a mind at rest about the welfare of his patient under the ether is in condition to do much better work, and the hospital which has the reputation of furnishing such expert anesthetists will before long be the hospital of choice of the well-informed physicians and surgeons in that community.

SALONICA FEVER.

The war has brought out another disease of a somewhat new type, or, at any rate, of a new type to Europeans. Captain I. C. McWalter contributes a paper in the *Medical Press* August 9, 1916, on Salonica fever, presumably a malady indigenous to Salonica and its vicinity or which has appeared and been closely observed only since the allied armies made a base of that Grecian port. McWalter describes it as resembling a cross between malaria and typhoid, aggravated by bronchopneumonia. With the exception of the presence of parasites in the blood corpuscles the affection exhibits none of the characteristics of malaria, no cycle of events, no regular stages, no enormous spleen, no definitely specific effects of quinine. McWalter questions whether every pyrexia where Peyer's patches are inflamed, as is the case in Salonica fever, should be

classed as typhoid. Widal's reaction is sometimes negative, but this may be attributed to antityphoid inoculation. None of the postmortem signs of typhoid fever, malaria, or pneumonia are observed in fatal cases of Salonica fever, that is, to say, no such signs as an observed postmortem at home in cases of these diseases. Most of the cases of Salonica fever, as said above, resemble a complication of typhoid and malaria, with the supervention of bronchopneumonia; others are more like dysentery with malaria and lobar pneumonia, and still others closely simulate sunstroke.

Perhaps the most interesting point mentioned by McWalter in connection with this disease is that it is largely due to diet. It appears to him that much of the severity of the fever is due to the lack of vitamines. Where patients have been living for ten or twelve months in a hot, dusty, insanitary environment on canned food and chlorinated water and they are taken to a hospital where they get a canned food diet, it is difficult for the blood to become charged with that fresh abounding viltality which will enable it to shake off a fever.

The war, and especially the war waged in the East and Far East in which the conditions are peculiarly enervating to the unacclimated European and the food is seldom fresh, has brought out the fact that after all diet is an important factor in the preservation of health. Moreover, many happenings would seem to favor the theory that several diseases are caused by a lack of the vitamine element in food while other diseases are injuriously influenced by this same lack. It has been demonstrated to the satisfaction of most authorities that beriberi is a malady caused by absence or lack of vitamines. In this country a great deal of evidence has been brought to show that pellagra is caused by a deficiency or absence of vitamines in the diet. Scurvy has also been stigmatized as probably due to an insufficiency of vitamines, and many are inclined to the belief that rickets may also be a deficiency disease. There is no doubt that the presence of vitamines in a diet is essential to the preservation of good health. The mortality from Salonica fever is believed to be greatly increased by the lowering of the patient's resisting powers and it seems not unlikely that McWalter is correct in attributing the severity of this fever to an insufficiency of the vitamine element of the food.

Educational Menus.

The medical profession has been described as being the only altruistic one in the world, that is, it is constantly endeavoring to deprive itself of its means of livelihood. When preventive medicine has achieved its final victory, the family physician can take in his shingle and bring up his children to be wireless operators or aviators. We are of course a long way from this millennium, but there is no doubt that the public is becoming better educated in health matters. Such terms as bacillus, salvarsan, and the calorie are mentioned in the best society now. For centuries mankind has dimly realized that the average individual eats too much and many aphorisms have gathered about the subject, as "Man lives on one-third of what he eats, the doctor lives on the other two-thirds," and "Leave the table always feeling that you could have eaten more." It is only comparatively recently, however, that the exact requirements of the human machine has been estimated with an arbitrary unit, the calorie, as a standard. The next step will be the familiarization of the lay public with the caloric value of various foods. A move in this direction has already been taken by the Public Health Department of New York City which furnishes educational menus to its employees at its lunch-room at headquarters. The menu cards are ruled vertically into five parts containing respectively the name of the food, its price, the quantity in a single order, the number of calories, and the protein content. Thus we have a glass of milk: four cents, seven ounces, 160 calories, seven grams of protein. Apple pie, five cents, one-sixth of a pie, 300 calories, four grams of protein. To be sure it would seem better to use the metric system all the way through if it is to be used at all, but this is of small moment. The important fact is that these employees can eat intelligently (if they wish to do so), something of which Americans are notoriously incapable, according to the Continental belief. When this custom is extended to private dinner parties we shall begin to realize its full benefit as an aid to conversation, as well as its possibilities as a guide to correct methods of living.

News of the Week.

The Poliomyelitis Epidemic.—The decline in the epidemic of poliomyelitis, though perhaps not quite so marked as was hoped, has continued steadily. The death rate from the disease has risen during the last two weeks somewhat alarmingly. For the week ending September 9 there were reported 351 new cases and 132 deaths, as compared with 477 cases and 157 deaths for the previous week. The total number of cases to September 9 was 8486, with 2100 deaths. It is estimated that the total cost of the epidemic will be about $1,000,000. The surgeons of the United States Public Health Service, who have been issuing certificates to persons leaving New York for interstate travel, have discontinued this service. The call for immune serums from persons who have recovered from the disease has met with a satisfactory response, and up to September 9 seven gallons of blood had been drawn, yielding three gallons of serum. The supply has not yet, however, been sufficient to meet the demand. An outbreak of the disease has been reported among the Crow Indians on the reservation near Billings, Mont., sixteen cases having appeared up to September 6. The openings of Williams College, Rutgers College, Amherst College, and Wellesley College have been postponed, in most cases until after the first of October, because of the prevalence of the disease. In New York State outside of New York City 2,575 cases, with 271 deaths, had occurred up to September 9. Commissioner of Health Emerson spoke before the League of American Municipalities in Newark on September 7, on the subject of infantile paralysis, reviewing the history of the present epidemic and the steps which had been taken by the Department of Health in the attempt to control it.

Poliomyelitis, Ptomaine Poisoning, and Sour-Grass Soup.—A writer in one of the New York newspapers has recently advanced the theory that the epidemic of infantile paralysis is due to the eating of spoiled food, and that many of the so-called poliomyelitis cases are merely cases of ptomaine poisoning. This is denied by the Health

Commissioner, who says that in the present epidemic very few wrong diagnoses have been made, but that on the other hand the diagnosis of ptomaine poisoning often is wrongly made. It is stated that several cases of illness occurring in the East Side of the city and reported as ptomaine poisoning were on investigation found to be due to indulgence in sour-grass soup. This is prepared from sour-grass, a species of sorrel, otherwise known as "qchav" or "schav" leaves, which are rich in oxalic acid salts. The soup is a common dish in some of the East Side restaurants. In one restaurant visited by the Health Department inspector it was found that the method of preparation was as follows: The leaves were stripped from the stalks and well washed, the washings being thrown away; they were then soaked over night in cold water, and later boiled for fifteen minutes. This water also was thrown out. The leaves were then boiled for the second time, eggs and cream were added and the dish was ready to serve. Chemical analysis of the finished soup showed about 10 grains of oxalic acid to the pint.

Sick Rate on Border.—Statistical reports from medical officers in charge of troops on the Mexican border show that the percentage of sick among both regular troops and National Guardsmen was less than 2.5 per 100 for the week ending September 2. During that time six deaths occurred. The army medical officers regard the condition as unusually satisfactory for this season of the year.

Typhus in Mexico.—An epidemic of typhus fever is reported in the State of Zacatecas, Mexico. Physicians are being sent from Mexico City to fight the disease and precautions are being taken to prevent its spread to other parts of the republic.

War on Mosquitos.—The Princeton, N. J., Board of Health is planning a general clean-up movement for the extermination of mosquitos in the marsh lands near Lake Carnegie. Thousands of loads of fill have been dumped on the low ground and the land has been graded so that excess water will drain off into the lake. It is estimated that between $5,000 and $10,000 will be needed for the work.

Is Whiskey a Medicine?—The question how to meet demands for whiskey and brandy for medicinal purposes was discussed at the American Pharmaceutical Association in session at Atlantic City last week. Both have been deleted in the new pharmacopœia of the United States, and it was feared that this action might prevent the sale of all alcoholic stimulants in drug stores.

Gift to Charities.—In lieu of rent for Shadow Lawn, the summer White House at Long Branch, N. J., President Wilson has sent to the committee in charge his personal check for $2,500, the money to be distributed among charitable institutions in Monmouth County. This was the stipulation made by the President when he agreed to accept Shadow Lawn as a residence without rent.

Typhoid Epidemic.—Altoona, Pa., is threatened with an epidemic of typhoid fever, six deaths having occurred to September 8. The State Department of Health has inspected the city's watershed and has found evidence of serious contamination. The city has been placarded with warnings that water for all purposes should be boiled as a precautionary measure. It has been predicted that five hundred cases may occur before the epidemic reaches its height.

Memorial to Poliomyelitis Victim.—The Philadelphia Department of Health has begun plans for the erection of a memorial to Dr. Earle C. Peck, who, as reported in the obituary column, died last week from poliomyelitis contracted in the course of his service as chief resident physician in one of the Philadelphia hospitals in charge of infantile paralysis cases.

Strike in Hospital.—The nurses and students at the Philippine General Hospital, Manila, went on strike on August 31, as a protest against the discipline of the hospital, and on the following day the disturbances became so serious that it was necessary to call out American reserves.

Dr. Julius E. Foehrenbach has been appointed assistant bacteriologist in the Department of Public Health and Charities of Philadelphia.

Civil Service Examinations.—The Civil Service Commission of the State of New York announces examinations on September 30, 1916, for the purpose of filling vacancies in the following positions:

Laboratory assistant in bacteriology, State Department of Health. Men and women, $720 to $1,200 a year. Only candidates who have satisfactorily completed a systematic course in bacteriology and have had not less than eight months' practical experience will be accepted. The examination will cover the technical procedures used in the study of pathogenic bacteria, and immunity, and the standard methods used in the examination of milk, water, sewage, air, and soil.

Laboratory apprentice, State Department of Health, $600 to $720. Candidates must have a collegiate education or its equivalent. A knowledge of bacteriology and practical laboratory experience are desirable but not essential.

Assistant physician, regular or homeopathic, in State hospitals and other State and county institutions. Salary in State hospital $1,200 to $1,600 with maintenance. Open to men and women who are licensed medical practitioners in New York State, and graduates of a registered medical school, and who have had since graduation one year's experience on the resident medical staff of a general hospital or as medical interne or clinical assistant in a state hospital or institution, or have been engaged for three consecutive years in the practice of medicine.

Woman physician, regular or homeopathic, in State hospitals and institutions. Salary $1,000 to $1,500 a year and maintenance. Candidates must be licensed medical practitioners in New York State and have had at least one year's experience on the medical staff of a hospital or three years' experience in the practice of medicine.

Further details and application blanks will be furnished, until September 18, by the State Civil Service Commission, Albany, N. Y.

Sentenced for Fake Cure.—The New York City Department of Health has secured the conviction of an imposter in this city on the charge of selling as a cure for infantile paralysis a bag of cedar shavings and advertising this in the newspapers as a cure. In the Court of General Sessions last week the man was sentenced to serve thirty days in jail and pay a fine of $250. The bags were similar to those in which tobacco is sold and were labeled with a red cross and "Infantile Protector" in red ink. They were sold at ten cents each and were said to confer immunity when worn about the neck.

U. S. Cruiser to Transport Supplies.—The medical supplies for the hospitals in Palestine, which, ever since an embargo was put on shipments to that part of the world, have been in charge of the American Consul at Alexandria, will soon be forwarded to their destination on the U. S. cruiser

Des Moines, by order of the Secretary of the Navy. The need for medicines and medical supplies in the districts about Jaffa and Jerusalem has become very great, and for this reason the Allies at the instance of the Department of State have consented to the forwarding of the detained shipment.

Typhus Fever Germ.—A newspaper dispatch from Berlin recently contained the announcement of the discovery of the germ of spotted typhus by Dr. Eugen Czernel, bacteriologist, at Budapest.

Portraits for Hospital.—Through the generosity of Dr. Howard Kelly and Mr. Blanchard Randall, the Johns Hopkins Hospital, Baltimore, is now in the possession of a collection of portraits of medical men, giving it one of the finest portrait galleries of the sort in the world. The collection, which is valued at $100,000, consists of forty-eight portraits, some of which date back to the early part of the sixteenth century.

Charitable Bequest.—By the will of the late C. Cresson Wistar of Philadelphia, the sum of $2,000 is bequeathed in trust to the Howard Hospital of that city.

Rebuilding City Institutions.—The Commissioner of Charities of New York City has had prepared plans, involving an expenditure of $1,400,000, for the rebuilding of the institutions on Randall's Island and the enlarging of Sea View Hospital on Staten Island. When the improvements at Sea View are completed its capacity will be increased from 1,000 to 2,000 patients. The buildings on Randall's Island, some of which were put up in 1848, are all of wood and brick and will be replaced as far as possible with fireproof structures.

Obituary Notes.—Dr. Earle Curtiss Peck of Philadelphia, a graduate of the Jefferson Medical College, Philadelphia, in 1914, interne at the Germantown Dispensary and Hospital, died at the hospital, after a short illness, from poliomyelitis contracted in the course of duty, on September 5, aged 25 years.

Dr. Sterling Barrows, formerly of Amherst, Mass., a graduate of the College of Physicians and Surgeons, New York, in 1906, and a member of the Massachusetts and Hampshire District Medical Societies, died at his summer home in Worthington, Mass., after a long illness, on August 16, aged 36 years.

Dr. Joseph Logue Lockary of Boston, a graduate of McGill University, Medical Faculty, Montreal, in 1897, formerly assistant professor of obstetrics at Tufts College Medical School, Boston, and a member of the American Medical Association and the Massachusetts Medical Society, died, after a short illness, on August 13, aged 46 years.

Dr. Albert Currier Buswell of Epping, N. H., a graduate of the Medical School of Maine, Portland, in 1878, and a member of the New Hampshire and Rockingham County Medical Societies, died at his home, after a long illness, on August 12, aged 63 years.

Dr. James H. McLaughlin of Sutter Creek, Cal., a graduate of the Kentucky School of Medicine, Louisville, in 1891, and a member of the Medical Society of the State of California and the Amador County Medical Society, died in Stockton, Cal., on August 22, aged 54 years.

Dr. Michael Lewinski of New York died at his home on September 1, aged 54 years.

Dr. Stacey Watkins Boyle, formerly of Middleburg, Vt., a graduate of the New York Homeopathic Medical College and Flower Hospital, New York, in 1908, died suddenly at Panama, on August 20, aged 39 years.

Dr. William Henry Baker of Lynn, Mass., a graduate of the Hahnemann Medical College and Hospital of Philadelphia, in 1880, died suddenly at his home on August 22, aged 72 years.

Dr. Edward L. Estabrook of Minneapolis, Minn., a graduate of the Long Island College Hospital, Brooklyn, N. Y., in 1878, died at the Corey Hill Hospital, Brookline, Mass., after a short illness, on August 20, aged 70 years.

Dr. M. J. Newberry of Lizella, Ga., a graduate of the Atlanta Medical College, Atlanta, Ga., in 1886, died at his home from paralysis, after a lingering illness, on August 27, aged 54 years.

Dr. John H. Roebuck died recently at Bethlehem, Pa., at the age of 76 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1865.

Dr. Clarence James Lockhart of Freedom, Pa., was killed by a disappointed patient on August 20, aged 28 years. He was a graduate of the Cleveland-Pulte Medical College in the class of 1912.

Obituary.

RUDOLPH H. VON EZDORF, M.D.,

UNITED STATES PUBLIC HEALTH SERVICE.

Dr. R. H. von Ezdorf, surgeon in the United States Public Health Service, and at the time of his death in charge of the United States Marine Hospital at New Orleans, La., died at Lincolnton, N. C., on September 8. He was born in Pennsylvania and was a graduate of the George Washington University Medical School, Washington, D. C., in the class of 1894, and entered the Public Health Service in 1898. Dr. von Ezdorf was widely known for his researches in yellow fever, typhoid fever, and particularly malaria, of which he had made a special study and on which he had written much in the Public Health Service Reports; he was also the author of the article on Malaria in the Reference Handbook of the Medical Sciences. He had at various times been in charge of the quarantine stations at Savannah, Mobile, New Orleans, and other places. He was a member of the Medical Association of the State of Alabama and of the American Medical Association.

Correspondence.

LIABILITY FOR PROFESSIONAL SERVICES RENDERED TO ANOTHER.

To the Editor of the Medical Record:

Sir:—The following letter from Mr. A. Frank Cowen may be of interest to your readers. I am forwarding it to you exactly as Mr. Cowen has written to me. I thought that perhaps it would be well for the protection of the profession if this decision and Mr. Cowen's instructions were published.

Samuel Lloyd, M.D.

12 West Fiftieth Street.

My dear Doctor:

In the belief that the medical journals have overlooked the importance of a comparatively recent decision of the Court of Appeals on the question of the liability of a person for professional services

rendered to a third party who is neither the wife, husband, nor minor child of that person, I am calling your attention to the same trusting that it will be of interest to you and to your colleagues in the profession.

The decision was rendered in the case of McGuire v. Hughes, 204 N. Y., 516. A physician was called upon by the defendant, a widow, to render professional services to her daughter, a married woman who was then living with her husband. At the time the physician was called into the case the patient was stopping at the defendant's residence. Without any definite understanding or without any inquiry as to who was to be responsible for the bill to be rendered, the physician proceeded on the theory, since the patient was the defendant's daughter and was being treated at home and that the request that she be treated had come from the defendant, it was all right for him to assume that she, the mother, was responsible for the bill.

In due course of time he rendered a bill to the mother and after payment was refused proceeded to bring suit. The case was eventually carried to the Court of Appeals at Albany. Throughout the litigation the physician made no pretense that there was any express promise or agreement on the part of the mother to pay for her daughter's treatment but instead relied on the facts in the case to raise an implied agreement on the mother's part to do so. The Court said as follows:

"The only question upon this appeal is whether the defendant came under any obligation to the plaintiff. That turns upon whether the law will imply a promise on her part to compensate him. If we might assume the existence of a moral obligation, that would not determine that a legal, or enforceable, obligation existed. The general rule, that where a person requests of another the performance of services, which are performed, the law implies a promise by the former to pay their reasonable value, has no application in the case of a physician, rendering professional services to a third person, if the relation to the patient of the person, who requests them, be not such as imports the legal obligation to provide them."

Now in the case before the Court there was no legal obligation on the part of the defendant to provide professional services for her daughter. She was not only over 21 years of age, but she was married and living with her husband.

The Court held further:

"The fact of a request to a physician to attend a patient is not, alone, sufficient for the inference of an agreement to pay for the services rendered (citing cases). We are, therefore, of the opinion that it should be taken as the rule of law, too well settled upon authority to be now questioned, that a physician, in the absence of a special contract, may recover upon an implied agreement to pay for his services *quantum meruit*, where they have been rendered at the request of the patient or of a person who, in the eye of the law, is regarded as being under a legal obligation to provide such professional services for the patient; such as a husband, wife, or the parent of a minor child."

From a reading of the decision, it becomes apparent that in a case similar to the above where the relation of parent, wife, or minor child does not exist so as to import a legal obligation for the payment of the physician's services, it is absolutely essential that an express promise to pay shall be clearly evidenced in order to sustain in the courts a claim for such services. A promise of this kind is best expressed in writing and I submit a short form that leaves nothing to the imagination but effectually binds the party executing the same.

Very sincerely yours,

A. FRANK COWEN.

Form.

This is to certify that I have this day engaged .....M.D., to render professional services for ..... and that I obligate myself to pay for the services so rendered.

Date.

.....

OUR LONDON LETTER.

(From Our Regular Correspondent.)

CITY MEDICAL REPORT—SHORTAGE OF RESIDENT MEDICAL OFFICERS AT VOLUNTARY HOSPITALS—LOSS OF MEDICAL OFFICERS AT THE FRONT—ST. JOHN'S AMBULANCE AND RED CROSS SOCIETIES.

LONDON, Aug. 17, 1916.

THE City of London medical officer has just issued his report for 1915. Referring in it to the evil of coal smoke he declares it cannot be satisfactorily dealt with by law until the enactments at present in force are amended. The dirt and discomfort continue, though in less degree than in former years. For this the enormous number of chimneys in surrounding "Greater London" are largely responsible. During 1914, with the concurrence of the Sanitary Committee, a critical examination of the air in the city was begun in conjunction with the Committee on Atmospheric Pollution, appointed by the International Exhibition of 1912. A large rain gauge placed in a convenient position was used to collect the rainwater from a known area. This rainwater containing the soot, grit and dust washed from the air was submitted to the public analyst. In the month of November the solids falling in the city were estimated at 58 tons, of which 35 tons were soluble. An observation has been made daily of the purity of the air by a new method. The amount of impurity at noon has varied from a mere trace up to 3 milligrams per cubic metre of air, including times when there has been a slight fog, but no dense fog has at present been tested.

The scarcity of resident medical officers in the voluntary hospitals has been discussed at one or two meetings lately, and there is an impression that it will become more acute with the progress of the war. As a result of inquiries at 50 hospitals, Mr. Courtney Buchanan reported a great excess of expenses. Where only two or three residents were required the vacancies were easily filled up, but where four or more were needed there was difficulty, and in some instances out-patient work had been restricted. General practitioners had in some instances been called to assist in other cases by lady doctors. The non-teaching hospitals, with salaries of £150 or £200, could not compete with the War Office, which offered twice as much, besides other attractions. Graduates of our Canadian and Australian schools had found occupation in this direction. In July, 1914, there were 104 resident medical officers in 26 London hospitals; now there are only 81. King Edward's Hospital Fund has made representations to the War Office, it being thought that some engaged in official positions might be transferred with advantage. More cooperation between the civil hospitals and the military authorities would probably be beneficial. The British Hospitals Association is collecting information as to the number and qualifications of men available for service, and arrangements could surely be completed for transferring officers from places over-supplied to positions where there is any deficiency.

The losses of medical officers in the present war are very heavy. In the Franco-Prussian War out

of 4962 German doctors with the army only 9 were killed and 69 wounded. In the present struggle up to Jan. 15, the German doctors killed numbered 56, the wounded, 216, and prisoners, 40, besides which 94 are missing, 29 have died of disease or wounds, 5 have met with accidents and 2 are sick, out of the total number of about 12,000 actually with the army, not including those in military hospitals. Besides these, 10,000 are employed in reserve hospitals, sanatoria, prisoners' camps and ambulance trains. Germany has some 32,000 members of the profession, so only about 8000 appear to be available for civil practice.

General Sir J. Maxwell has issued from headquarters (Irish command) an expression of his sincere appreciation of the services rendered in the late disturbances in Dublin by the medical, surgical and nursing staffs of the hospitals and especially to the gallantry of some nurses who exposed themselves to heavy fire in attending and removing the wounded. Further, to members of St. John's Ambulance and the Red Cross Societies, as well as many medical men and private individuals who gave assistance to the wounded or placed their houses at the disposal of the military for use as dressing stations. In numerous instances these services were rendered at considerable personal risk and under circumstances reflecting the greatest credit on those engaged in them.

OUR LETTER FROM ALASKA.

(From Our Regular Correspondent.)

IMPETIGO CONTAGIOSA AMONG THE NATIVE ESKIMO. SOME DIFFICULTIES IN COMBATING IT.

St. Michael, August 5, 1916.

Those readers who have followed these letters from Alaska have, we hope, gained a fair insight into the mode of life of the Eskimo in Northwestern Alaska. If so it will readily be appreciated that it is a very difficult proposition indeed to combat any form of epidemic disease among these poor, ignorant, superstitious, dirty people. Their bedclothing is usually composed of a few skins or dirty old blankets thrown on the floor, and their wearing apparel, too, is composed of skins, sometimes mixed with cloth garments. However, the Eskimo has usually but one outfit of clothing, and he wears that all the time, day and night. The children dress in the same way, even very small children. The babies often wear no form of diaper at all, and it is an interesting fact that the Eskimo children learn to use some form of commode at a very early age. Since they wear the same clothing day and night, rarely washing these clothes or themselves, and sleeping huddled together among these dirty bedclothes, epidemic diseases spread very rapidly among them and are very difficult to check. One cannot boil the bedclothing or the clothes they are wearing. They have but one set and nothing to use while these are being cleaned; besides furs cannot be boiled. Their houses, too, are as dirty in proportion as their clothing.

With the above conditions existing in the Native Village—which village is said to be one of the cleanest in Alaska—impetigo contagiosa appeared in an epidemic form among the children in April in 1916, and it soon gained great headway in the native school as well as in the village. The disease soon spread into the town of St. Michael, appearing in the school for white children as well as in isolated cases throughout the entire community. It was an easy proposition to handle the white children. They were isolated and their clothing was boiled or placed in the sun; the patients were treated, school visited, and search made for new cases.

An effective quarantine among Eskimos in an Eskimo village is impossible without armed enforcement, and the nature of this malady did not justify such drastic action. However, the village and native school were frequently searched for new cases. An out-patient dispensary was established at the schoolhouse where the native children were seen daily and treated. A roster was kept, entering new cases and discharging others when cured. If the native did not report for treatment, he was sent for and brought to the dispensary. Records were kept and the village plotted, showing where each infected house was. Isolation of infected children was attempted by talking to the mothers and fathers and explaining how the disease spreads; this undoubtedly did good though isolation could not be enforced; however, the "medicine man" was instructed in the beginning to keep his hands off or he would be put in jail.

There are 56 children in the village under the age of fifteen years and about 25 of them became infected with this disease. The lesions were principally upon the face and hands, but the trunk was often affected. Infection around the nails was common and a mixture of scabies and pediculosis with impetigo contagiosa was several times noted. The lesions were vesicopustular, with thin scabs, no infiltration or hyperemic surrounding zone; no itching and apparently no toxemia as the children seemed to feel well at all times; they were superficial and left no scars but a dark pigmentation was often noticed at the site of a former impetigo lesion. Several cases showed lesions on the scalp, and one an eruption in the mouth.

The treatment consisted in boiling the clothing wherever possible, scrubbing the body with warm water, tincture of green soap, and a brush and an application of mercurial ointment, sulphur ointment, and vaseline in equal parts. This was rubbed in well daily. The white children responded promptly, but it required about three months to suppress the epidemic in the Native Village. The continuance of this disease among the Eskimos was due to the fact that it was impossible to establish an effective quarantine, due to autoinoculation, and the transfer of infection through the medium of clothing and their dirty hands.

There was one house in the village where the infection persisted. Five children lived in this one-roomed house. Impetigo contagiosa was detected here at the beginning of the epidemic and remained for about three weeks after all other houses appeared free of it. One child named Hilma Otten who lived here and is about 7 years of age, was three times under treatment during the three months that this disease was present in the Native Village, being discharged as cured and readmitted to sick report. This illustrates the difficulty of treating such diseases among the Eskimos.

Although we do not know whence this infection came, how long it has been among the natives of this section, its cause, the details of its transmission or its exact status when apparently suppressed, it is believed to be but a question of a short time before there will be a reappearance of the disease among the natives of St. Michael.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 31, 1916.

1. Contact Points Between Tuberculosis and Syphilis. James A. Lyon.
2. Tuberculosis Carriers. Charles E. Perry.
3. What Constitutes Clinical Tuberculosis in Adults? George L. Schadt.

1. Contact Points Between Pulmonary Tuberculosis and Syphilis.—James A. Lyon, in order to test the supposition that a definite number of so-called tuberculosis patients would be found to possess definite pulmonary syphilitic lesions, tested 471 patients in the Rutland Sanatorium by the Wassermann test. Of these 430 were negative, 10 were doubtful, two were unsatisfactory, and 29, or six per cent., were positive. Of the 430 negative cases, 140 had incipient pulmonary tuberculosis, 105 of these had repeated negative sputum, and 35 had positive sputum. Of the moderately advanced cases there were 222, and of these 75 had negative sputum, and 149 had positive sputum. The remaining 68 were far advanced, and of these seven were negative and 61 had positive sputum. The sputum was negative in four and positive in two of the doubtful cases in the incipient stage; two had negative and two positive sputum in the moderately advanced stage. There were no doubtful cases in the far advanced stage of their pulmonary disease. A positive Wassermann was obtained in 10 incipient cases, and of these eight had negative sputum and two positive. In the moderately advanced stage, four had negative and 11 positive sputum. In the far advanced stage there were only four that gave a positive Wassermann, and in each instance the sputum was positive. From his experience the writer believes a careful inquiry should be made into all cases of pulmonary disease as to the possibility of a latent syphilitic infection, and, if there is a suspicion of syphilis, the search should not be abandoned in a case of pulmonary diseases with a positive or even a negative Wassermann without first having a careful radiograph taken of the lungs and the long bones. The presence of cavity signs in the lung and the expectoration of large amounts of sputum persistently negative to tubercle bacilli should always suggest pulmonary syphilis. If a positive reaction to tuberculin occurs in a given case of pulmonary disease with a marked positive Wassermann, it is difficult to make a correct diagnosis because the two diseases may coexist while the *x*-ray examination may not be of assistance.

3. What Constitutes Clinical Tuberculosis in Adults?—George L. Schadt emphasizes the belief that it is not only in the beginning cases of tuberculosis that we err in our diagnosis, but just as much in the diagnosis of the moderately advanced and advanced cases. He urges a consideration of the percentages of wrong diagnoses as cited by Ash and the fact that during only the past year a matter of 1.6 per cent. of the individuals entering the State sanatoria of Massachusetts were either non-tuberculous or not diagnosed. The responsibility is just as great in the diagnosis of the patient presenting with what seem to be all the necessary signs and symptoms for the diagnosis of advanced tuberculosis as in the doubtful case. The necessity of approaching the examination in these cases with a mind as free and unprejudiced by the history of cough or hemoptysis as is possible should be emphasized, remembering that almost any pathological condition in the pulmonary tract may simulate tuberculosis in every respect. Pottenger, in suggesting the consideration of the symptomatology from the etiological viewpoint, has made it easier to analyze the disease conditions. The essayist agrees with Lawrason Brown and others that the importance of physical examination in the diagnosis of pulmonary tuberculosis has been overemphasized in that symptoms are a better guide to activity than physical signs and that symptoms without physical signs demand treatment, and physical signs without symptoms require only careful watching. It does not seem possible or probable that we can ever outline a symptom complex of certain signs and certain symptoms and say that these signs and symptoms in every case mean tuberculosis. It seems rather that we must value each symptom and each sign for itself and in conjunction with other symptoms and signs, for every case is a different one and has a different complex. Though deeming that certain outstanding symptoms, such as hemoptysis, cough, elevated temperature, increased pulse, and emaciation are suspicious of infection, we are not qualified to say that this is a case of active tuberculosis in an adult without proper and due consideration to other factors present.

New York Medical Journal.

September 2, 1916.

1. Pyorrhea Alveolaris. A Review of 1496 Cases. John A. Roddy, Elmer H. Funk and David W. Kramer.
2. The Pre-existing Condition of the Injured. A Medicolegal Study from the Standpoint of Employer's Liability and Accident Insurance. G. R. Dore.
3. Therapeutic Applications of Human Thyroid Extract. S. P. Beebe.
4. The Syndrome of Asthenia of Mental Origin. Meyer Solomon.
5. Dr. S. Weir Mitchell. A Short Sketch of His Life. W. A. Boyd.
6. Spasmus Nutans. Murray B. Gordon.
7. Primary Perithelial Sarcoma of Spermatic Cord. Adolph Brand.
8. Heart Disorders in Children. J. Epstein.
9. Graves's Disease. A Report of a Case with Post-operative Amblyopia. Chester Henry Keogh.

1. Pyorrhea Alveolaris.—John A. Roddy, Elmer H. Funk, and David W. Kramer state that if this disease did no more than interfere with mastication, it would be serious enough to deserve the attention that has been given it by the dental profession, but an indisputable mass of evidence has accumulated which shows that the complications of this disease develop in portions of the body remote from the head, and seriously injure or destroy important organs. Their conclusions are that: (1) Pyorrhea Alveolaris is not a specific disease; its chief etiological factors are (a) an excessive bacterial flora of the mouth; (b) deviations from the normal of the afflicted tissues brought about by certain diseases. (2) Oral sepsis is the first stage of pyorrhea; the etiology of both is the same. (3) Pyorrhea can be prevented by regular cleansing of the mouth and teeth. (4) The detection of all the etiological factors in the majority of the cases of pyorrhea requires a thorough dental and medical examination. Whenever possible an *x*-ray examination should be made. (5) Acute recurrent gingivitis or chronic gingivitis or a persistent excessive bacterial flora of the mouth is a clinical sign of the disease. (6) Systemic complications are rare in the early stages and frequent in the late stages. (7) Coincident systemic diseases are frequently associated with pyorrhea. (8) There are no specific methods of treatment. (9) The three indispensable factors in the treatment are: (a) Training the patient regularly to cleanse the mouth and teeth; (b) the institution of whatever dental treatment may be indicated; (c) medical treatment of coexisting systemic disturbances or disease. (10) Emetin may be well employed as an adjunct on the principle that it will de no harm and may possibly in some cases be beneficial. (11) When infectious systemic complications exist, an autogenous vaccine is indicated and even in uncomplicated cases will at times accelerate improvement.

4. The Syndrome of Asthenia of Mental Origin.—

Meyer Solomon states that worry over somatic or external factors may lead to insomnia and the syndrome of asthenia. Worry concerning these symptoms may now take the place of the original causative factor, the patient as a rule not appreciating the relationship. This may be the starting point of true psychoneurotic states. Once the symptoms have appeared there is a veritable vicious cycle—the emotionalism with suggestion increasing the symptoms, in degree or number or both, and the accompanying symptoms increasing the emotionalism and suggestibility. The diagnosis is easy, with the aid of the history and the exclusion of physical disease as the primary cause. The differentiation, however, must be made between this form of asthenia and tuberculosis, arteriosclerosis, syphilis, etc. The prognosis in uncomplicated cases is most favorable, treatment being simple and results prompt. The mental factor should be thought of, investigated, and weighed in every case of the asthenic syndrome, especially when no apparent cause exists. Insomnia is most potent in producing symptoms and must be boldly and unhesitatingly treated by drugs and otherwise. In these cases successful treatment means that a psychoneurosis or minor psychosis may frequently be aborted.

6. **Spasmus Nutans.** — Murray B. Gordon reports three cases of this rather unusual condition out of 4,000 general cases which have come under his personal observation at the Polhemus Memorial Clinic. He says that spasmus nutans is a rare functional neurosis found in children, which consists of an almost continual nodding or shaking of the head. In some cases there is a rotary movement of the neck. Generally there are no other rhythmic movements or other phenomena of nervous irritability, though in some cases, as in one of those reported, there may be an accompanying spasm of an arm or a leg. The mentality of the child is not impaired. During the attack there is no loss of consciousness. In many instances attacks are brought on by the child turning its head, or concentrating its attention, in an endeavor to look upon a particular object, or in a certain direction. In the majority of cases reported, nystagmus has been associated with the spasm of the head. Some observers hold that nystagmus is present in every case of spasmus nutants, and that their contentions can be proved if every case is seen long enough and observed minutely. In two of the cases in this series nystagmus was not observed. This condition is in no way connected with or related to epilepsy, tetany or any tetanoid hyerirritability of the nervous system. It is insidious in its onset, and may not be noticed in the first stages. The course of the condition varies; the longest period in which it persisted was reported to have been two years. The treatment should be directed to the correction of malnutrition and faulty hygiene. Thyroid extract has been found efficacious. This may be given alone or in conjunction with calcium lactate. The elixir glycerophosphates of lime and soda may be given alternately with the thyroid.

7. **Primary Perithelial Sarcoma of Spermatic Cord.**— Adolph Brand reports the case of a young man, 29 years of age, who had suffered a year previously from urethritis followed by a hemorrhagic and suppurative orchitis. He was in apparently good health for during this year when he returned with a mass in the left side of the scrotum. A diagnosis of tumor of the spermatic cord was made and the growth removed. This was found to be a perithelial sarcoma of the spermic cord. Brand states that very little is known of the etiology of spermic cord neoplasms. Recent injuries are credited with being the causative factors in a small percentage of cases, and it is denied that venereal disease plays a provocative role. It is stated by many authors that neoplasms of the spermic cord usually develop secondarily to such growths in the testicle, but it is conceded by some that the primary origin of the tumor may be within the cord itself. In this case a thorough examination of the removed testicle, by a pathologist of unquestioned ability, failed to show evidence of malignancy, and it must be argued that in this instance the spermic cord was the primary seat of the growth. Another point in this case is the etiology. Since recent injuries are looked upon as the causative factors in the production of tumors of the spermatic cord in 25 per cent. of the cases, the question may be raised whether the suppurative process in the testicle and the surgical intervention acted the rôle of trauma in the subsequent development of the neoplasm of the spermatic cord.

Journal of the American Medical Association.

September 2, 1916.

1. Ringworm of the Hands and Feet. Oliver S. Ormsby and James Herbert Mitchell.
2. The Effect of Potassium Iodid on the Luetin Reaction. John A. Kolmer, Toitsu Matsunami, and Stuart Broadwell.
3. Splenectomy in Pernicious Anemia: Studies on Bone Marrow Stimulation. Roger I. Lee, George R. Minot, and Beth Vincent.
4. Late Results of Splenectomy in Pernicious Anemia: A Statistical and Critical Review. Edward B. Krumbhaar.
5. Splenectomy in Splenic Anemia, Hemolytic Icterus and Hanot's Cirrhosis. Joseph L. Miller.
6. The Results of Treatment in Arterial Hypertension Due to or Associated with Syphilis. Louis A. Levison.
7. The Intensive Treatment of Syphilis. Lloyd Thompson.
8. Complete Vocational Disability from Muscular Imbalance of the Eyes. Lloyd Mills.
9. Painless Labor. J. Clifton Edgar.
10. A Case of Testicle Grafting with Unexpected Results. Robert T. Morris.
11. Lumbar Puncture for the Relief of Convulsions in Puerperal Eclampsia: Report of Two Cases. W. T. Wilson.
12. A Case of Progressive Neural Muscular Atrophy. Robert F. Sheehan.

1. **Ringworm of the Hands and Feet.**—Oliver S. Ormsby and James Herbert Mitchell present an analysis of 65 cases seen in the routine of private practice who did not present the ordinary clinical symptoms of ringworm of the body, but are examples of what is ordinarily termed dyshidrosis or eczema of the vesicular-vesiculo pustular or intertriginous type. The diagnosis depends on the microscopical examination of the tissues. All vesicular or desquammating areas of the interdigital or volar surfaces of the hands and feet should be carefully examined for the presence of fungi. Eczematoid and dyshidrotic lesions of the volar surfaces due to myotic infection are much more common, at least in the Middle West, than the number of reported cases indicates. The disorder occurs much more frequently in men than in women, on the feet than on the hands, and more frequently in the warm and damp than in the cold and dry season. The essential lesion is a deep-seated vesicle, in the roof of which mycelial threads may be found. The areas affected in the order of frequency are the fourth interspace of the foot, the plantar surface of the arch, and over the tuberosity of the fifth metatarsus. The disorder frequently follows or precedes eczema marginatum, and is due in many cases to the same organism. The pathogenic organism may remain dormant in the cutaneous folds of the feet throughout the winter months. With the advent of warm weather an acute attack of vesication, desquammation, and maceration may occur. The treatment included the use of three preparations. In the severe cases of eczematoisdermatitis, a preliminary soothing treatment of naftalan, combined with zinc oxide and starch, was used. This was followed by 5 per cent. chrysobarin in traumaticin which is painted on until a good reaction occurs. Five daily applications were usually given. In

another series of cases an ointment containing two parts of salicylic acid and four parts of benzoic acid in 30 parts of ointment base were used. This was applied daily over several weeks.

2. **The Effect of Potassium Iodid on the Luetin Reaction.**—John A. Kolmer, Toitsu Matsunami, and Stuart Broadwell have been studying the effects of the iodids, bromids, chlorids, ether, chloroform, and other drugs on the luetin, tuberculin, and other skin reactions. The results with the iodids have proved definite and confirmed Sherrick's observations in practically every particular. The study warrants the following conclusions: 1. Well marked positive luetin reactions were observed among a group of healthy nonsyphilitic persons following the administration of potassium iodid. 2. Similar results were observed among nonsyphilitic persons suffering with various other diseases. 3. Somewhat severe reactions were observed following the intracutaneous injection of 0.1 c.c. of 0.5 per cent. agar-agar. 4. The strongest reactions were observed when the luetin was injected during or immediately after the ingestion of potassium iodid. 5. Positive luetin reactions were observed among normal nonsyphilitic persons as late as one month after the ingestion of large doses of potassium iodid. 6. In some instances the administration of potassium iodid caused the site of a former luetin injection to develop inflammatory phenomena progressive to pustulation. 7. Similar but less marked reactions to luetin and agar ware observed among guinea-pigs and rabbits following the oral administration of potassium iodid. 8. Accordingly, a positive luetin skin test has little value in the diagnosis of syphilis among persons who are taking or have recently taken potassium iodid. The amount of iodid capable of producing these reactions varies considerably; also the length of time following the ingestion of iodid when this reaction to luetin may follow. For these reasons physicians should very carefully rule out the possible influence of iodid before conducting the luetin skin test.

3. **Splenectomy in Pernicious Anemia: Studies on Bone Marrow Stimulation.**—Roger I. Lee, George R. Minot, and Beth Vincent. (See MEDICAL RECORD, July 1, 1916, page 32.)

4. **Late Results of Splenectomy in Pernicious Anemia: A Statistical and Critical Review.**—Edward B. Krumbhaar. (See MEDICAL RECORD, July 1, 1916, page 32.)

5. **Splenectomy in Splenic Anemia, Hemolytic Icterus, and Hanot's Cirrhosis.** — Joseph L. Miller. (See MEDICAL RECORD, July 1, 1916, page 36.)

6. **The Results of Treatment in Arterial Hypertension Due to or Associated with Syphilis.**—Louis A. Levison has collected a group of 18 cases in which syphilis and hypertension were associated of which he has made a careful study, more particularly with reference to associated kidney lesions. He concludes that anti-syphilitic treatment is not expected to reduce the high blood pressure in syphilitics who have also arterial hypertension. Occasional reductions in the blood pressure, however, do take place in such cases. The association of arterial hypertension with syphilis does not contraindicate the treatment of the latter. The careful use of mercury and salvarsan has not had bad results on kidneys damaged by arterial disease.

7. **The Intensive Treatment of Syphilis.** — Lloyd Thompson reviews evidence as to the efficacy of the three syphilitic remedies and states that with this evidence the logical method of treating this disease is to administer mercury and salvarsan as intensively as the patient can tolerate in all cases, and iodin in some form where indicated. He has been able to reduce a four plus Wassermann to a negative which remained negative from one to six weeks with intramuscular injections of mercuric benzoate or intravenous injections of mercuric chlorid. It is the opinion of the writer that all cases of syphilis of the central nervous system should have intraspinal medication. For these injections he employs a method which is a combination of those described by Ogilvie and Wile. This consists in the withdrawal of 10 c.c. of blood by venipuncture and centrifuging it at once. One c.c. of this clear serum is removed and placed in a sterile test tube. The salvarsan is then prepared by dissolving in water, neutralizing, and diluting so that each 0.1 gm. is diluted to 40 c.c. One c.c., the dose usually required, is placed in the hemostat 37.5°C. for forty-five minutes. It is then removed and placed in a water bath at 55°C. for thirty minutes. The intraspinal injection should be made as soon as possible after the serum is prepared. The injection is made in the arachnoid space, the skin having first been infiltrated with 5 per cent. novocain. When about 15 c.c. of spinal fluid have been collected, one or two c.c. of 5 per cent. novocain are added and thoroughly mixed with the fluid which is allowed to run back into the spinal canal. After three minutes the fluid is again allowed to flow into the syringe and the salvarsanized serum added and injected. By using the novocain as described for both the salvarsanized serum and the mercurialized serum, the pains in the legs and back which so frequently follow these injections are eliminated to a great extent. Much has been written and said with regard to the wonderful cures of syphilis which have been affected at the great watering places of the world. It does not seem that the waters of these springs possess any specific value in the treatment of syphilis; the benefit is found in the pleasant surroundings, outdoor exercise, regularity of treatment, and the fact that the patient makes a business of getting well. It is a fact, however, that most patients bathing daily in the waters can tolerate more mercury without untoward effects than those not bathing.

11. **Lumbar Puncture for the Relief of Convulsions in Puerperal Eclampsia: Report of Two Cases.**—W. T. Wilson says he used lumbar puncture in these cases because he had seen convulsions controlled in his cases of cerebrospinal meningitis by drawing the fluid from the spinal canal before injecting serum. In both of the cases reported the patients had had over twenty convulsions and this procedure was followed by recovery. Lumbar puncture is a treatment only for the convulsions of eclampsia and not for the toxemia of pregnancy. However, with the convulsions controlled one is in a better position to treat the toxemia. Puncture seems to be indicated in those cases in which the convulsions are severe and frequent. It does not interfere with other forms of treatment for the disease, and proper treatment should be instituted as soon as the convulsions are controlled.

The Lancet.

August 12, 1916.

1. Observations on the Effects of Trinitro-Toluene on Women Workers. Agnes Livingstone-Learmonth and Barbara Martin Cunningham.
2. An Address on the Psycho-Pathology of the War Neuroses. M. D Eder.
3. The Treatment of Infected Suppurating War Wounds. Rutherford Morison.
4. An Anomaly in the Widal Reaction. A. F. S. Sladden.
5. The Effect of Typhoid Inoculation on Endemic Goitre at the Lawrence Military Asylum, Sanawar, Punjab. M. A. Nicholson.
6. A Contribution to the Etiology of Epidemic Cerebrospinal Meningitis. M. F. H. Gamble.

7. Shiah Pilgrimage and the Sanitary Defenses of Mesopotamia and the Turco-Persian Frontier. F. G. Clemow.

1. The Effects of Trinitro-Toluene on Women Workers. — Agnes Livingstone-Learmonth and Barbara Martin Cunningham have made careful observations of the symptoms complained of by women working on trinitro-toluene in the munition factories in which they have been acting as medical officers. They are convinced that the frequency with which these symptoms occur among workers cannot be a mere coincidence and must point to irritation by and absorption of some toxic product of the explosive used. The irritative symptoms described are referred to the respiratory tract, the alimentary tract, and the skin. The toxic symptoms include digestive, circulatory, cerebral, and special symptoms. From their observations they are convinced that the careful selection of workers is of the greatest importance and that women inclined to be anemic, those that have had liver or gastric trouble, those who sweat freely, those who have had chest trouble, those even slightly addicted to alcohol, and persons of lowered vitality from fatigue, malnutrition, etc., should be excluded from this kind of work. No person under 21 or over 40 years of age should be employed on trinitro-tuolene. Workers should not be employed more than twelve weeks continuously and not too long daily. A routine weekly examination of all these workers is essential and any that show signs of fatigue or toxemia should be taken off the work. If respirators are worn they should be impregnated with some alkaline antidote.

3. The Treatment of Infected Suppurating War Wounds.—Rutherford Morison described a simple method of treating suppurating war wounds which he has developed which consists in covering the wound and surrounding area with gauze wrung out of 1:20 carbolic acid, opening the wound freely, cleansing the cavity with dry sterile gauze, removing foreign bodies, mopping the wound and surrounding skin with methylated spirit, and then filling up the whole wound with a paste made of bismuth subnitrate, one ounce; iodoform, two ounces, and paraffin liq. q.s., to make a thick paste. For this preparation the writer suggests the name "Bipp." This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. A case of hernia cerebri is cited which healed readily with the employment of this procedure and it is claimed that under this treatment septic wounds heal by first intention with infrequent dressings and without drainage further than that allowed for through gaps left by interrupted sutures. Acute abscesses, opened, cleansed, filled with "Bipp" and closed by interrupted sutures can heal by first intention without further pus formation. It appears to be safe to plate compound fractures by adopting this method. Up to the present time no bad results have been observed after the employment of this treatment.

4. An Anomaly in the Widal Reaction. — A. F. S. Sladden calls attention to the fact that in following Dreyer's standard method of agglutination testing for suspect enteric cases in the lower dilutions a negative (inhibition) zone is frequently seen and that this is not peculiar to Dreyer's method. A feeble agglutinating power, if opposed by a well-marked inhibition zone, may only be visible over a short range of dilutions, and unless a large number of dilutions be tested the presence of agglutinin may be missed. In the experiments recorded the sera have been those of subjects inoculated against *B. typhosus* within 18 months. Addition of another serum, non-agglutinating to the bacillus under test, will increase the zone of inhibition. The presence of sodium chloride in the test augments but does not cause the negative zone. By using distilled water as a dilutent in place of normal saline the negative zone is diminished and the test rendered more delicate. The zone effect is exerted on all three members of the typhoid group but in varying degrees. Its extent tends to increase with the progress of the infection. No definite relationship between zone effect and clinical aspect is established, but the inhibition zone does not appear to be of unfavorable omen.

6. A Contribution to the Etiology of Epidemic Cerebrospinal Meningitis. — M. F. H. Gamble states that epidemic cerebrospinal meningitis was unknown in Victoria until May 27, 1916, when an outbreak originated in the military camp at Seymour. The organism causing the disease was practically identical with the gonococcus, a mutant form perhaps. A study of this epidemic gives convincing evidence that cerebrospinal meningitis in epidemic form may be a true gonorrheal inflammation of the arachnoid membrane of the brain and spinal cord, set up by the bites of infected pediculi corporis. During the winter the soldiers are reluctant to take the daily cold shower in the open and thus provide a soil on which the pediculi corporis thrive vigorously, and gonorrhea is always prevalent in a large training camp near a city. The real carriers of the meningitis were the lice ladened with gonococci or full of serum from a meningitis patient. The futility of prophylactic measures directed to the nasopharynx and the fact that no specific organism has been proven to be the cause of epidemic cerebrospinal meningitis, in the opinion of the author, lend plausibility to his theory as to the etiology of this epidemic.

The British Medical Journal.

August 12, 1916.

1. Contractures of the Hand After Wounds of the Upper Limb. W. M. Macdonald.
2. Note on the Distant Effects of Rifle Bullets; with Special Reference to the Spinal Cord. Judson S. Bury.
3. The Treatment of Gunshot Fractures. D. McCrae Aitken.
4. The Treatment of Convalescent Soldiers by Physical Means. R. Tait McKenzie.
5. Trismus During Serum Sickness (Septic Finger). R. F. Bolt.
6. Babinski's Sign from the Point of View of Comparative Anatomy. M. Astwazaturof.

2. Note on the Distant Effects of Rifle Bullets; with Special Reference to the Spinal Cord.—Judson S. Bury relates two cases which confirm the experience of the present war that the effects of high velocity bullets with rapid rotary spin are rarely limited to the parts through which it passes; as a rule there is evidence of either indirect or secondary lesions and sometimes of remote lesions. Of particular interest are the effects on the spinal cord of the passage of bullets in its immediate vicinity, in cases in which there is no evidence of direct injury to the cord. In some instances there was an impact of the bullet upon some portion of vertebra; in others, however, it was probable that the bullet did not strike the bone, but passed through the tissues outside of it. In both conditions the damage to the cord may be either severe or slight. In one of the cases cited the bullet entered near the top of the left shoulder and came out on the right side of the spine. The main points of interest in this case were the temporary incontinence of urine; the implication of some of the dorsal roots; the signs of a lesion of the right pyramidal tract, the fibers which convey impulses to the dorsoflexors of the ankle being chiefly affected. In the group of "spastic paralyses," cases are not uncommon in which no paralysis can be detected, the lesions of the upper neurones being represented clinically only by exaggeration of the deep reflexes. The explanation of this is difficult; it may be that a lesion too slight to produce paralysis that can

be detected is sufficient to cut off the cerebral impulses which are inhibitory to muscle tonus, when there will be overaction of the spinal centers which is probably, the author thinks, the result of the unopposed action of the cerebellum.

4. The Treatment of Convalescent Soldiers by Physical Means.—R. Tait McKenzie describes the work of the "command dépots to which are sent men for whom there is some hope of cure or improvement within a period of six months. Among those usually sent are cases of profound neurasthenia, the result of sleepless nights and arduous days; shock in all its forms—tremulous hands and tongue, stammering speech or deafness, persistent nightmares and fears by day; disorders of sensation, contractures, and paralyses; rapid and weak heart action, hearts that were overstrained and that are unable to sustain the effort of the lightest gymnastic exercise or the shortest march; rheumatism, real and unreal, in all its forms; lungs suffering from the bronchitis of gas poisoning, asthma, and even tuberculosis; profound debilities following typhoid fever, dysentery, and malaria, requiring months of good food, light duty, and progressive exercise to build them up. For all of these cases the treatment comes under what may be called physical therapy, electricity, hydrotherapy, massage, mechanotherapy, corrective exercises, physical training, and marching. The procedures employed in the various conditions are described in detail and it is pointed out that many cases of disordered heart action can be brought up to the full physical training but not into it. Several cases were brought up to this point three or four times and then had to be returned to lighter duty. Not more than 30 per cent. succeeded in passing into Class A. This same experience has been shared by some cases of shock, of bronchitis following exposure to gas, and cases of frostbite. An analysis of the classified cases sent out from Heaton Park up to date shows that nearly 50 per cent. have been returned fit for active service. About 15 per cent. have been sent to lines of communication abroad. About 15 per cent. have been sent to useful work of a sedentary nature at home, and over 20 per cent. have been discharged as permanently unfit, many of these being untreatable from the first. A fact which is not to be lost sight of, McKenzie says, is that even though these men may not be sent back as first class men their opportunities for a useful career in civil life after the war have been enormously increased.

5. Trismus During Serum Sickness (Septic Finger).—R. F. Bolt relates the case of an officer who pricked his finger while operating on a case of empyema. His temperature rose on the following day to 102° F., whereupon the finger was incised and a dose of 18 c.c. of antistreptococcus serum was administered. No antitetanic serum was injected. A week later an enlarged and tender gland was noticed in the right axilla and fourteen days after receiving the prick trismus developed. At this time an urticarial rash appeared over the arms, chest and abdomen. The possibility of the patient's symptoms being due to tetanus was seriously considered, but it was decided that he was already suffering from serum sickness and it was not advisable to give antitetanic serum. Under the administration of chloral hydrate and sodium salicylate the patient recovered. A careful review of the history of the wound made it seem unlikely that infection with the tetanus bacillus could have occurred, while the course of the symptoms and the rapid recovery, the author believed, made it very much more probable that the condition had been entirely due to the antistreptococcus serum.

Journal de Médecine de Bordeaux.

August, 1916.

Strangled Diaphragmatic Hernia; Laparotomy; Death.—Vitrac states that, evolution of symptoms in a case treated by him was almost pathognomonic. They comprised epigastric pain, acute thirst, painless retraction of the abdomen, precocious dyspnea unilateral thoracic symptoms, such as bulging of the chorax, tympany, etc. The squatting attitude is also quite characteristic. Let us suppose that we have a strangulation of doubtful origin. Laparotomy reveals a complex of empty and distended intestinal loops, so that we have to think of the possibility of more than one strangulation. In such a case we must always think of the possibility of a diaphragmatic hernia, and introduce the hand beneath the concavity of the diaphragm. A stop should be made to examine the thorax, if necessary by puncture. If the diagnosis is made a thoracotomy should be performed in order to liberate the strangled intestine. If reduction has been effected the lips of the hernia opening must be sutured. The prognosis depends on early diagnosis and early laparotomy. If simple suture cannot be effected a portion of lung tissue may be fixed into the opening.

Strophanthus and Strophanthin.—Mallié discusses at considerable length the physiological action, the clinical results, toxicity, indications, contraindications, modes of exhibition and posology of these substances. Before giving the drug the kidneys must be tested and blood pressure measured. All other medication must be suspended. Then on the first day 1/10 mgm. crystallized strophanthin should be injected into a vien in 10 c.c. freshly distilled water. The dose should be repeated on the second, third and fourth days. If the result is not as desired the treatment is suspended. The leading indication is cardiac insufficiency, either subacute or fatally progressive. In such cases strophanthin acts directly on the tonicity and contractility of the heart muscles. Given in a vein for this condition the drug action is more heroic than that of digitalis. In pulmonary asystole it is a better drug than the latter, overcoming the stasis more rapidly. In asystole of valvular origin the results obtained are not harmonious. On the other hand it may be invaluable in pure myocarditis, not as a functional stimulant of normal fibers but when the latter have become altered and delicate. Hence it is much used in France in the myocarditis of infectious fevers including pneumonia. It may succeed in a variety of conditions in which the rationale of its action is none too clear. Such successes are sometimes the exception. Here belong palpitation tachycardia, Graves' disease, old cardiac lesions with deeply altered myocardium, senile heart, etc. In certain well-known degenerations of the myocardium its use is contraindicated, as it is in angina pectoris, cardiorenal disease, arteriosclerosis, etc. Digitalis, as is well known, is a drug the employment of which is greatly subject to abuse and it is evident that strophanthus shares the same lot; all because the action and indications are not sufficiently studied.

Action of the Interossei Muscles.—Massé sums up an original study of these muscles as follows: One may consider that the action of the interossei is not limited to the fingers, as has always been held by the classic authors. They contribute almost wholly to the lateral movements of the metacarpals. Their insertions upon the articulations of the carpus, intermetacarpals, and metacarpophalangeals cause them to act as important, active ligaments to these articulations. They concur in maintaining the normal palmar concavity in two directions—length and breadth. This action therefore plays a rôle in the morphology of the hand.

Le Bulletin Médical.

August 12, 1916.

Primary Paludism in Salonica.—J. J. in a letter to the *Bulletin* gives information about the forms of malaria in this sphere of warfare which he thinks should prove of general interest. Some soldiers coming from France became contaminated on their arrival, diagnosis being determined in the bacteriological laboratories of the Eastern Army. A study of the blood shows three principal forms of parasite, the *Plasmodium vivax* (tertia benigna), *Plasmodium malariæ* (quartan), and *Plasmodium falciparum* (tertia maligna). Aside from certain regions affected with malaria, this so-called primary paludism is not seen in France to-day. It is unknown save in regions where the disease is endemic, like Salonica. It always appears a few days after the sting of an anopheles, the injury often being completely overlooked. At times it is masked as a febrile gastric disturbance, or even as a mild or severe typhoid. In such cases the patient's welfare is greatly prejudiced because he does not receive his quinine at the outset of the disease. These attacks of primary paludism are followed at an early date by a series of daily intermittent attacks, even in the absence of a reinfection. These attacks are not as cleanly defined as frank outbreaks of secondary paludism. They appear in periods of 5 or 6 days each, whatever the intensity of the treatment. A remission then occurs and the attacks reappear about every 12 days. If the patient has not been treated at all, or treated insufficiently, anemia appears, followed by enlargement of the spleen, and may pass on to a true cachexia with anasarca or simple edema of the legs and face, oliguria, palpitation, anorexia, diarrhea, apathy, and torpor. If such a patient is stung at any time by a fresh mosquito, the tendency is toward a continued fever.

Responsibility of the Army to the Civil Population When All Medical Supplies Have Been Commandeered.—A. M. writes to the *Bulletin*, referring to several recent articles on the subject. The lot of the rural dweller is particularly severe and the writer concerns himself solely with this aspect of the case problem. The countryman is deprived of the services of the better class of physicians, and must depend often upon a class of men who under normal conditions would have little to do. When a well qualified practitioner finds himself in such a situation, his difficulties are almost insuperable, if he is ignorant of the ways of the peasant, who, slovenly and indifferent, does not send for him until after the disease has a good start. The speech of the peasant is so full of local idioms, which vary even within small distances, that it becomes almost unintelligible. For example, a Paris physician assigned to practice in a certain sector remote from the metropolis, was summoned to attend a child who had been coughing for a month. He was informed that the child had been suffering from some affection with an unfamiliar name which turned out to be measles.

Le Caducée.

August 15, 1916.

Case of Anterior Spinal General Paralysis in a Soldier Due to Malaria.—Blin and Kernéis relate the case which they ascribed to a malarial infection. The patient, aged 20, had a good personal history. As an officer of the Senegalese he left Bordeaux for Africa and developed malaria during the 18 days he had spent in the tropics, probably because on one night he slept without protection against mosquitos. Interned in the nearest hospital the severe symptoms of the attack gave way to quinine, but at this juncture a severe dysentery developed but soon yielded to treatment. He continued to have mild febrile attacks as brief intervals, hardly severe enough to incapacitate him, but soon was seized with a very sharp attack of chills, fever and sweating which after three hours left him prostrated. The next day the fever returned and after the seizure the patient was found to be paralyzed. The entire lower extremities were stricken *en masse*, and the upper extremities progressively. On the next day the muscles of the face and trunk became paralyzed. Within the next 24 hours speech and swallowing became embarassed. The lips and jaws and eye muscles were not involved, nor were the sphincters, while sensibility was intact. The paralyses were followed by a certain amount of muscular atrophy which later attacked most of the voluntary muscles. An intercurrent attack of orchitis was without apparent cause. Gradually there was noted a return of power to some of the muscles—in general those last to be attacked, and despite the muscular atrophy a considerable restoration of function was noted elsewhere, and the reflexes which had been totally abolished began to reappear. The treatment had consisted of hypodermics of quinine and large doses of potassium iodide. Returning to France he eventually recovered completely. In this case a malarial polyneuritis could be excluded. The condition resembled anterior poliomyelitis in many ways and in fact was regarded as this disease, but due to malarial infection of the nerve cells of the anterior horns of the cord.

La Presse Médicale.

August 10, 1916

The Cardiac Rhythm in the Fighting Soldier.—Binet states that numerous peculiar modifications of cardiac rhythm have been noted in troops and their relatives as well. Those who have near relatives at the front or whose status in life has been inverted by the war, suffer from constant tachycardia, from 90 to 120, with inversion of the oculocardiac reflex. Those actually at the front show a much greater variety of pulse, due to the operation of various distinct causes. From mere extreme fatigue we see all the manifestations of asystole, with a small, filiform pulse, or perhaps paroxysmal tachycardia, or tachycardia with anhythmia or bradycardia (6 or 7 per cent. may show the latter alone). The state of suppression the emotions of warfare, as when men force themselves to be calm in a bombardment, is not accompanied by arrhythmia but bradycardia frequently follows a heavy, sudden explosion. When the sympathetic is chiefly involved acceleration of the heart beat is seen, and indicates that the soldier is naturally emotional and not very strong of heart. Emotional tachycardia is perhaps due to overproduction of thyroidin, especially when it becomes permanent. Another factor appears in the wounded, namely traumatic shock which should be largely psychical in nature. In some cases we see commotion without traumatism. In traumatic shock, much depends on the character of the wound, whether it is very painful or attended by much hemorrhage; and on the seat of the injury. Tachycardia commonly follows any wound in the chest. On the contrary slowing of the pulse is seen in cranial wounds. One who is shocked physically by an explosion may show tachy- or bradycardia, according as his sympathetic nerves or vagus react most strongly. Among aviators a rapid ascent or descent tends to lower the frequency of the pulse. In other words, so-called aviators' disease appears to depend on a functional disturbance of the vagus.

Insurance Medicine.

Respiratory Symptoms in Heart Disease.—Dr. J. S. Lankford says that one of the earliest symptoms of important disease of the heart is undue shortness of breath on exertion. It may be the sole symptom causing the patient to seek advice and the question must be determined whether it is simple or serious, for it may be the beginning of the gravest myocardial or other cardiac disease, or may be due to less important conditions. It occurs in unimportant vague disturbances, such as sinus arrhythmia, transient indigestion, and various irritable conditions of the nervous system. It may occur in a sound heart, which is out of proportion to the body in size. We occasionally find a man normal in all respects except that the heart is too small. If a man is perfectly free from all indication of disease, but is inclined to shortness of breath on exertion, his heart is probably too small for his body. This condition is especially likely to result from that form of infection in children which is generally characterized, "growing pains." It occurs also, in repeated infections of other kinds, especially in the throat. The heart may not have been inflamed, but has been sufficiently embarrassed in nourishing itself to prevent the proper growth. A like limitation of growth occurs in the young inveterate cigarette smoker. A similar condition exists where a man weighs 130 pounds at 25 years of age and 230 at the age of 40. His heart has attained the growth necessary for a small body and is always tired from carrying such a heavy burden, and yet it may be a sound heart. There is grave danger of high blood pressure and a breakdown in the heart or kidneys, in this kind of case after the age of 45, because the heart cannot nourish itself properly and do the work of such a heavy body. These patients should be cautioned to live rigidly within the reserve power of the heart, to avoid stimulants, to drink water sparingly, and especially should they be directed to steer clear of excess in starches and sugars, the fat producers. It is better for them to take the chances of an albuminous diet than to put on more flesh. There is here some disturbance of the internal secretions not yet fully understood, but it is probable that the thyroid and other ductless glands are involved in the accumulation of flesh. No insurance applicant requires a more thorough examination than the heavy-weight. Serious organic disease may be confused when testing by means of exercise and the manometer, with a poisoned heart, but the absence of the usual signs and the collateral symptoms of poisoned heart, as autointoxication, marked indicanuria albuminuria, or some infectious condition, especially from the teeth, will point the way to the truth, the blood pressure is low and the pulse pressure very limited. This condition may be relieved by treatment and the heart saved from organic disease. In very grave heart disease of any kind, there is always shortness of breath on exercise and sometimes air hunger on exertion. In nearly all cases there is inability to stop breathing, a very significant symptom. Continuous labored breathing is also characteristic of serious heart disease, indicating an exhausted myocardium. Unconscious, rapid breathing is a symptom that is often overlooked both in chronic heart disease and in heart complication in infectious diseases of various kinds, especially typhoid fever and tuberculosis. Aortic insufficiency is always attended by embarrassed breathing in some form. Mitral insufficiency is accompanied by short breathing on exercise or it may be continuous if the myocardium has become involved, dilatation taken place, or dropsy occurred.

Mitral stenosis is usually accompanied by shortness of breath on exercise, which may become a dominant characteristic late in the disease when the myocardium is in serious trouble. Angina pectoris leads to great embarrassment of breathing on account of pain in the intercostal muscles and the nerves of the skin over the region of the heart, on the inside of the left arm and sometimes the right, and down back of the left ear. Of all the distressing conditions that fall to the lot of the physician to handle, there is none that equals that condition of advanced cardiarenal disease, with high blood pressure, auricular fibrillation, and heart block, where the Ceyne-Stokes respiration has appeared and is persistent.

The blood pressure is low or high in serious heart disease, in proportion to myocardial change or kidney complication. In rapid degeneration of the cardiac muscle the systolic pressure may drop a hundred millimeters in a few months. It is a grave mistake to reduce the systolic with nitrites or other depressants; for the diastolic pressure tension is not correspondingly reduced and the heart is depressed. Some cases attended by high blood pressure are greatly relieved by free cartharsis with salts. A full dose of cream of tartar at bed time is useful, and some patients are greatly benefited by a mighty blue mass pill for a long period. As a general treatment for serious heart disease, where respiratory difficulties occur, rest in bed is important, but in some cases where cyanosis is absent the patients do better with a little exercise gradually increased.—*Texas State Journal of Medicine.*

Thinness and Life Assurance.—The presence or absence of thinness is of definite importance to the medical officer of life insurance companies, since one of the factors on which estimation of risk is based is the constitution of the assured, of which thinness is one type. Some companies exact an extra premium on account of thinness on those whose weight is 20 per cent below the standard, others take into account the relation between the height and the chest measurement; while others, again, rely on a "constitutional coefficient" calculated from a comparison of height, thoracic circumference, and weight. Dr. Romanelli, in *Il Policlinico* (February, 1916), draws attention to the great practical importance of the "bi-acromial diameter" in calculations of this kind. This diameter is measured from the extremity of one acromion to the other, passing in front of the thorax, and has the merit of having two fixed and easily found bony points and of being a fairly accurate estimate of the development of the body in breadth and of the thoracic development. Dr. Romanelli places the lives to be insured into two classes in this respect; those whose weight is 15 to 20 per cent. below the standard and those whose weight is over 20 per cent. below. He endorses the opinion of Dr. Haviland Hall that thin lives not exceeding 15 per cent. of underweight should not be refused. but that those who pass this limit should only be accepted after a rigorous examination, and that if there is tuberculosis in the family a life below 30 years should be rejected.—*The Lancet.*

Book Reviews.

THE PROCEEDINGS OF THE CHARAKA CLUB. Volume IV. New York. William Wood & Company. 1916.

WHILE the study of the history of medicine cannot, perhaps, be considered an essential part of medical education, it certainly is the most desirable of its embellishments. The Charaka Club has long held an enviable position because of its successful work in the collection and dissemination of information on medico-historical subjects and literary and artistic matters bearing on medicine, and the appearance of the fourth volume of its proceedings is therefore a welcome occasion. The papers presented cover a wide range of topics of much interest. A botanical view of the Shakespeare-Bacon controversy, the University of Alexandria, the medical publications of the Elzevirs, medical data from old church history, Saints Cosmo and Damian, and other titles of fascinating interest head articles that well repay attention. This volume contains twelve articles in all by eight contributors, namely, Drs. Gerster, Walton, Collins, Mumford, Dana, Bailey, Pilcher, and Streeter. The Charaka Club deserves the thanks of the profession for its efforts to keep alive in us the history of our medical forefathers and the memories upon which our modern practice is founded.

ALCOHOL—ITS INFLUENCE ON MIND AND BODY. By EDWIN F. BOWERS, M.D. Price, $1.25 net. New York: Edward J. Clode, 1916.

THIS book is intended for popular consumption rather than as a contribution to medical literature and is a palatable presentation of the case against alcohol. Statistical studies are diluted and disguised until they are made to appear entertaining reading. Examples of the writer's facility in coining trenchant phrases are such chapter headings as "The Emperor of Drugs" and "Beer, the Brutalizer." The greater part of the evidence against alcohol is furnished by Kraepelin's well-known studies, which are, of course, familiar to the profession by this time. The crux of the alcohol problem, that is, the fact that alcoholism is a symptom, is not mentioned by Dr. Bowers, wisely enough. He likewise does not allude to the studies of Haycraft, who found an increase in the admissions to poorhouses and insane asylums in States where prohibition had been in force several years. A fact of this kind is difficult to present to a lay audience on account of the necessity for explaining away the obvious inferences. The consensus of opinion of students of inebriety is that, even apart from his alcohol, the inebriate is not normal, but here again an investigation of this circumstance would lead into rather deep waters, so it is not attempted in the present volume. Dr. Bowers' book is, however, interesting and should find a large circle of readers.

A TEXTBOOK OF FRACTURES AND DISLOCATIONS. With Special Reference to Their Pathology, Diagnosis, and Treatment. By KELLOGG SPEED, S.B., M.D., F.A.C.S. Associate in Surgery, Northwestern University Medical School; Associate Surgeon Mercy Hospital; Attending Surgeon Cook County and Provident Hospitals, Chicago, Ill. Octavo of 888 pages. Illustrated with 656 engravings. Price, $6 net. Philadelphia and New York: Lea & Febiger, 1916.

THIS is a very satisfying book, among other reasons because the author, as he states in the preface, has himself performed the labor of writing the text; there is very little of the flavor of compilation and relatively few pages that do not bear the unmistakable imprint of the author's personality. There is also everywhere evidence of the author's thorough study of the literature as well as of his comprehensive grasp of the subject on the basis of actual personal experience. The author very properly insists upon the value and necessity of a thorough knowledge of the histology and pathology of bone, at least in so far as fractures are concerned, and upon this the development of the subject is based.

There are no sweeping criticisms that can be made, although, in common with most first editions, there are occasional errors of omission and of commission. One rather common fault in first editions is incompleteness of the index and upon looking up a number of subjects at random we find that this book furnishes no exception in that regard. There are relatively few typographical errors, but proper names are occasionally misspelled. Hey Groves, for instance, is sometimes spelled correctly, sometimes Hey Grooves. In discussing the Rainey wooden splint the method of application is not adequately described and the photographic representation of a patient in bed with the Rainey splint applied throws no light upon the matter. As to the author's remarks on the operative treatment of fractures, we must say that the advantages of the inlay graft do not seem to be appreciated, and we trust that this section will be found much revised when a second edition appears.

On page 69 he says: "Volkmann's ischemic contraction is the term applied to a type of contraction of the muscles and the changes in the soft parts distal to the point of fracture." Since in many instances this condition affects the muscles of the forearm in cases of Colles' fracture, it is evident that the lesion need not necessarily be *distal* to the point of fracture.

In spite of these and a few other matters calling for criticism the fact remains that Speed has written not only a good book but one of the best devoted to this subject. The subject matter is well presented, practically all methods of treatment in general use are well described, illustrations are abundant and generally to the point, and the book is equally well fitted for the use of student, general practitioner, and surgical specialist.

OPHTHALMOLOGIE DU MÉDICIN PRACTICIEN. Avec 347 Figures Dans le Texte et Une Planche Hors Texte en Couleurs. Price, 12 fr. Paris: Masson et Cie, 1916.

THIS work appears in a volume of 480 pages. It is well illustrated by many figures in the text and one colored plate. The book is for the use of the general practitioner particularly. After defining the desired position of the general practitioner regarding ophthalmology as to his knowledge of the subject and his relation to the ophthalmic patient, the direct consideration of the subject is entered into. The necessary instruments to be procured by the general practitioner are designated, methods of examination with systematic chart. Remedies employed and their application. A chapter is devoted to injuries to the eye and its adnexa. The diseases of the eye are then systematically considered in a brief and concise manner. A chapter is devoted to the consideration of eye affections complicating general disease. A short chapter on the hygiene of the eye and prophylaxis follows. The work is well adapted to serve the purpose for which it was written, namely, for the use of the general practitioner.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D. Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College, Philadelphia. Assisted by LEIGHTON F. APPLEMAN, M.D. Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Price, $6 per annum. Philadelphia and New York: Lea & Febiger, June 1, 1916.

THE current number of Progressive Medicine contains the following contributions: "Hernia," by W. B. Coley; "Surgery of the Abdomen, Exclusive of Hernia," by J. C. A. Gerster; "Gynecology," by J. G. Clark; "Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of the Tryroid Gland, Spleen, Nutrition, and the Lymphatic System," by A. Stengel, and "Ophthalmology," by E. Jackson. We have so frequently drawn attention to this admirable publication that there is no need to enlarge on its merits. But it is a pity that the present number should be marred by such a wretched index. Under the heading "Uterus, Cancer of," not one of the references is correct; "Cancer" is similarly mishandled, and many other entries give the impression that the index does not belong to the present volume.

THE INVOLUNTARY NERVOUS SYSTEM. By WALTER HOLBROOK GASKELL, M.A., M.D., F.R.S. Author of "The Origin of Vertebrates," etc. With colored figures. Price, $1.80. New York: Longmans, Green and Co., 1916.

THIS volume by the late Dr. Gaskell is one of a series of monographs on physiological subjects which is being edited by Professor Starling. Unlike several recently issued works on the sympathetic and autonomous nerve systems the present volume deals principally with the innervation of non-striated muscle in the entire vertebrate kingdom, beginning with the reptiles. Having purely an experimental foundation, the work does not include mankind. Doubtless it represents an outgrowth of his book on the origin of the vertebrates.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 20, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THE Council of the Academy submitted the following resolutions which were unanimously passed:

Resolved, That the New York Academy of Medicine approves of the establishment of dental colleges in connection with universities having medical departments.

Resolved, That the New York Academy of Medicine views with regret the inadequate provision made for the medical service in the bills now before Congress for increasing the Army of the United States, which gives less than five medical officers to one thousand combatants, whereas experience in the present war in Europe indicates that ten medical officers to one thousand combatants are necessary under conditions of actual warfare. The ratio in the Army of the United States in peace time should not be less than seven medical officers to one thousand combatants, to be increased to ten per thousand in war time.

The subject of the evening was the "Discussion of Some Recent Developments in Our Knowledge of Food Values, and Their Bearing upon the Causation of Disease and upon Its Management."

Vitamines a New Factor in Nutrition.—Dr. CASIMIR FUNK read this paper in which he said that recently sufficient evidence had accumulated to warrant the statement that besides the ordinary food constituents, such as proteins, fats, carbohydrates, lipoids, and inorganic salts, to the presence of which with the exception of salts the caloric value of our food was due, a number of substances could be found in very small quantities which were as indispensable to life as the former constituents. These substances were elaborated in both the lower and higher plants, but could not be synthetised by the animal organism, and this was one of the reasons why animal life depended upon plants. These products were present in all our foods, in all our organs, and in all vital parts of the plant without a single exception. Their presence had been revealed to us by the modern technic of cooking and by the refinement of food due to the introduction of machinery for the industrial preparation of foodstuffs on a large scale. After referring to the etiology of beriberi as due to polished rice, the writer stated that another origin of the same disease was in other refined foods like sago, tapioca, white bread, especially when baked with baking powder, consumed in disproportionately large quantities, or if our usual food was subjected to prolonged boiling as sometimes happened when food was prepared in very large quantities as in the army and in prisons and in other institutions. The insufficiency of these substances had also been noted in cases of mental disturbance in which a fancy was taken to one particular food. Without going into the detail of the extraction and preparation of these substances, it might be stated that they were dealing here with products showing a good deal of instability under ordinary laboratory conditions. This point might be best illustrated by referring to the time it took to isolate adrenalin from the suprarenal glands, which was partially due to the fact that this base was present in small quantities, and that an insufficient amount of starting material was taken for fractionation, and also to the fact that adrenalin was easily oxydizable in alkaline solution. When precautions were taken to eliminate these factors the isolation of adrenalin was successfully accomplished. It then took a number of years to inform them of its chemical properties and constitution, and then further time for its successful synthesis. It would take even longer to ascertain the constitution and composition of the vitamines, since as yet the difficulties of the first stage had not been overcome, and this had liminted the valve of investigations with reference to the second stage to some extent. However, sufficient evidence had been accumulated to warrant the designation of these substances by the term "vitamines" and the diseases which arose from their lack or insufficiency as deficiency diseases or "avitaminoses." Dr. Funk expressed surprise that the introduction of this term had aroused so much animosity, since it was quite customary to give a name to substance the presence of which was merely assumed before its actual isolation, and such terms were usually accepted until further evidence disputed their presence. The evidence for the existence of the vitamines was many times stronger than in most cases where similar terms had been introduced. The chemical evidence for the existence of these substances could be seen from the methods of their detection. After calling attention to the difficulty of fractionating and identifying substances obtained in such small quantities, the writer said that the vitamines were sometimes stable at higher temperatures in the presence of acids and could be thrown down by phosphotungstic acid or analogous reagents which were so largely used for the isolation of nitrogenous substances, and afterward could be fractionated by means of mercuric chloride and silver nitrate and baryta. From this final precipitate a crystalline fraction could be obtained which in relatively small quantities cured beriberi in pigeons. This precipitation was specific for vitamines, and they were not merely carried down as was supposed by some investigators. Other precipitating agents which also yielded heavy precipitates did not carry down the vitamines. While this work had been confirmed by many observers it must be admitted that further chemical evidence was desirable, especially as regards the mode of combination of the vitamines in the tissues. With reference to the action of the vitamines nothing very definite was known except that they bore a certain relationship to the carbohydrate metabolism. Dr. Funk had found that feeding animals on a food composed largely of carbohydrates brought on an earlier appearance of the symptoms of deficiency diseases. For instance, if a pigeon was fed on polished rice it was possible to estimate approximately when the symptoms of beriberi would appear when a given quantity of rice was metabolized. The writer had confirmed this with an artificial diet composed of variable amounts of carbohydrates, and it was also found that the blood sugar content in avian beriberi was greatly increased. This fact had a practical bearing in infant feeding. It must be borne in mind that a certain amount of vitamine could only take care of a limited amount of carbohydrates, and when starch was increased in the diet the amount of vitamine-containing foodstuffs must be increased in proportion. A second fact which had been established in connection with the metabolism in deficiency diseases was that in the absence of vitamine we obtain not only a negative nitrogen balance, but the whole metabolism goes wrong. This was particularly noticed in the negative balance of inorganic constituents, like calcium, phosphorus, and sulphur. Schaumann had recently shown that the addition of vitamine put the whole metabolism again on a normal basis, and this fact was of special importance for the understanding of certain conditions like rickets in children. It was found further that vitamine when properly prepared and added in sufficient amount to polished rice would make the latter diet complete. The writer had shown in addition that no animal was yet found able to live more than a short time on a vitamine-free food, and that an artificial diet composed of casein, starch, fat, sugar, and all the necessary salts would produce a deficiency disease of some kind, according to the animal chosen, provided sufficient care was taken to purify the ingredients. To this diet all known lipoids, cholesterol, various proteins, and all sorts of salts could be added, but nothing could save the animal or man from certain death unless vitamine was added. Dr. Funk then proceeded to discuss certain points in reference to the relation of the vitamines to the deficiency diseases, calling special attention to the experiments of Morgen and Beger, who found that rabbits fed on oats, a diet supposed to produce scurvy in them, could remain in good health when sodium bicarbonate was added. They considered therefore that the condition produced was an acidosis, and certain experiments which the author had performed seemed to confirm this statement to some extent. However, the same experiments in guinea pigs produced a condition that was possibly scurvy, but certainly not acidosis. As to pellagra, when he first expressed the opinion that this was a deficiency disease he had met with great opposition, but now the etiology of this disease as a deficiency disease seemed to be clearly established. It seemed possible that pellagra was nothing but a chronic scurvy, and that we knew as scurvy was the acute form of the same disease. The vitamine theory as to the etiology of rickets was at present a mere working hypothesis. The results of animal experiments suggested that they were dealing with a deficiency disease due to a deficiency of vitamine which was not essential for life, or to a partial deficiency of the ordinary vitamine. The opinion of certain workers that rickets had its cause in a lack of calcium was very largely due to a misinterpretation of their experiments. From the point of view of the vitamine theory there was no objection to congenital rickets when the mother's diet

was deficient, and there was no objection to rickets in breast-fed babies, in adults as osteomalacia, and in old age perhaps under another name. The writer next considered the problem of growth, worked up in conjunction with Dr. A. B. McCollum, and referred to the work of McCollum, Osborne, and Mendel who had tried to demonstrate that butter had a very decided effect on the growth of rats, and had stated that butter-fat did not contain nitrogen. He was now able to demonstrate that rats could grow very well without butter when a sufficient amount of vitamine was added to the diet of the rats, and hence he was utterly unable to confirm the results of McCollum. When working with yeast it had been noticed that rats on dried yeast grew well, but had shown slight symptoms of scurvy, which, however, disappeared when autolyzed yeast was used. This possibly showed that rats required for their wellbeing both the beriberi and scurvy vitamines. Successful growth was also obtained by using phosphotungstate precipitate decomposed from autolyzed yeast, while the filtrate had no action whatever. The fraction used was entirely free from material which could not be extracted with lipoidal solvents, and this alone proved that the water-soluble portion of yeast was the only one responsible for the growth of rats in direct contradistinction with the recent statement of McCollum. Experiments which the writer had conducted in association with Dr. Morris Stark showed also that McCollum's assumption that casein lost, when heated with alcohol, its nutritive value was baseless. At present they were not able to say whether autoclaved casein heated at higher temperature had a full nutritive value or not, and it was possible that the latter casein would require an addition of tryptophan and cystine. Dr. Funk and Dr. McCollum had found, however, that by means of a suitable diet they could make rats grow twice as fast as on a diet regarded hitherto as normal. At the same time they were able to stunt animals on a diet that might be designated as normal. This result had been obtained in chickens fed on unpolished rice, and still better by feeding unpolished rice and codliver oil. The same could be accomplished with rats on a diet of oats. These results could be applied to the growth of children. It was of interest in this connection to know that they had been able to show that tumors in rats and chickens did not grow so extensively on such a diet as on a rich diet, and also that the tumor had a greater affinity to these substances than somatic cells. While cancer had nothing in common with the deficiency disease and was if anything a disease entirely opposed to avitaminoses, it seems extremely probable that cancer was not of infectious origin, but was due to a chemical cause, and the study of diet in cancer will be in the future one of the most important lines of research.

Group Similarities of the Deficiency Diseases, as Illustrated by the Clinical and Experimental Study of Infantile Scurvy.—Dr. ALFRED F. HESS presented this communication, in which he first called attention to the fact that infantile scurvy almost never developed among breast fed babies, but was encountered among those who were fed on cow's milk, and more especially those who received in addition some of the proprietary foods which were so commonly resorted to in the preparation of milk formulae. There had been a difference of opinion as to whether the use of pasteurized milk could induce the scorbutic condition. The commission on Milk Standards, in its report of 1912, stated that pasteurization did not destroy the chemical constituents of milk and that it was not altered by exposure to heat under 145° F. Dr. Hess determined to test the validity of this statement and, accordingly, among a certain number of inmates of an infants' home, where all babies were fed on Grade A pasteurized milk which had been heated to 145° F. for thirty minutes, the use of orange juice was discontinued. No other change was instituted. The results of this apparently minor dietary change might be summarized by the statement that almost all the infants who did not receive orange juice developed a more or less marked form of scurvy, whereas those who continued to receive orange juice remained entirely free from this disorder. Most of these infants had been in the institution from birth, so that their condition, both before and subsequent to the change, could be thoroughly observed. The results of this investigation, which was published some two years ago, were questioned by some who were loathe to believve that pasteurized milk could in any way lead to scurvy, and hence the investigation was extended somewhat in the subsequent year. The results were the same, so that the writer felt safe in saying that a diet of pasteurized milk led to the production of scurvy in infants unless some antiscorbutic food was also given. This scurvy was not as a rule of the florid type met with in infants fed for months upon proprietary food, but might be described as latent or rudimentary scurvy. There was a gradually increasing pallor, a failure to gain in weight, the development of some petechial hemorrhages, and in more marked instances, the subperiosteal hemorrhages. It would seem probable that this insidious type of the disorder was far more common than was generally recognized by physicians and that there were many infants suffering from slight nutritional disturbances which might be ascribed to this cause. When the pasteurized milk was replaced by raw milk the scorbutic condition improved, although it might be added that raw cow's milk was by no means comparable to orange juice as an antiscorbutic. It was not to be inferred from these conclusions that the use of pasteurized milk was fraught with danger, but merely that it was an incomplete diet for babies and must be given with antiscorbutic food. There were also secondary factors contributing to the development of scurvy, such as the individual variation depending upon hereditary characteristics, that was, upon the amount of antiscorbutic material which the infant brought with it when it came into the world. Secondary food factors also seemed to play a part, malt preparations seemingly predisposing to scurvy and it also seemed probable that there was an intimate relation between the development of scurvy and the amount of carbohydrate in the dietary. Infantile scurvy differed clinically from the other deficiency diseases mainly in the fact that it was characterized by the production of hemorrhage in various parts of the body, which a study of the pathogenesis showed to be due not to alterations in the blood itself, but to alterations in the blood vessels which were probably to be regarded merely as a part of the general cellular and tissue changes which occurred in this disorder. In considering the clinical relationship between beriberi and infantile scurvy he expressed the opinion that the current clinical viewpoint which regarded infantile scurvy almost as one of the hemorrhagic diseases and the current pathological viewpoint which centered its attention on the changes in bone structure were far too limited in their scope. Signs of involvement of the nervous system were the characteristic manifestations of beriberi and a study of the cases which came under his observation showed that infantile scurvy was not entirely free from nervous signs. The knee-jerks were frequently found exaggeratd, and in some instances there was slight involvement of the optic discs and sensitiveness of the cutaneous nerves seemed to be present. These symptoms disappeared when the nutrition became normal again. Again dilatation of the right heart had frequently been described in beriberi, and this was noticed by Andrews in infants who were nursed by women with this disease and had been found to occur likewise in infantile scurvy, as had been demonstrated by numerous Roentgen ray examinations. Edema was also a common symptom of the two conditions. Further evidence was also available showing the interweaving in the symptomatology of these two diseases. There was also evidence demonstrating essential differences in the vitamines controlling the development of these allied disorders. The sovereign cure of scurvy was orange juice, which was efficacious even when boiled for ten minutes; potato, one of the best antiscorbutics for adults, might be employed in infant feeding where orange juice could not be readily obtained. For this purpose milk could be diluted with potato water, one tablespoonful of mashed potato to one pint of water, instead of the usual cereal decoctions. In connection with this work observations were carried out as to the effect of infantile scurvy on growth, the study embracing an interval of one year or more. Three periods might be distinguished in this investigation, a preliminary period of about three months, during which the infants were weighed daily and measured every two weeks; a second period embracing about four mouths, during which the infants received a liberal diet of pasteurized milk and cereal, which differed from the previous diet only in the fact that no orange juice was given; and an after period, lasting about six months, which dated from the time when orange juice or other antiscorbutic was once more added to the food. During the period when the antiscorbutic was discontinued particular attention was given to furnishing a sufficient quantity of food, and more cereal was given or the strength of the milk mixture was increased. It was found that although the infants continued to gain in most instances for a few

weeks following the discontinuance of the orange juice, they soon reached a stationary plane and for months were unable to rise above this level, but increased in weight promptly when the antiscorbutic food was again added to their diet. This gain took place in some definite cases in spite of the fact that the infants did not take an increased amount of food, showing that the orange juice either brought about a more perfect metabolism, or what was more probable, contained substances capable of stimulating the growth promoting function. It was very probable that infants frequently ceased to gain at about eight months of age, during the third quarter of the first year of life, for the want of this essential addition to their food, and failed to progress until mixed feeding was begun some months later. At present the rule might be said to be to add fruit juices to the dietary at about the sixth month, probably because scurvy seldom developed during the first six months of life. At this time incidence was due to the fact that the infant had been protected for the first few months of life by the supply of antiscorbutic material which it had inherited from the mother, and that there must have been a constant negative balance of these essential substances dating from the earliest beginning of artificial feeding. It would therefore seem that a corrective dietary, that was an antiscorbutic should be given as soon as possible. There was no reason why an infant should not receive orange juice when it was a month old, and there were strong arguments in favor of such a procedure. A number of the infants were not only weighed, but were frequently measured. This group included about twenty, one-half of which number received orange juice, whereas the others did not. As a result it was found that scurvy not only had a direct effect on the weight, but also upon the growth in length, and that orange juice contained properties corrective in both respects. This fact was of greater biologic interest than failure to gain in weight, for as had been shown by Freund and Variot growth in length was a physiological impulse to which the human species clung with great tenacity, and which was rarely affected even when other functions were held in abeyance. Although it was true that infantile scurvy and lack of growth went hand in hand, such was not always the case, as one of the infants in this series gained steadily in weight in spite of the fact that it was developing scurvy. Instances such as this showed that lack of growth did not play an essential part in the constitution of this disorder. A deficiency of scurvy vitamine was one cause of stunting; lack of sufficient or adequate food another, and no doubt there were other factors. Whether or not growth occurred and to what extent, depended upon the resultant stimulation brought about by these various impulses.

Dr. L. Emmett Holt said that his remarks were made from the standpoint of the clinician and were based only on observations made at the bedside. His interest in this question was not whether the substances under discussion were vitamines or amino acids, or what particular name should be given to the substances the lack of which produced deficiency diseases, but rather as to the clinical manifestations of these conditions. He believed that scurvy was much more frequently seen since the general introduction in this city of pasteurized milk. To his mind the evidence was conclusive that the connection was one of cause and effect. Boards of health were properly impressed by the part that milk had played in the transmission of septic sore throat and typhoid fever, but it was unfortunate that they should have neglected to warn the public that pasteurized milk might produce scurvy. It had been claimed that if scurvy occurred in an infant on pasteurized milk it was always the fault of the milk formula used and could not be ascribed to the heating. This was a difficult position to maintain. While it was certainly true that the occurrence of scurvy showed that the food was not proper, this was far from proving that other proportions of the fat, carbohydrate, and protein used would have given a different result. Dr. Holt did not think that the addition of cereals to milk as commonly employed in infant feeding gave any protection against scurvy if milk was heated; but rather that additions of considerable amounts of carbohydrates, particularly in the form of starchy foods and maltose mixtures, increased the liability to scurvy in heated milk. He did not wish to be understood as voicing an indictment of pasteurized milk, whose great advantages he fully appreciated, but simply to call attention to the disadvantages which must be considered as well. The use of pasteurized or sterilized milk over long periods was always attended by the risk of producing scurvy unless some antiscorbutic was added.

Dr. Warren Coleman said that one of the most interesting phases of the vitamine problem for the clinician was the question whether the diets used in the treatment of any of the commoner diseases with which we had to deal were deficient in these important substances. There was no common disease of adults, occurring in this latitude, which was recognized to be due to the lack or insufficiency of vitamines. Yet it was not impossible that ill-defined types of disorders now thought to be disturbances of function, or some of the symptoms of well-established diseases, might have this origin. He was the more ready to credit this possibility because of his experience with typhoid fever. For example, he believed that the very course of the disease had been altered by giving patients all of the food they required instead of only a part of it. He no longer considered diarrhea a symptom of typhoid fever, except perhaps in the prodromal stage, but thought that it was the result of improper diet and it ceased when the diet was properly arranged. Delirium and the typhoid state were not essential symptoms of the disease. Delirium might occur, but when it occurred it was due either merely to the fact that the temperature was elevated beyond a certain height for a particular individual, or to the elevated temperature plus starvation. If in so well known a disease as typhoid fever such prominent symptoms could have been considered essential symptoms of the disease, it was quite possible that some of the symptoms of other diseases, or at least some disorders not now understood, might be found to be due to diets deficient in vitamines. Attention should be directed to this point, however, that the so-called bland diets of the text-books ordinarily consisted of foods with a high vitamine content such as milk, eggs, and meat extracts, unless they had been heated too high.

Dr. Morris Stark said that in the course of the evening's discussion in referring to the deficiency diseases, not much stress had been laid on the possibility of rachitis being considered as a deficiency disease, as had been suggested by Dr. Funk and others some time ago. There was enough evidence in the literature of rachitis to say nothing of as yet unpublished work now going on, to tempt one to assume that rachitis was a metabolic deficiency, at least until it could be proven or disproven to be such by further work along the lines of metabolism experiments upon the human infant. If such experiments could definitely show, as he had not the slightest doubt they would show, a change in the mineral metabolism as a result of the administration of substances designated by Dr. Funk as vitamines, substances in themselves free from these salts in any appreciable amounts, in addition to the diet which produced the deficiency disease, a diet in itself not lacking these salts in necessary amount for the needs of the body, but lacking in vitamines, their point was proven and the mystery surrounding rickets solved. The literature already published by Dr. Funk showed ample evidence in justification of the term vitamine as applied to these substances. That this group of substances was just as necessary to life as those amino-acids which had proven themselves also necessary for the normal existence of the organism, would readily demonstrate itself to anyone making as careful chemical and physiological tests as Dr. Funk and his collaborators had made, tests which, though questioned, had never been disproven in publications by anyone so far as he knew. As to whether the boiling of milk diminished its nutritive value, at least the nutritive value of the casein, it seemed so far as their experiments had shown that boiling casein did not destroy its food value, as supposed by McCollum, but it undoubtedly did destroy the vitamines, as shown by the cessation of the growth of rats fed upon it and their return to normal growth when a vitamine containing substance, such as yeast, was added to the food. McCollum's findings as to the necessity of butter for growth seemed to be controverted by Dr. Funk's experiments referred to in his paper. From many authoritative sources they were led to believe that yeast contained a large proportion of vitamine, and accordingly, observations upon the effect of the administration of autolyzed yeast to rachitic children were now being conducted by the speaker at one of the outpatient departments with the possible finding that a distinct increase of appetite was the result. Rachitis in breast fed babies and also its occurrence very early in other infants artificially fed was being further in-

vestigated by a careful study of the diet of the mothers during pregnancy and lactation. However, they were still far from saying the final word upon this subject and upon the relation of vitamines to rachitis.

Dr. Abraham Jacobi said it was an undisputed fact that scurvy was very frequent nowadays when so many babies were being artificially fed. Forty or fifty years ago it was very rare. Scurvy was apparently produced by over-sterilization of the milk. Pasteurized milk would not cure or even prevent scurvy, but it did not by itself cause it. Pasteurized milk with a cereal would do better and would sometimes prevent or cure scurvy, but not every over-refined cereal would do this, only cereal in the raw state. If there was no husk left on it there was no advantage to the baby. Raw barley or oatmeal were the most efficacious materials to add to the milk. A second point to be noted was that breast fed babies rarely had scurvy and for the reason that the milk from day to day, from morning to evening, was never the same; it had the advantage of being changed frequently. As long as a baby was fed on uniformly the same food, eventually he would get scurvy.

Stated Meeting, Held May 18, 1916.

The First Vice-President, Dr. Edward D. Fisher, in the Chair.

This meeting was held in association with the American Society for the Control of Cancer.

The Interests of the Community in the Problem of Cancer.—Louis I. Dublin, Ph.D., statistician of the Metropolitan Life Insurance Company, presented this communication. Contrasting cancer with tuberculosis, he stated that the average age at death from tuberculosis was about 37 years; from cancer it was about 20 years later. Tuberculosis primarily affected the economic interests of the community. The decedent was usually at the highest point of his efficiency; his productive period was still largely in the future; his children were either still young or yet unborn. In cancer, on the other hand, the productive period was for the most part in the past; the children had been born and the family unit was only slightly disturbed economically by the death, since in the majority of cases the offspring had reached the age of self support and independence. It was, therefore, the emotional interest that was uppermost. To-day cancer was responsible for one death out of every 14 among men and one death out of every nine among women after the age of 50 years. The present interest of the public in cancer was further accelerated by the mystery that surrounded the disease and which had thus far baffled all efforts of the physician and the scientist. Additional interest resulted from the disquieting fact that the cancer rate might be increasing. The chief sources of information indicated an increase. This held true not only for the registration area of the United States, and for those of our states whose records were most reliable, but also for the United Kingdom, for Switzerland, for Germany, and, indeed, generally throughout the civilized world. Equally good authorities were divided as whether this increase was real or only apparent. The speaker was of the opinion that there might very well be an increase. The figures, however, seemed too striking to be true. In the ten year period from 1901 to 1910, there was an increase of 30 per cent. in the male cancer rate and of 22 per cent. in the female cancer rate, at all ages, beginning with 25 years, in the states included in the registration area in 1900. At certain periods this increase was very considerable, as much as 40 per cent. The unreliability of these figures was at once apparent when we thought of cancer as a disease of long standing in our civilization. By projecting such increases in the rates forward or backward a few generations in time one was led at once to an absurdity; for if cancers are capable of increasing at such a pace it would either have been a negligible disease in the past or would seriously threaten the existence of the race in the near future. The marked improvement in registration must be taken into consideration and the greater certainty in the diagnosis of cancer by physicians. We should have to wait at least ten years under present conditions of registration in this country to know definitely what had happened. Whether cancer was on the increase or not was secondary to the fact that the rate at present was extremely high, and conditions to-day a real menace. In order to demonstrate the extent of the problem the essayist presented certain data which he stated were valuable because of their intrinsic value. They had also the merit of being based on a large exposure, there being represented over ten million persons, both white and colored, men, women, and children, of all ages, above one year. From this table it was shown that the rate at all ages was 69.7 per 100,000 exposed. This table showed, among many interesting details, that the cancer rate was much higher among females than among males; that the cancer rate began to be significant only with the decade 25 to 34; that thereafter the rate increased very rapidly, until the maximum was reached at the age of 75 and over. This was true for both sexes and for both white and colored persons. The rates were lower for the colored than for the whites, and this applied more to males than to females. It had often been said that cancer was a disease of the well-to-do; the figures showed, if anything, that the industrial classes enjoyed no advantage. It seemed that no large groups in the community enjoyed any special immunity. The Jews had been singled out as enjoying a special or partial immunity. The rate for Jews was sometimes higher than for the native born Americans of the corresponding age periods. Another table illustrated the relative importance of the several forms of cancer which occurred among males and females of the two races. This table showed that among white males about one-half of the cancers affected the stomach or liver; about 20 per cent. more related to other parts of the digestive system, namely, the buccal cavity, the peritoneum, the intestines, or the rectum. Together over 70 per cent. of the cancers among males were so accounted for. Among females cancer of the genital organs and cancer of the breast were very prominent. The former was responsible for 43.1 per cent. of all the cancer deaths occurring among the colored; 15.9 per cent. in addition were due to breast cancers. Cancers of the skin were much more numerous among males than among females; the rate was extremely low for colored persons, being virtually negligible among colored females. In general, there was clearly a larger proportion of external and surgically accessible cases among females than among males. Hospital statistics showed that the cancers which were responsible for the large part of the female mortality, those of the genital organs and the breast, were most susceptible to treatment. Therefore, a large reduction in the female cancer mortality might be expected from organized efforts to bring cases to early treatment. A third table showed the average ages at death of the persons who had died of cancer of the various forms. The average age of females at death was about two and one-half years lower than that of males: 54.8 years as against 57.2 years. The highest average age was 63.7 years for cancer of the skin among females; the lowest 51.1 years for cancer of the female genital organs. A discussion of the average age at death was important because it was an indication of the loss to the community that was occasioned by cancer deaths. At the present time a conservative estimate placed the total number of cancer deaths in the United States at 80,000 a year. This meant an aggregate loss to the community of 1,200,000 years of life, basing the life expectation as accepted at the present time in New York City. Not considering the monetary value of this loss, it would be a gain to civilization of no mean value to extend to persons of middle life and early old age a few additional years of peaceful enjoyment. That the happiness of thousands of families would be preserved and that thousands of individuals would be spared unbearable pain meant more to the community than could be estimated in dollars and cents. To accomplish this end two lines of effort were clearly indicated. The first was to reduce at the best means at our disposal the suffering and premature death of cancer patients. At the present time the greatest promise of success was held out by the surgeon. The statistics indicated that with early diagnosis followed by immediate operation the average duration of life of cancer patients could be appreciably prolonged. If an average of five years could be added to these lives, this would be equivalent to a reduction of more than one-third the total loss. This was clearly the community's immediate program. The second line of effort lay in investigating into the basic facts of cancer, the etiology of the disease, its method of dissemination, the problem of inheritance, and finally the measures of relief. This was the field of the pathologist and the surgeon. A contribution to this

effort was being made by the life insurance companies, which promised to cast valuable light on the entire problem. They had made all the necessary preparations to carry on a special study of the life insurance returns from two forms of cancer which were readily diagnosed—cancer of the buccal cavity and cancer of the breast. Forms had been drawn up for this purpose, which it was planned to send to the physician who signed the death certificate on the claim papers and to ask him for more information in reference to the case. In closing the essayist expressed the hope that these forms would receive the careful and enthusiastic attention of physicians.

Our Present Knowledge of the Nature of Cancer.—Dr. FRANCIS C. WOOD made this contribution. He stated that the interest of investigators in cancer was almost wholly due to the fact that they wanted to cure it, interest in the discovery of the cause being largely scientific and academic. It might be quite possible to discover a cure for cancer before the cause was known, as was the case with malaria, anemia, and syphilis. Unfortunately, at the present time, the only cure known was complete and early removal of the tumor by surgical operation before it had spread throughout the body. Before they could intelligently devise or even attempt to devise a cure, they must know a great deal about the nature of cancer: What it was, how it grew. Why it did not disappear of itself. Put in its simplest terms, a cancer might be described as a wild growth of some tissue of the body. It was extremely important to remember that these cancer cells did not come from outside the body, nor were they due to bacteria or to any parasite; but they were the cells of one's own body. Hence the difficulty of finding a cure, because to destroy these cells meant to destroy also the cells of the tissue or organ of the body from which they grew. The diagnosis of internal cancers was still the great difficulty in their treatment, for almost any internal cancer could be removed, except one which was in the interior of an important single organ, such as the brain or liver. Until some medicinal cure was discovered, it was important to develop every possible means of diagnosis. This was the portion of the cancer problem that belonged to the practitioner of medicine and surgery. The question of discovering what cancer was and the details of the way in which it grew belonged, on the other hand, to the scientific workers in laboratories. This investigation must of necessity be confined to animals, and fortunately for the human race the antivivisectionists had not yet rendered it impossible for us to study the disease in animals. Most animals suffered from cancer in one form or another, and these cancers could be transplanted easily and painlessly by the simple process of injecting hypodermically a small portion of the fresh tumor tissue. This cancer tissue when placed in an animal of the same species would often grow much as the original cancer did, but unfortunately it did not grow in exactly the same way because it was implanted in a new healthy strong animal. This animal frequently resisted the introduction of the cancer and either refused to permit it to grow at all or offered such resistance to the growth that after a few months the tumor disappeared. This absorption greatly complicated the study of cancer, because in trying out a cure they had to be very careful that the disappearance of the tumor was not due to other causes than the remedy administered. Only such tumors as went on and grew steadily until the death of the host resulted should be used in testing out a supposed cancer cure. The tumors which spontaneously disappeared often left the animal immunized against a second implantation and this fact had enabled them to study the conditions which led to the refusal of the animal's tissues to adapt themselves to the new growth. The study of such grafts led to the interesting conclusion that, if the tumor was to take, the animal tissues quickly provided the small mass of cells injected with suitable blood vessels to nourish it, thus showing that the tumor cells did not cause any reactions against themselves, as did ordinary cells such as the cells from the surface of the skin. If these latter cells were injected they would be promptly destroyed by the active cells of the body. The cancer cell was the one then which had lost this power of inciting resistance to itself and the animal's tissues did not recognize the existence of a dangerous invader until it was too late. On the other hand, if the animal was resistant to a particular tumor cell the tissues refused to supply this nourishment. "Why do cancers start?" Dr. Wood said they were still unable to answer this question completely. Certain experiments seemed to show that a chronic irritation induced by an *x*-ray burn would produce a cancer when a person carrying that burn reached the cancer age. But there were other factors besides age, for everyone who had an *x*-ray burn did not develop cancer. In the same way they knew that ulcer of the intestine or stomach frequently, but not always, gave rise to cancers. Still they did not know exactly why irritations started a cancer. Possibly these areas got free and grew just as they would grow in a culture tube and learned to go independently of the influences which kept normal tissue cells within their natural boundaries, but this was a mere surmise. Their experimental work on animals had shown that the growing of a cancer was entirely different from the beginning of a cancer. A mouse could be rendered insusceptible to inoculation of cancerous tissue by suitable treatment before inoculation, but the same mouse might develop a cancer of its own while still resistant to implantation, so that the conditions of growth and the conditions of origin were entirely different things. It had recently been shown that a certain amount of resistance to cancer could be produced by very small doses of *x*-ray, just enough to stimulate the bone marrow and cause it to send out certain kinds of cells which had been recognized as in some way related to the spontaneous disappearance of tumors in animals, but this did not mean that the original tumor which this animal had did not keep on growing. The only way in which one could use *x*-ray or radium to treat a tumor which was already fixed and had a start was to kill the cells of the cancer and this was very difficult because large quantities of radium and prolonged exposures to *x*-rays were required, and there was always the danger of stimulating the tumor instead of killing it. Tumors spread to the body through the blood vessels or lymph channels, and this spreading could be hastened by manipulation of the tumor, as in examination, either by the patient, the physician, or the surgeon. The surgeon should be very careful in excising a tumor to go wide of the tumor itself and not to open up any of the cancer bearing tissue itself. Despite the most earnest and painstaking study by laboratory workers during the last fifteen years, the amount of knowledge acquired had been small. They had had to do a great deal of unlearning, because at first it was thought that cancer cells might grow in the same way that bacteria grew, but it had become evident that no such parallel could be drawn; the bacterium destroyed by its poisons as it grew, the cancer cell insinuated itself without causing the slightest disturbance until it destroyed some important organ or blocked the way for circulation, or nourishment. Thus it might be seen that the surface of the last great problem of medicine was still almost unscratched, and they still had no indication as to the direction in which the solution was to be obtained.

The Place of Surgery in the Treatment of Cancer.—Dr. GEORGE D. STEWART made this address. He took as his thesis "Surgery Is the Only Cure for Cancer." This he endeavored to demonstrate, speaking first of the so-called "cancer cures." These he said were so numerous that scarcely a day passed that one did not hear of a new one. The truth was that toxins, extracts, and serums had not given a single cure or, if they had cures by these means, they were as rare as spontaneous cures. The most that could be said by those who had used these methods was that they *thought* the growth had decreased in size; here too often, the wish was father to the thought. The various methods that had been used in the cure of cancer might be divided into three groups: The first group included the escharotics, the cautery, and fulguration; the second group included the radioactive agents, radium, thorium and mesothorium; the third method was by some effort of surgery. The agents belonging to the first group might occasionally cure a benign growth. When this happened the testimony of the patient so cured was sent broadcast and many flourished on this kind of exploitation. It should be remembered that drugs which caused sloughing affected healthy tissue as well as diseased tissue and one could not accurately limit the field of their action. Cauterization by means of fulguration was also a means of tissue destruction that one could not accurately control, and there were other similar methods, as the superheating method of Percy. This method was devised for destroying cancer of the cervix uteri, and was also a form of tissue destruction that was not safe. Aside from the danger of hemorrhage which Percy claimed to have overcome by cutting off the blood supply, rectal

and bladder fistulæ were not uncommon. This method was only a variant of the cautery method which had been used for some years by Dr. Burns of Brooklyn; furthermore it was only applicable to cancer of one variety. Fulguration with the high frequency current in cancer of the bladder was still extolled by some and had cured some cases in the early stage, but it had never cured a case in which the bladder wall was deeply involved. Taking up the second group of agents, radium had some very ardent advocates. In the Howard Kelly Hospital, Dr. Kelly associated with Dr. Burnham reported 1300 cases, some treated five years ago and most of them two years ago. These statistics did not carry conviction because two years was not sufficient time to say whether a cancer was cured or not. Speaking of cancer of the body of the uterus, Burnham said no case was cured, but there was a decrease in the size of the growth; it must be remembered a decrease in the size of a cancer was not a cure. Burnham said further that they would not advise radium unless operation was impossible in cancer of the cervix uteri, and that it gave the best results in cancers of slow growth. If operable, cases should be operated upon. They found radium less satisfactory in ovarian cancers. In papillomata of the bladder it had given favorable results and it had cured rectal adenocarcinoma. Dr. Stewart said he had seen two cases of carcinoma of the rectum made distinctly worse after radium treatment. The statistics given this evening showed the large number of cases of cancer of the stomach, liver, thorax, and intestines, and to these radium was not applicable. The basal celled carcinoma of the mucous membranes of the mouth were milder and more amenable to treatment than similar growths of the skin. The need was for something to cure cancer in cases in which radium did not give any help. Burnham concluded that he did not advocate the use of radium in operable cases, but only in inoperable cases and following operation. Others had found radium effective in carcinoma of the skin, papillomata, nevi, and in all superficial forms of the disease, except malignant pigmented moles in which the growth was very rapid. Albutt stated that radium had kept cases of mammary cancer alive for from three to seven years, but that one ought not to deny these patients the help that operation might offer. One must not expect too much from radium or thorium; they were effective in round celled carcoma, basal celled epitheloma, and superficial cancers of the face. It should be remembered that these were not true cancers. Koenig and Gauss, at Frieberg, after an experience with a very large number of cases stated that in carcinomas with metastases they could not report a single cure with radium, thorium or mesothorium, but they believed that these inoperable cases should be submitted to the radium treatment. After reviewing the results of still other observers who had employed the radioactive agents in the treatment of cancer, Dr. Stewart said that, summing up their evidence, it seemed that radium cured some cases of superficial epithelioma and that it had an effect on sarcoma, but that it had no effect on hard cirrhous growths. Of the *x*-ray and radium, in general it might be said that they had some curative properties, but they could not be applied in the cavities of the body and there was some question whether the *x*-ray did not in some cases have a stimulating effect upon the growth of the cells. Taking up the question of surgery in cancer, a few cases might be cited. Metropolitan Life Insurance Company showed that of 75,000 cases of breast cancer operated upon 18,000 died in one year. Lynburg reported 183 cancers of the breast, some very advanced, which were operated upon and 77 survived after three years. In cancer of the stomach Schauter reported 20 to 30 per cent. alive after three years; Altschult 14 per cent. of cancer of the stomach, and May 38 per cent. after three years. Of course it was recognized that earlier diagnosis had improved the statistics of operations, that had often been stated and would have to be affirmed and reaffirmed. It must further be emphasized that operative removal to be effective must be radical. No other method had so far succeeded in displacing surgery. Every cancer patient should be given the chance for cure that surgery held out. Cancer was a local condition only before there were any metastases, and surgery offered hope of cure provided it could be removed before that time. Those that held that cancer was a general blood disease were absolutely wrong inasmuch as it did not grow until the tumor material was transplanted to other parts of the body. If seen in the early stage radical surgical removal offered a fair prospect of permanent cure in a certain percentage of cases.

Dr. JOHN A. HARTWELL said it seemed to him that the function of the man who discussed a paper was to sum up what had been said rather than to bring out anything new. The first paper was statistical and therefore it was impossible to discuss it, but these figures in spite of what Dr. Stewart had said, were unassailable. Dr. Dublin had said that the interest in the cancer problem was not so much from the standpoint of economics as from that of sentiment. On the other hand he thought cancer took men at a time of life when they were still much needed and that the economic side of the question was very important. Dr. Wood had told them what he knew of cancer and, so far as he had been able to grasp it, their knowledge seemed to be very meagre, but they must not feel that it was through the laboratory that cancer would be controlled or mitigated. It would be in the laboratory associated with clinical work that salvation would be found. Dr. Stewart had given them the results of operative methods of treatment and had shown that there was a very much better outlook for the cancer patient through surgical interference than by any other method, yet no operating surgeon ever approached a case of cancer without serious misgivings. The surgeon got successes but he also got failures and the failures were more numerous than the successes. When one got statistics reporting 75 per cent. of cures in cancer it was well to see if there was not something that made them different from the average group of cancer case, for cancer was curable in only a small percentage of cases. A certain number could be cured if we got them at an early date. The surgeon could do little after cancer had passed the local stage. However, it was a common experience of the surgeon that early cases did remain cured. Therefore this was the line along which they must direct their efforts toward the control of cancer and the problem must be worked out by a combination of the laboratory and the clinic, by a study of mouse cancer and human cancer. The cure of cancer was not to be sought in radium or the *x*-ray though there was some evidence that these agents had actually accomplished cures; they therefore must not be set aside, but must be studied with intelligence. There was now a difference of opinion among radiologists as to the dosage and the frequency with which treatment should be given, and also with reference to the duration of the treatments and whether it should be applied locally or generally. It seemed from observations made at the Rockefeller Institute that the lymphocytes were increased above the normal by the *x*-ray treatment and the lymphocytes seemed to have an influence on cancer growth. In treating cancer by the *x*-ray or radium the patients should be observed by an expert surgeon, who by watching the results of these methods and the results of surgery would be able to make comparisons. By such a method there was reason to hope that definite conclusions might be reached and in the meantime it was well to avoid methods that savored of exploitation or that had not been well worked out.

Dr. DAVID BOVAIRD, Jr., said that if one added together the cancers of the alimentary tract, cancers of the stomach, intestines, liver, and rectum he would find that these formed about 50 per cent. of all cancers. These cases were regularly examined first by the general practitioner, so that the fate of those suffering from cancer depended upon the physician, and it was he who should be brought to an appreciation of the gravity of the situation and the need for proper action. Dr. Stewart had shown that the percentage of persons surviving operation for cancer of the stomach for from two to three years varied from 14 to 38 per cent., but such results were obtained in very few clinics in the world. A search of the literature would convince one that cancer of the stomach was one of the gravest things that could befall any one. Friedenwald of Baltimore reported 1,000 cases, 266 of which were brought to operation. Of these 138 were merely exploratory operations. The remainder were subjected to suitable operative procedures, such as gastrectomies, pylorectomies, etc., and not one of these patients was alive today. Dr. Lambert and Dr. St. John in going over the records of the Presbyterian Hospital covering operations for cancer of the stomach found 15 or 16 cases in which partial gastrectomy had been done and of these only two patients were living at the present time. One of these was apparently healthy but in the other the condition was not so clear. These were the results in most surgical clinics in this city. The responsibility

for these results did not rest on the surgeon—surgical skill does not vary so greatly in different places—but on the stage of the disease when brought to operation. As an aid in making an earlier diagnosis in cancer of the alimentary tract Dr. Bovaird urged the early and adequate use of the *x*-ray. He said he felt thoroughly convinced that the radiograph added more to the possibility of early diagnosis of carcinoma than any other one thing that they had tried in recent years. It therefore behooved them as physicians whenever they were dealing with a case of gastric disturbance not to rely wholly on the usual clinical methods but to have a thorough radiographic examination of the stomach and intestinal tract made. If that was done and the result correlated with the clinical findings the diagnosis might be made sufficiently early to give the surgeon a fair opportunity of effecting a cure. The radiograph also had a value on the negative side as well as on the positive side. It had been their experience that when a radiograph had given negative results and the patient had been subjeected to operation the radiograph was shown to be right. The radiograph could generally be relied upon to establish the diagnosis of gastric carcinoma, and when that was done no time should be lost in referring the patient to the surgeon for operation as that offered the only hope of cure.

Dr. Eugene H. Pool said it was important to define what one meant by cancer in this discussion. We had roughly two types of cancer, first, the relatively benign which rested relatively tranquil at or near the site of its inception, to this type belonged basal cell epithelioma; second, the truly malignant type, which was a creature of mushroom-like growth, a prolific breeder, a voracious and predatory despoiler and ravager. This type was represented by cancer of breast, cervix uteri and tongue. The benign type was like a cub lion which usually we might play with and fondle with impunity; this type might be treated indifferently with radium, *x*-ray, cautery, or the knife. The pathologist and the average surgeon usually could recognize clinically this type. Yet the lion cub could not always be depended upon and sometimes matured unexpectedly and caused injury and even took life. This benign type, however, was not what we had in mind in speaking of cancer in such a discussion as this. We had in mind the well defined malignant type, trifling with which was like fondling a serpent. It was unfortunate that the term cancer was used indifferently for these two types of tumor which clinically and in their life history were so different. In considering the malignant type, Dr. Pool said he had recently heard an eminent surgeon say in a carefully prepared paper, in discussing the treatment of carcinoma of the cervix with radium that in addition to numerous non-operable cases he had treated three operable cases with radium. He claimed these three cancers had disappeared and stated that this suggested that radium and not operation might prove to be the method of election in the treatment of these growths. Such was an example of the statements made by the enthusiast; one would not, however, expect such a statement from a surgeon. Such suggestions were extremely dangerous teaching. Why? Because they engendered in the mind of the sufferer a hope of success from other means than the knife; they consequently encouraged delay. Now practically the entire progress in the treatment of cancer had been dependent upon training the profession and the laity that early diagnosis and early radical operation offered the sole chance of cure. Dr. Pool claimed that radium, *x*-ray, mustard applied inside or outside, or any other pet therapeutic agent of the experimenter, commercializer, or scientist had not been put on a basis sufficiently firm to warrant recommending them to a sufferer with an *operable malignant type of cancer*. On the other hand we must continually emphasize the salutory effect if the knife was employed early. One must picture in his imagination the cancer beginning from a single cell or an extremely limited collection of cells, not initially as a diffuse lesion. Obviously if such is correct the disease may be eradicated by early operation; and more surely in direct proportion as the time of operation approached the time of the inception of the disease. Therefore we must insist that these patients be submitted to the surgeon, not only with an early diagnosis, but, better, when there was merely a suspicion of the presence of a malignant type of cancer.

Dr. J. C. Bloodgood of Baltimore said he had not come prepared to speak but to listen and to learn. However he could give a few impressions with reference to the change that had taken place not only in their knowledge of cancer, but in their attitude toward it. Dr. Wood had spoken of the workers with the *x*-ray getting cancer; workers with the *x*-ray to-day did not develop cancer. That was definite evidence that some forms of cancer could be prevented. We knew that some forms of cancer were more frequent in men than in women, in this instance the only difference was the question of the use of tobacco, and there was no reason why men should not learn to smoke without getting cancer of the mouth. Dr. Pool made the point in the difference in the results of operative treatment in early and late cancer, that was the difference between the early and late stages as far as one could tell from the macroscopical appearances. They had made a study along this line and at the end of five years compared the two groups, and there was a great difference in the results; but surgery did cure a certain number of fairly advanced cancers, though one could not put great hope in surgery in advanced cases. His figures demonstrated that education could bring to the surgical clinic cancer in their locality in a much earlier period of the disease. Their results were not due to the fact that surgery had improved but were due to the different stage of the disease at the time of operation. Their report on cases of cancer of the stomach showed three and five-year cures in 19 per cent. of the cases. In cancers of the stomach that were operable, some of which were shown to be operable by exploratory operation, in the last six years they had increased their percentage to 38 or 39 per cent. A large per cent. were living but it was not five years since all of them were operated upon. The increase, however, showed that with the education of the public and the physician in regard to the early diagnosis and the importance of early surgical interference better results could be obtained. The importance of this would be recognized when he said that 51 per cent. of these cancers were in regions in which it was difficult to recognize cancer early, and to detect the difference between advanced benign and distinctly malignant types. In a series of 2000 cases the percentage of those brought to early operation had increased from 32 to 57 per cent. From the time they began their campaign of public education until 1913 the proportion of breast lesions brought to operation early had increased from 47 to 59 per cent. These figures showed very definitely what education could do. Until six years ago they had never had an operable cancer of the right colon. In cancer of the lip, tongue and skin there must have been a period when the individual had known that he had a local affection and if he had sought treatment at the hands of the surgeon he could have been cured in almost every case. Cancers of the lip and tongue within three months had become hopeless. There was no more reason why a patient with a growth on the lip or tongue should allow it to go three or four months without seeking relief than there was why a patient with appendicitis should wait three or four days for peritonitis to set in before consulting a surgeon. The percentage of inoperable cancers that they were getting was decreasing. No one should die from cancer of the skin or lip as these were generally small growths, and they had had only about 100 pigmented mole cancers to 1500 lip and skin cases. Therefore correct information for both the public and the profession would increase the number of cures in cancer and the number of late cases would be decreased. To illustrate, breast cancer for the first time in the last five years was relatively on the decrease in the clinic in Baltimore. The laboratory workers were having a tremendous influence on the surgeons in their investigations. Surgeons had not known how to use their material for the development of knowledge of cancer. The workers in the laboratory would influence the surgeon to use their methods to advance knowledge in respect to the cure of cancer.

Poisoned Bait for Controlling the House-Fly.—Malley, in an article in the *South African Journal of Science*, refers to a mixture of sweetened water and arsenite of soda which is sprayed on detached branches of trees which have firm foliage, the latter then being placed upon strategical situations, as manure heaps and garbage cans. Other bait carriers in use are old bags and the like. Finally the bait may be sprinkled directly on the dunghills, and on the ground near by. The full formula for the bait is arsenite of sodium 1 pound, sugar 10 pounds, water 10 gallons. The insects die before they can deposit their eggs. The idea seems to have been anticipated by Berlese of Italy in 1913.—*Tropical Diseases Bulletin.*

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THE PRESENT STATUS OF CHRONIC MULTIPLE ARTHRITIS, WITH SPECIAL CONSIDERATION OF INFECTION AS AN ETIOLOGICAL FACTOR.

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THE object of this paper is to present the subject of chronic multiple arthritis as generally accepted to-day. Prominence is given to methods that are appearing to unravel this difficult subject. We shall omit full consideration of the arthritis urica and tuberculous types of arthritis, referring to them as only part of the general subject.

To make the subject comprehensible, we shall discuss it under two chief heads or types. The two types the observing clinician would find himself dividing his patients into were he shown a large number of cases. In fact, the two main types of the older clinicians to whom we find ourselves coming back for a working basis.

Out of the great chaotic clinical mass of polyarthritis of recent years, we feel that we have something here very tangible, and a knowledge of the two chief types clearly in our mind will enable us to more clearly understand the irregular types.

The chief subject discussed in this paper is that of infection; how it plays its part.

The two types we are to consider give entirely different clinical pictures. These are: (1) Proliferating, or ankylotic type of chronic multiple arthritis; (2) degenerative or non-ankylotic type of chronic multiple arthritis.

We shall refer to the true infectious types of arthritis together with the mixed types. Out of this a working classification will be given, based on our study and presentation of the subject, which classification we hope will be understood by the physician.

1. *Proliferating, or ankylotic type of chronic multiple arthritis*, called by some rheumatoid arthritis, by others atrophic arthritis. This constitutes the large class of polyarthritis now being studied as never before, attracting and engaging the attention of world-wide laboratory research. It attacks as a rule the young adult; its febrile onset is irregular and frequently entirely overlooked; its best external signs are seen in the small peripheral joints which tend to become fusiform in shape; it is apparently steadily progressive; ankylosis tends to occur and the patient becomes bedridden. This type of patient may linger on for years, a hopelessly deformed invalid, dying finally of cardiovasculorenal disease with profound anemia. Even at this day such in brief too truly pictures a large class now filling our institutions for the treatment of chronic invalids and private homes throughout the land.

As a result of intelligent research now going on this picture is changing. We are rescuing patients and staying the progress of the disease, cutting it short so to speak and repairing damage done. In a certain way, we may compare this disease with poliomyelitis. In the latter, however, we have a distinct infection doing its work quickly and ceasing action. The resulting damage is left to nature and the surgeon for repair. In chronic multiple arthritis, on the other hand, the active agent seems to act intermittently, but no less effectively, and the semblance of progression characterizes the clinical picture. The etiological factor stamped out, however, and the polyarthritic becomes as the poliomyelitic amenable to the restorative power of nature and the intelligent properly directed skill of the surgeon. All this leads us at once to infer that at the etiological root of this type of arthritis lies an infection—the generally accepted view to-day.

What is the basis for accepting belief of infection? In order to comprehend the nature of the evidence forcing upon us the infection theory of polyarthritis, an understanding of the nature of some of the comparatively recent work done in rheumatic fever is necessary.

Of the several promulgated theories of the etiology of rheumatic fever only two schools appear to meet with recognition: One that it is a specific disease due to a specific germ; the other that there is no specific organism but a form of septicemia of staphylococcal or streptococcal origin, and bearing a close analogy to pyemia. Much has been produced in the support of both of these views.

Regarding the single germ theory, which now seems the favorite, several workers have isolated a specific germ and confirmed the specificity through cultural inoculations. Achalme, in 1891, discovered a bacillus. Triboulet, in 1897, isolated a germ from the blood in rheumatic fever, and grew it anaerobically. In 1899, Westphal, Wassermann and Walkoff published their findings regarding a diplococcus. Soon after this, Poynton and Payne began to publish some of their research work along this line describing a germ isolated by them—a micrococcus identical with those of other observers. To Poynton and Payne we are indebted for a mass of work which has excited a great deal of scepticism among laboratory students. Many have failed in any way to duplicate their findings. This has led to their work being discredited by some. But just now it can be safely stated that their work is being recognized, and of great assistance in bringing to

the front much to support the single germ theory of acute rheumatic fever, and that germ a micrococcus identical with that discovered and described by Triboulet and by Wassermann and more recently by Rosenow. All the observers point out the extreme difficulty in isolating the germ, and here doubtless is the explanation of so many failures on the part of laboratory workers who have made their cultures from the blood stream and joint cavities.

It is not in the joint cavity for example, the place usually examined, that organisms are found. The joint effusions both in rheumatic fever and in arthritis experimentally produced are usually sterile. It is in the areolar tissue about the joint—that binding the endothelial tissue to the fibrous capsule, the site of cellular exudation—where the organisms are found. The organisms find difficulty in getting into the free-joint cavity in any numbers. They here encounter the endothelial cells and leucocytes and are rapidly destroyed. They locate themselves then outside about the joint, and

FIG. 1.—Proliferative or ankylotic type of chronic multiple arthritis. Age of patient 27 years. Onset of disease at age of 20 years. Illustrated further by *x*-ray, Figs. 2 and 3.

it is just this fact that has made the bacteriological study of joint infection so difficult and so long in being understood. It opens to us, as we shall show later, a better means of understanding chronic polyarthritis. The blood stream is simply a carrier containing only now and then organisms gathered from the original focus of infection; hence also the repeated failures in getting a specific blood culture. This definite organism has been isolated from the human subject afflicted with rheumatic fever and injected into rabbits producing a disease identical with that in man; the microorganism has been recovered and again injected. This has now been confirmed by many observers (Triboulet, Wassermann, Poynton and Payne, Rosenow and many others).

Evidence Supporting the Teaching of the School Advocating the Septicemic Theory.—Kronenberg, in 1889, expressed the view that rheumatic fever is not a disease sui generis, but rather a reaction of the joints and other tissues to a series of bacterial influences, *e. g.*, streptococcal, staphylococcal, gonococcal and allied infections. Those holding this view were confronted with absence of suppuration characterizing its clinical manifestations. This absence is striking. Frequently in rheumatic fever the reaction is pronounced, and the febrile movement marked, yet suppuration is rare.

To meet this absence of suppuration, it became necessary to attenuate the organism and speak of attributes which had ceased to be pus-producing. This pyogenic germ in its transformation to a joint environment must have materially changed its attributes and ceased to be pus-producing. This is especially interesting, and has an important bearing in chronic multiple arthritis, as we shall see later.

How the Theory of Infection is being Worked Out; Meaning of Mutation, Focal Infection and Elective Localization.—As we have just stated, since the pus-producing organisms have played the chief rôle in the rsearch work of arthritis, it has become necessary to modify in some way the specific attributes of the organism. And we have referred to the recognized attenuation need of the pyemic school. To explain this attenuation gave rise to the use of mutation and focal infection. Herein lies much that is promising toward the solution of our arthritic problems.

MUTATION.—The repeated failures to obtain cultures from the blood and joint cavities in active forms of rheumatic fever led bacteriologists into side fields of investigation. Ruediger,[1] in 1906, called attention to fermentation and morphological changes of certain streptococci; later noted by Buerger and Rittenberg,[4] Anthony,[2] Walker,[3] and others. Davis,[6] after a great deal of work, stated that transformation of one member of the streptococcus group into another within certain limits appeared to be not an uncommon phenomenon. Rosenow[6] says: "Davis and Rosenow have shown that the encapsulated streptococcus from "septic sore throat" can be converted into streptococcus mucosus on the one hand and hemolytic streptococcus on the other." Rosenow also calls attention to a previous paper where he has shown that streptococcus viridans isolated chiefly from the blood in cases of subacute endocarditis may by animal passage take on the properties of the typical pneumococcus.

He summarizes thus: Altogether twenty-one strains isolated originally as hemolytic streptococcus from a wide range of sources, including erysipelas, scarlet fever, puerperal fever, arthritis, tonsillitis, etc., in one way or another, have been converted into *streptococcus viridans;* 17 strains isolated as *streptococcus viridans* chiefly from the blood and tonsils in cases of infective endocarditis have been converted into pneumococci. Eleven strains isolated from the sputum, blood and lung in pneumonia and empyemia have been made to correspond to hemolytic streptococci. The streptococci from three of the strains acquired all the essential features of the streptococci of rheumatism, two into hemolytic streptococci, the streptococcus of rheumatism, *streptococcus viridans* and back again into the pneumococcus. Rosenow asserts that the various strains of the streptococcus group may be converted each into the other.

Here then the change appears as nothing short of a real mutation. To enable one to grasp the subject intelligently, it may not be amiss to refer to what biologists mean by mutation. Like pre-

Raphaelism in art, the mutation theory is a revival, so to speak, in a new dress of the theory of the origin of species of pre-Darwinian times. The terms mutation, mutability, immutability, etc., were completely driven out of use by the theory

Fig. 2—Radiogram of left hand of patient shown in Fig. 1. Note selective character of the disease in the hands—proximo-medial joints chiefly; also great amount of destruction.

of natural selection. While Darwin used the term mutability, he used it in a restricted sense from that of the modern biological school of mutation. Mutation in the modern sense means that species arise by saltations or jumps, and these individual saltations can be observed like any other physiological process. These saltations or mutations occur without transitional gradations. This is readily seen to stand in marked contrast with the generally accepted selective theory that species of animals and plants have arisen by imperceptible gradations, the changes being so slow that the life of a man is not long enough to enable him to witness the origin of a new form. The mutation theory means that the attributes of organisms consist of distinct, separate and independent units. Each new unit, forming a fresh step in this process, sharply separates the new form as an independent species from that from which it sprang. The new species appears all at once. It originates from the parent species without any visible preparation, and without any obvious series of transitional forms. Natural selection, Darwin says, chooses "slight variations." Natural selection, he says, works on "chance variations" (Life and Letters, II, page 87 et seq.). Unless such occur, natural selection can do nothing ("Origin of Species," p. 64). Wallace is still more precise than Darwin in his selective theory. He dwells upon rapid multiplication and the premature death of innumerable individuals; variability and survival of the fittest. He says: "It is therefore proved that if any particular kind of variation is preserved and bred from, the variation itself goes on increasing in amount to an enormous extent, and the bearing of this on the question of the origin of species is most important."

Without going further into the details of the selection theory, it holds that "species have arisen by natural selection resulting from the struggle for existence" requiring long periods of time. According to the theory of mutation, species have not arisen gradually as the result of selection operating for hundreds or thousands of years, but by sudden, however small, changes. De Vries'[1] experimental work with the primrose (*Oenotheria lamarkiana*) is interesting as well as illustrating the full meaning of the mutation theory as set forth by one of its chief exponents. DeVries brought over 100 plants into cultivation, and only one, as he terms it, was found passing through the mutation period. In seven generations his experiments dealt with 50,000 plants and of these over 800 mutated. As a result of these experiments, DeVries formulated laws, some of which are here given:

1. New elementary species arise suddenly without transitional forms.
2. New elementary species are, as a rule, absolutely constant from the moment that they arise.
3. Mutability appears periodically.

So much for the mutation theory which has by no means been fully accepted by the great class of biologists. This lack of acceptance applies also to the special primrose work of DeVries just alluded to.

Fig. 3.—Radiogram of right hand of patient shown in Fig. 1. See also Fig. 2.

While the work of the bacteriological transformationists fails in certain important facts in meeting the strict requirements of the mutation school of biology, yet it is clearly seen that they fall back upon that school for any approximate scientific ex-

planation of their experimental findings. This is not the place to discuss the biological placing of the bacteriological mutationists, but it is well to observe that the claimed attributes of bacterial organisms do not arise in accordance with some of the established laws of the mutation school —one especially that "new elementary species are as a rule absolutely constant from the moment that they arise." This constancy is dwelt upon with no trace of reversion. But, according to Rosenow, especially members of the streptococcus group are by means of oxygen regulation and animal passage made to pass one into the other in a sort of "Jack-in-the-box" manner—now I am hemolytic and now I am not, and now again I am hemolytic; now I am soluble in bile and now I am not. Rosenow's changes occur practically over night.

It is interesting right here to mention the tenacity with which some bacteria cling to their attributes. Quite recently Dr. Rufus Cole of the Rockefeller Institute told me that one of his well-known types of pneumococcus had at that time made 226 animal passages, with complete retention of all its attributes and without change. It had not, however, been subjected to the Rosenow technique or mutational experimentation. This is of interest only as showing the stability of this particular member of the streptococcus group, and in no manner is intended to reflect upon Rosenow's work.

We have especially emphasized the "species" and what a change of this means. It may be found that the changes are not so great after all. That the organisms are all of the same species and only variants; that, for example, the *Streptococcus hemolyticus, Streptococcus mucosus, Streptococcus pneumococcus, Streptococcus viridans*, are all variants of the same species. This is much easier to reconcile with the rapid changes resulting from changed environment. We must await further development and confirmation to clear up the subject and make for a complete reconciliation with the established laws of biology.

And now to the practical work of the bacterial transmutationists along this line. The following table by Davis[5] showing the relation of streptococci is interesting at this point.

Relation of Streptococci

Organisms	Hemolysis	Green Colonies Blood Agar	Capsule	Solubility in Bile	Inulin Fermentation	Exp. Arthritis	Exp. Endocarditis
1. Str. hemolyticus	+++	0	0	0	0	+++	±
2. Str. epidemicus.	++	0	+	±	0	+++	+
3. Str. mucosus.	±	++	+++	+++	++	++	±
4. Str. pneumoniae	0	+++	+	++	++	±	+?
5. Str. viridans	0	+++	0	0	+	±	+++

Sign — indicates particular property may occur rarely or to a slight degree.

Sign ± gives a general idea of intensity of frequency of the property.

The plus signs give general idea of the intensity or relative frequency of the property. The first members of the group are hemolytic. Descending the series, this property vanishes.

The relative solubility in bile of this group of organisms first called attention to by Neufeld in 1900, is regarded as of much value in differentiating. The bile solubility and hemolytic attributes may be styled the two chief factors making for differentiation. To make a hemolytic become a non-hemolytic, for instance, is certainly striking.

To bring about the transformation Rosehow devised a certain technique. The fact that lesions in rheumatism occur in relatively nonvascular regions suggested to him that the infecting organism might be sensitive to oxygen pressure. To meet this he made his inoculations into tall tubes containing acites-dextrose agar. Thus giving near the top of the tube aerobic conditions and near the bottom anaerobic. He found that the oxygen requirement was the chief factor, since the largest number of colonies developed between 1.5 cm. from the top and 3.5 cm. from the bottom of the tube. He further found that growths in symbiosis with other bacteria, and injection into cavities in animals called forth mutational forms. Rosenow's work is most interesting and it is well to note how he adapts his experimental transitional work to the practical solution of the arthritic problem.

Fig. 4.—Proliferative or ankylotic type of chronic multiple arthritis. Patient aet. 27 years. Onset 2½ years ago, immediately following pregnancy.

Davis[5] states as a fact "that injection of *Streptococcus hemolyticus* intravenously into a rabbit practically always gives rise to arthritis and tenosynovitis which may be monoarticular or polyarticular. When given in moderate doses rarely do the streptococci localize elsewhere. In large doses prone to produce myocardial abscess and hemorrhages."

Rosenow[6], through his technique, has obtained three types of cocci from the joints in rheumatism. One type corresponds with that found by Poynton and Payne and might be called *Micrococcus rheumaticus*. Another type corresponds to the description of Beatty and might quite properly be designated as *Diplococcus rheumaticus*. And a third group, which forms long chains and may be designated as *Streptococcus rheumaticus*. All types are quite susceptible to phagocytosis and probably have not the power to grow in the free circulation. In from 24 to 48 hours after a large intravenous injection in rabbits and dogs the blood is sterile. The affinity of the *Streptococcus viridans*, especially as

isolated from cases of chronic infectious endocarditis, for the endocardium of animals and of the hemolytic streptococcus for the joints is now well established. Rosenow has been able to produce endocarditis and arthritis in the same animal by injecting mixed cultures in pure form.

FIG. 5.—Proliferative type of chronic multiple arthritis. Advanced type. Male aet. 56 years. Onset at 24 years. Note especially selective character of this type involving chiefly the proximo-medial joints. Also note comparatively good condition of other finger joints after 30 years. Note also that in this very advanced case joint destruction is not much greater than in the case of comparatively short duration. (Figs. 1-3.)

The arthritis is multiple, never suppurative. The endocarditis produced from the strains from rheumatism, just as has been found to be the case in *Streptococcus viridans* is embolic in origin.

Rosenow found virulence of his three types of a low order. When first isolated all are characterized by a marked capacity to multiply at a low temperature and all very sensitive to oxygen pressure. He makes the following statement: "Strains of the three varieties have been converted each into the other." By means of animal passage strains of each group have been converted into typical pneumococci. Rosenow in his rheumatism experiments confirmed also the findings of Beattie and Poynton and Paine that a low temperature favors their growth. This is in keeping with the well-known clinical fact that cold aggravates the symptoms in rheumatism. Rosenow's experimental work suggested to him the reasoning that cold causing vasomotor constriction might favor the growth of organisms by causing a lack of blood and leucocytes and in consequence a lowered oxygen pressure.

The results, then, of cultures in man and of the animal experiments support the view that acute articular rheumatism is due to streptococci having peculiar properties. The workers have found that affinity for joints, endocardium, pericardium, and muscles characterizing these organisms when isolated tends to disappear on cultivation. It may be restored by animal passage. When the rheumatic strains have acquired the cultural features of hemolytic streptococci they lose the affinity for the endocardium and pericardium and acquire an even greater affinity for the joints.

Focal Infection and Elective Localization.—The literature for a considerable time has been filled with infective data and attempts at localization as the underlying cause of arthritic involvement. The tonsils, the oral cavity, especially the gums and teeth with concealed abscess cavities, have given us from both dentists and physicians a real bombardment of literature dealing largely with clinical observations and rather positive statements; yet beyond the localization of the foci very little real scientific data. No inconsiderable part of this literature deals with cultures taken from the mouth—alveolar cavities, tonsillar crypts, etc.—so-called autogenous vaccines made and injected into the patient. In the light of our present knowledge such superficial work only does ill to the patient and reflects upon the scientific bateriological knowledge of the physician. It is needless to say that to be of any promise whatever autogenous vaccines must be obtained from closed cavities under proper aseptic precautions. Many workers are now adhering to this and the results are more promising.

Focal sites in connection with the teeth illustrate this part of the subject well and we reproduce here some of these concealed foci.

The nasal sinuses have attracted a great deal of attention, the appendix, the seminal vesicles, the intestines—all these and many more have figured as sites of focal infection. That such focal sites exist as points of toxic entrance has long been known, but it remained for Rosenow to emphasize something that had escaped recognition—that focal sites furnished a place where bacteria may acquire new properties. These new properties are in keeping with those of the transmutationists already mentioned.

It is believed that previous to an attack of rheumatism various types of the streptococcus group, especially the hemolytic streptococcus, acquires in the tissues of the infected individual the factors which give them the affinity for joint, endocardium, and

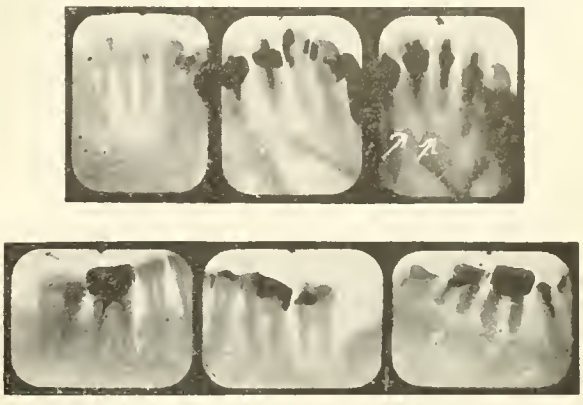

FIG. 6.—Dental roentgenograms for publication of which I am indebted to S. M. Getzoff, D.D.S., N. Y., showing concealed septic foci. Apical abscesses and resultant bone atrophy are well shown. Also stripping of roots from pyorrhea. Note especialy the concealed foci which here were due to failure to empty and fill the canals.

pericardium. These cavities so to speak, are human test tubes in which many of the mutation experiments outside the body are duplicated. In short, the streptococcus in these concealed cavities under low oxygen pressure and in the presence of other bacteria loses as it were its virulency and acquires

new properties, giving it a special affinity for joints and endocardium or joints alone, as the case may be.

The intestinal tract has long been looked upon as a focal site. Experiments have shown lesions of

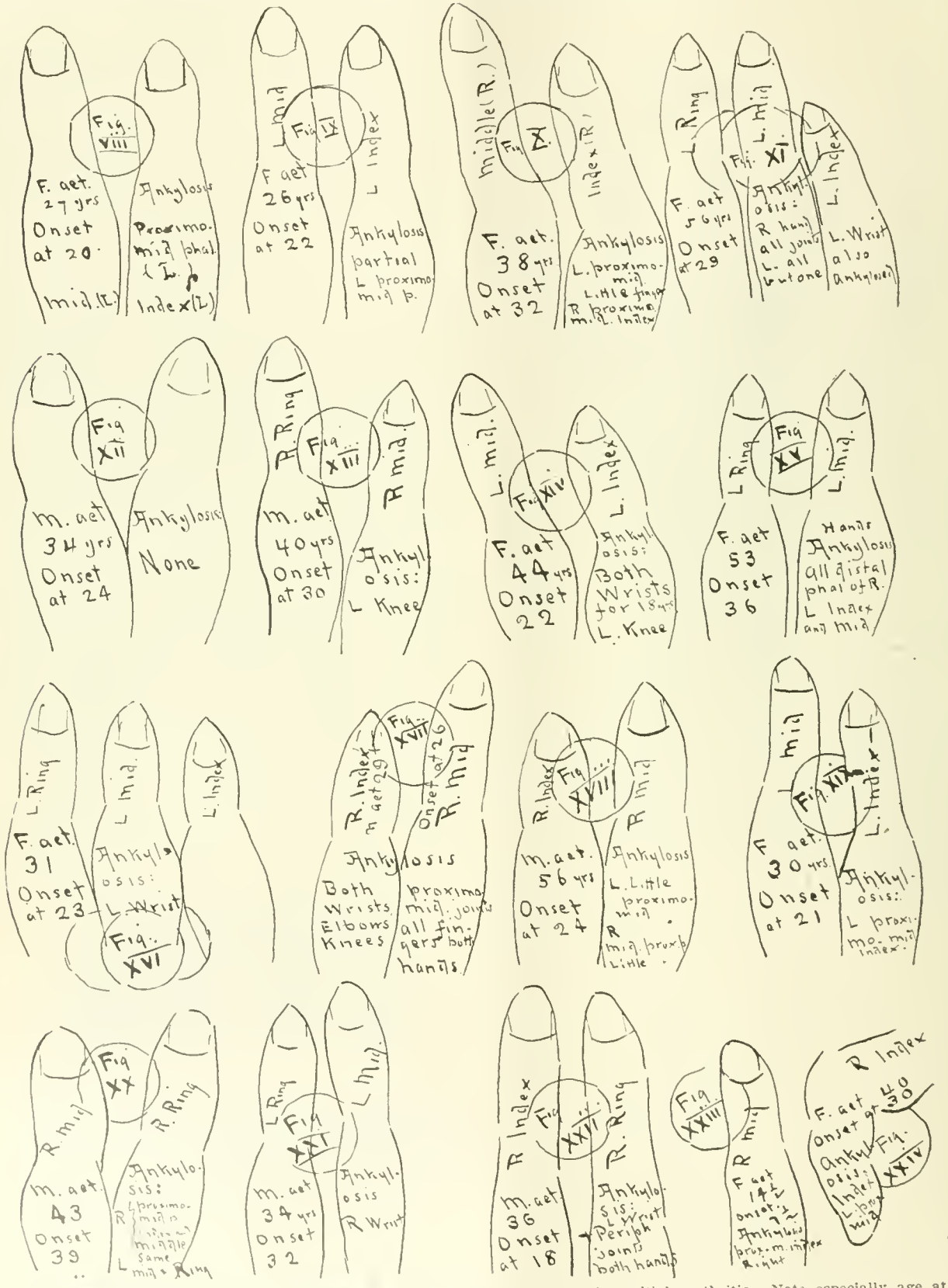

FIG. 7.—Tracings illustrating the proliferative or ankylotic type of chronic multiple arthritis. Note especially age at onset and ankylosis. Also the spindle shaped proximo-midphalangeal joint—the so-called Haygarth nodosity. Note also the large percentage of males. Cases not specially selected. We have complete *x*-rays, photographs, and casts of hands from which above are taken

the appendix, diarrhea due to cellulitis, ulceration, and the enlargement of the mesenteric glands (lymph) observed commonly in animals after intravenous injections of streptococcus strains indicate that the organisms may gain entrance into the lymph structures of the intestinal tract.

Subinfection.—Adami[10] covers a part of the field of infection in a way that seems worthy of a great deal of consideration and can be corelated with that which has gone before. Much of his work may bet-

ter belong to the non-proliferative type of arthritis, to be referred to later, but it is of practical interest right here inasmuch as he is dealing with infection. He, too, has recognized the fact that the bacteria in the more chronic manifestations under consideration are changed; have lost some of their attributes. The streptococcal group is especially mentioned. He says: "Fourteen years ago I showed that lymph nodes of the respiratory and alimentary tracts in normal animals constantly afforded cultures of pathological and non-pathological bacteria; that through leucocytes bacteria are constantly being carried into the system and constantly being destroyed in the healthy animal. That with inflammatory conditions in the alimentary canal and greater accumulation of leucocytes in its walls there must be greater passage of these from the surface into the system. According to virulence these set up other foci of active infection or a condition which I term subinfection." He distinctly states that bacteria so carried do not set up suppuration—a fact all intelligent observers have noted. Adami says the bacteria do not accumulate to any extent but die with liberation of toxins. These toxins cause a poisoning of the tissue cells in which they lie and through reactive stimulation a replacement by fibrous tissue. That tuberculous and other bacilli fed to the young animal by mouth are found in the thoracic duct one to two hours afterwards. That by the eighteenth year whether point of entrance is the respiratory or alimentary tract 95 per cent. of persons examined respond to tuberculo-cutaneous tests, though only 10 per cent. die of the disease. In 85 per cent. of the population the disease becomes arrested and latent.

Coordination of Foregoing Views.—From the foregoing it has been seen that the views of the different workers can be largely reconciled, and although traveling different roads they ultimately appear to meet. They all have recognized the need of getting rid of the pus-producing attributes of the organism with which they worked. Poynton and Paine, Wassermann, Walkoff, and others found it unsatisfactory to try to get any real cultures from the joint cavities or blood. That the joint effusion is frequently sterile. They went outside the joint cavity in the areolar tissue, in connective tissue attachments, in the *non-vascular* spots. Here they found the bacteria thriving best; from this source they made their cultures. From these points they obtained bacteria whose attributes had in a measure been changed.

The mutationists also recognized the need of in some way changing the attributes of the organisms of the streptococci group and especially the pus-producing factor alluded to. Rosenow conceived the idea that a low oxygen pressure might account for the changed attributes of the organisms. That if a number of the streptococci were made to live in anærobic rather than aerobic conditions, the proper selective affinity for joints and certain other tissues might be brought out. That through concealment in human test tubes, such as an apical abscess cavity of the tooth, an enclosed circumscribed pocket in a tonsil or appendix, the proper selective qualities of the organisms were brought out. To duplicate this in the laboratory Rosenow devised the experiments and technic alluded to above. All this is readily seen to reconcile itself with the avascular findings of Wassermann, Walkoff, Poynton and Paine, and others.

Further, Adami's findings in a measure, too, can be reconciled with these views. He follows the line of changed attributes of his organisms and deals with it in his so-called subinfection. So much for the working out of the bacteriological etiology of the subject along lines that ultimately coordinate.

Further Observation Bearing on the Subject of Infection (*Myositis* and *Fibrositis*).—The physician is constantly called upon to treat some localized muscle pain, especially at or near its tendonous insertion or some hardness in the muscle substance and we have long sought for a rational pathological explanation. Recently Rosenow has produced experimentally such myositis and given us a rational explanation. He produced lesions in numerous rabbits, dogs, and one monkey. In no instance was there suppuration. In order for the non-virulent strains of streptococci to localize in the muscles he found 12 to 21 animal passages necessary. When the various strains produced myositis their affinity for the muscle was so marked that each of the series of animals developed lesions in proportion to the dose.

A study of a section of muscle showed: (1) A small hemorrhage; (2) muscle fiber becomes granular and breaks up into fragments as a rather sharp leucocytic infiltration appears. The number of organisms are greatest at this time, after which they gradually disappear without causing suppuration. The leucocytes now give way to larger mononuclear cells, and as connective tissue is being formed there is found a deeply basic staining material in which bacteria are no longer demonstrable.

Adami says that this is the very thing he has been calling subinfection results—a chronic interstitial fibrosis, as he styles it. Streptococci of a particular grade of attenuation become arrested in the muscle capillaries, more especially those situated near the tendinous attachments.

Infection as Related to Certain Recent Etiological Theories of Chronic Multiple Arthritis.—The joint lesions of chronic multiple arthritis are commonly destructive and pronounced. There is frequently so much loss of bone and cartilage or formation of new bone that the blood-vessels have figured as playing the chief rôle. Wollenberg[11] especially has dwelt upon disease of the blood-vessels supplying the joint as explaining the lesion. The disturbed balance between arterial and venous supply causing the regressive and progressive changes characterizing the anatomical picture. In short, a localized arteriosclerosis.

Much discussion has arisen over the arteriosclerosis finding. Arteriosclerosis is commonly found in advanced cases of chronic multiple arthritis and by most observers believed to be a secondary finding. Even Wollenberg, the author of the so-called "vascular theory," does not claim that the sclerosis is primary, but that it stands as a "middleman" through which traumatism and inflammation produce the characteristic lesions of chronic multiple arthritis. Wollenberg has produced animal experiments upon which he largely bases his views. Walkhoff, Ewald, and Preiser[12] have repeated his experiments and are unable to corroborate his findings. Wollenberg's admission of inflammation necessarily restricts his theory to explaining the grosser findings only.

It remained for Rosenow[13] here to give the blood-vessel disease a logical cause and establish the blood-vessel lesion as primary, and primary through the source of infection. He found microscopic sec-

tions of tendon muscle and thickened capsule examined in a number of cases of chronic multiple arthritis showed marked thickening and not infrequently complete plugging of the blood-vessels apparently not the result of organized thrombi but rather of a primary endothelial proliferation. Bacteria were found in these areas of endothelial proliferation. In rabbits the exudate in the joints after intravenous injection and in the abdominal cavity after intraperitoneal injection usually show a preponderance of endothelial cells. For these reasons Rosenow regards the changes observed in the blood-vessels as primary rather than secondary. He says: "It would seem as if in arthritis deformans (chronic multiple arthritis) the microorganisms are taken up from the circulation by the endothelial cells which proliferate freely so that eventually the blood supply is reduced or cut off, in consequence of which there result areas of lowered oxygen tension, diminished nutrition, and atrophy." Such conditions would favor the growth of organisms which on isolation are sensitive to oxygen. He has found clumps of old bacteria, some alive, in the thick layers of old fibrous tissue in the capsule of the joints in which there was no sign of recent inflammatory reaction.

If these findings of Rosenow regarding the primary pathological origin of the joint blood-vessels are fully confirmed and accepted, much of the disputed anatomical picture of chronic multiple arthritis will be thoroughly cleared up.

The Rôle Infection Plays in Producing Lesions of the Nervous System in Chronic Multiple Arthritis.—For years many writers clung to a nerve origin for so-called arthritis deformans. This was largely based upon the rather bilateral nature of the arthritis. A great deal was said about the probable implication of anterior horn cells, motor and trophic. This theory has gradually fallen into disuse and can be said to be practically dropped. The arthritis is not alway bilateral; in fact, often very irregular in its distribution. The past few years have brought forward a new theory which clinically has been generally accepted. This has come with the generally accepted view of the infective etiology of arthritis—that the organism causing the arthritis may also attack the nervous system; that a common infection is the cause of the different lesions. Poynton and Paine, Triboulet, and others have dwelt upon this. Triboulet's[3] case which he reports with autopsy illustrates this very well.

The patient, a woman aet. 19 years, afflicted with chronic multiple arthritis complicated with nerve and muscle findings. He found degeneration of the lumbar posterior nerve roots and the resultant degeneration of the posterior columns of the spinal cord the result of a localized meningitis. The history showed that both the arthritic and neural changes were the common result of a puerperal infection.

This case, supported by similar findings by other authors, strongly supports the belief that both the nerve and arthritic phenomena of chronic multiple arthritis are the result of an infection having special affinity for these structures. Recently Dr. P. W. Nathan presented before the New York Neurological Society some of the results of experimental work he had been making along this line. His findings are striking, and corroborate the clinical findings referred to and strongly support the belief above expressed.

Where Does the Theory of Infection Logically Lead Us in Classifying Our Cases of the Proliferation Type?—We see, then, how far-spreading the subject of infection becomes the moment we begin to deal with the organism changed, attenuated, or mutated, as the case may be; that the organism in the vicinity of the joint active is quite different from the organism when originally produced and imprisoned in its cavity, be that connected with the teeth, tonsil, appendix, or elsewhere in the body; that in its cavity it has acquired new attributes, and as a joint invader it takes up a new life. It has been suggested that the common failure of autogenous vaccines is attributed to this very fact; that a vaccine made from the organism at the focus of origin is useless against the organism after it has acquired the new life and in action about a joint.

The question is often asked, if we accept the view that chronic multiple arthritis has an infectious origin, how do we know that it is not, after all, a late manifestation of acute arthritis? In other words, if we admit an acute rheumatism of infectious origin is chronic multiple arthritis, not, after all, a chronic rheumatism? Some hold this view, and much can be said in its favor.

It would appear that the text-books have long erred in teaching that little permanent damage is done to the joint tissues by the lesion of rheumatic fever. Experience teaches us that there are different types of the disease which seem to grade imperceptibly one into the other, giving markedly different local conditions and constitutional results. English authorities, for example, recognize three distinct types without entering the so-called rheumatoid field:

1. Where the organisms first gain access to the synovial membrane by means of the blood stream which do not get through the endothelial into the joint cavity. The connective tissue is swollen, the blood-vessels distended; even exudation occurs; but the organisms ultimately are destroyed by the endothelia and leucocytes, absorption takes place, and the function of the joint is restored.

2. The arthritis is more severe. Tendon sheaths in the neighborhood are implicated. The endothelial synovial lining becomes damaged and a certain amount of joint exudation occurs. For a long time the joint remains stiff.

3. Process less acute. A cellular exudation occurs around the blood-vessels and arterioles, producing what is called a perivascular fibrosis. Contraction follows, tending to diminish blood supply and nutrition of the synovial tissues, explaining probably the clincal phenomena such as feeble circulation in such joints, dropsical condition, slow reaction to all treatment. Effusion is passive here, hence cultures negative.

If such a pathological picture is accepted for so-called rheumatic fever, then it would seem but a step to enter the field of chronic polyarthritis and see one condition after another engrafted upon it, depending upon the attenuated or mutated organism acting; the resistance offered by the patient; the factors of trauma, of static disturbance, of arterial involvement, and of consequent joint changes.

We have, however, no such proof limiting the chronic types of arthritis to a single organism, as in rheumatic fever. On the contrary, there is much pointing to the probability of its multiple origin from many germs.

We know that arthritis is produced by several infections, such as gonorrhea, puerperal infection, influenza, and allied diseases. These are usually regarded as due to a distinct invasion of the organism, producing a rather violent reaction commonly to the extent of pus producing, and are to be considered later under a separate heading. On the other hand, chronic arthritis is the resultant of the organism attenuated, mutated through elective localization—a variant or mutant of the original.

It is not generally conceded that there is any external expression by which we can diagnosticate the particular organism acting. After showing one of our well-known surgical teachers a series of cases of chronic multiple anthritis he asked, "Now please show me a well-marked syphilitic type." If we exclude the arthropathy of locomotor ataxia it is quite impossible to make such a showing. In the present state of our knowledge on the subject the external joint expressions of most of the forms of chronic multiple anthritis are not distinctive enough to make an etiological-organism diagnosis, tuberculosis excepted.

We confidently expect that the classical type with which this paper deals will ultimately give such a showing. That is to say, with our increased understanding we shall be able to recognize it. We will allude to this later. At the present time, then, many hold that the primary etiology of chronic multiple arthritis is due to a variety of organisms, the streptococcus group, with its variants, being by far the most common. Some think that, like rheumatic fever, chronic multiple arthritis will ultimately be found due to a single organism, and are working to that end.

There is no doubt that we have many different types of chronic multiple arthritis where different organisms have played an etiological part. We are able to separate many of these and set them apart as types of chronic arthritis. In the midst of these types we have stood confused. To the observing student, however, there remains one type having a rather clean-cut clinical history with a clean-cut external joint picture. It is the type I have illustrated by photographs and drawings in this paper—the proliferating or ankylotic type. We believe that signs point here to a distinct entity—that entity may mean the streptococci group and variants or one member of the group.

In a second paper we shall deal with another striking type of chronic multiple arthritis referred to in the beginning of this article—the so-called degenerative type. In this latter type infection proper is a doubtful factor.

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40 East Forty-first Street.

MALIGNANT TRANSFORMATION OF BENIGN INTESTINAL GROWTHS.*

By Frank C. Yeomans, A.B., M.D., F.A.C.S.,
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The benign tumors of the colon and rectum to engage our attention are of the polypoid type and appear clinically as the solitary polyp, multiple polyposis, multiple adenomata and villous tumor. All of these growths have a common origin from the mucous membrane and both in children and in adults are of the same histologic structure, namely, glandular with connective tissue intermingled. They differ only in form (sessile or pedunculated), in number and in size, and in the relative amounts of glandular and of fibrous tissue present.

The etiology of these growths is shrouded in the same gloom as is the true cause of cancer itself. Meyer holds that multiple adenomata are due to congenital malformation of the connective tissue of the mucosa and submucosa of the bowel wall; that the epithelial changes are secondary, inflammatory in nature, and not due to a disturbed physiology. Liebert and Schwab concur in the opinion of Meyer that connective tissue proliferation is primary but consider it due solely to chronic irritation. Their examination showed that the process was independent of the epithelium and began by the formation of new blood vessels in the connective tissue.

G. Hauser, on the other hand, basing his observation on four cases of multiple adenomata, all of which were combined with carcinoma, three in the rectum and one in the sigmoid, states that proliferation of the mucous glands is primary and influenced by chronic irritation, though this may not be the only cause. The glandular epithelium loses its differentiation and physiological function and is replaced by degenerated and physiologically indifferent epithelium.

H. C. Ross (Induced Cell Reproduction and Cancer, 1911) observed *in vitro* leucocytes divide after absorption of certain chemical agents. The active agents or auxetics he employed are contained in the remains of dead tissue, namely kreatin, xanthin, and globin. Rose says: "Irritation is always followed by cell proliferation. Irritation means damage and damage means cell-death. Cell-death sets free kreatin, xanthin, and other auxetics, and the cell proliferation is caused by their absorption by the neighboring living cells. Cell-division is apparently an automatic phenomenon in the sense that the death of one cell will cause the reproduction of its living neighbors. The knowledge that dead tissues cause cell-proliferation is sufficient to give an inkling as to the cause of benign growths. Supposing for some reason, such as a slight injury, a local cell-death takes place, it would cause increased proliferation of local cells, and so form the basis of a tumor. Once this growth started, it will go on until, by causing "irritation," or to be more accurate, extensive cell-death, it may now induce the cell-proliferation of healing around it, and so, by the formation of connective tissue, cause its progress to be arrested by a capsule." He cites in illustration the formation of fibroids of the uterus.

The different theories of causation would be of academic interest only, were it not for their bearing on prognosis. Clinical experience, I believe, justifies the opinion that most of these tumors are inflammatory in origin. As evidence of this is the

*Read at the eighteenth annual meeting of the American Proctologic Society, Detroit, June 12, 1916.

frequent history of dysentery or colitis preceding the development of adenomata. Ball states that the ova of *Bilharzia hæmatobia* deposited in the mucosa may give rise to adenomata and that other intestinal parasites may produce new growths by irritation.

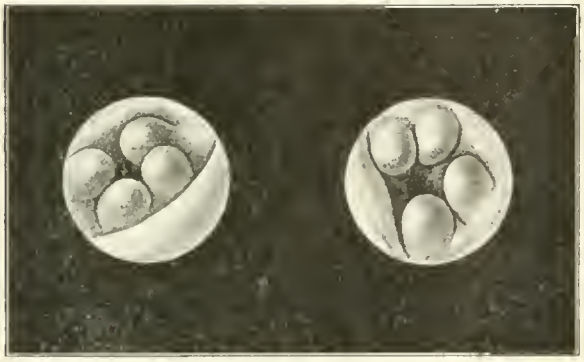

FIG. 1.—Multiple adenomata of the colon as seen through the proctoscope.

Positive evidence of the rôle of irritation in the causation of multiple adenomata is also furnished by therapy. In some cases retrogression and disappearance of the growths have followed the removal of the irritating substances by colonic lavage. In other and more resistant cases, diversion of the fecal current and irrigation have been efficient. As an example of the latter is the following case:

Mr. T., aged 30 years, referred to me in August, 1913. Fourteen months earlier he had suffered an attack of diarrhea, lasting four months, relieved by medical treatment. He remained well about six months when the diarrhea returned and had persisted four months when he first visited me. Movements then occurred hourly by day and once to three times at night, and contained considerable mucue, pus, and blood. His weight-loss was ten pounds, he was anemic and felt very weak. Proctoscopy showed typical multiple adenomata, the growths mostly sessile and varying in size from a pea to a hazelnut, extending beyond the reach of the tube (Fig. 1). During the next month he lost ten pounds in weight in spite of local and constitutional treatment, and I then did a colostomy in the transverse colon, no tumors being palpable above the sigmoid. Unfortunately when the bowel was opened on the fifth day it was found that the adenomata extended to the hepatic flexure and presumably to the cecum. By irrigations through the colostomy the greater number of growths below the artificial opening have disappeared, while retrogression has occurred in those remaining. Those growths above the colostomy have to a lesser degree been influenced by the operation, yet the patient's bowels act only once to thrice daily, he has regained his strength and most of his weight, has lost his toxemia, and is regularly employed as an elevator man. There is no evidence of malignancy.

Malignant transformation.—The answer to the question of why benign growths change into malignant ones is as of absorbing interest as is the enigma of cancer. That such transformation occurs is beyond cavil. Charles W. Cathcart illustrates such transformation admirably in his illuminating work on "Innocent and Malignant Tumors," 1907. He chose bony, cartilaginous and medullary neoplasms. In each class the growths were arranged in gradation series from innocent to malignant. He concludes that "No theory of the causation of tumor growth can be satisfactory which does not apply equally to innocent and to malignant tumors. No hard and fast line of demarcation can be drawn between the innocent and the malignant representatives of many different types of tumor; that the same tumor may be at one time innocent, at another time malignant; and that the power of dessemination, instead of being limited to malignant tumors as was formerly supposed, is possessed also by many innocent tumors."

Ball notes the close analogy between the change of a cutaneous wart into a malignant epithelioma and the transformation of a long standing purely adenomatous growth into a cancer of the rectum. So long as the proliferation continues in an orderly manner and the growth is limited by a capsule or the basement membrane, we may speak of it as benign; when, however, the cells break through their limiting membrane and infiltrate adjacent tissues, growth is anarchic and the tumor is malignant.

In 1867, Waldeyer stated that all carcinomas were epithelial growths, originating from corresponding epithelium, and that the secondary deposits were derived from transplanted cells, to which Virchow assented. The marked resemblance of beginning malignant growth to inflamed tissue so impressed Waldeyer that a few years later he asked: "Is it possible that the excessive nourishment and loosening of the connective tissue thereby involved, assist in the advance of the epithelial cells? Is it not possible that in this way local chronic inflammatory processes, especially those arising from repeated irritation which cause circumscribed inflammation, may eventually pass over into cancerous degeneration?"

Thiersch, Cohnheim, Ribbert, and other investigators have proposed theories as to the causation of cancer.

Adami, Benecke, Marchand, von Hausemann, and others seek the cause of cancer in the changed biological properties of the cells, namely, differentiation, function, and growth or vegetation. They recognize the individual cell as the unit containing and disseminating the disease. The question with them is the nature of the influences at work which inhibit differentiation while permitting growth, or vegetation. Adami considers several agents responsible, *e.g.* senescent loss of function and chronic inflammation, either mechanical or microbic in nature.

Oertel conceives the chromatin of the nucleus as of two orders, one controlling growth, the other

FIG. 2—Adenocarcinoma of the rectum.

function. The latter may be lost while the cell still retains the power of proliferation. But these theories lead into the difficult field of biochemistry.

Finally experimental work in the transplantation of tumors in animals of the same and different species and the work of those who believe in the

parasitic causation of cancer have been pursued with great zeal. The evidence adduced, however, has been largely of a negative character and the true cause of cancer is still undiscovered.

A striking fact of common knowledge is that the cancer cell, when transferred through the blood or lymph stream, is capable of reproducing a neoplasm similar to the parent growth. For example, metastatic carcinoma of the liver, secondary to adenocarcinoma of the rectum, as Cripps says, "cannot only be identified as consisting of the columnar cells of the rectum, but they actually in the liver grow into a gland tissue identical with Lieberkühn's follicles of the rectum."

In a word, all that can be stated positively is that cancer begins as a small local process; that it excites no reaction in the blood whereby a diagnosis can be made; that the individual cancer cell is the parasite of cancer, and whatever eventually explains the origin of cancer will also explain the transformation of a benign into a malignant growth.

Malignant change in simple polyp is rare indeed, but I know of one instance in which the pathologist reported such transformation in the pedicle at its point of attachment to the mucosa. I have also to report the case of Mr. K., aged 76 years, referred

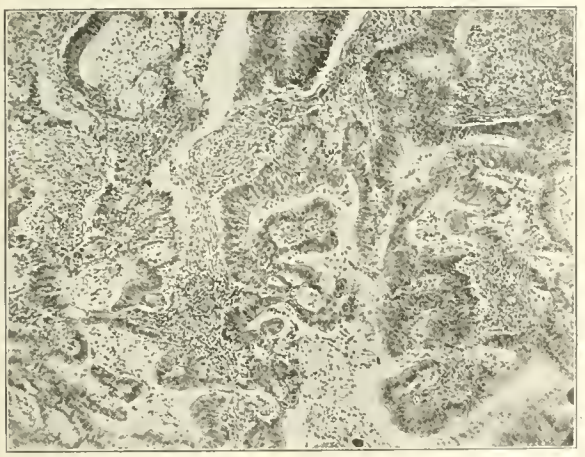

Fig. 3.—Transformation of an adenoma into an adenocarcinoma.

April 26, 1915, with a history of rectal bleeding of eight years' duration, progressive constipation, and a protrusion which at first occurred only at stool and could be reduced, but in recent years remained permanently outside and forced the patient to sit on one buttock. Examination showed a reniform tumor 3½ x 2 inches attached just within the anal verge of the left side and to both commissures for about two-thirds of the circumference of the canal. (Fig. 2.) On April 30, 1915, the tumor was removed under local anesthesia. Both the clinical and the histological diagnosis was adenocarcinoma. (Fig. 3.) This is a clear example of a simple adenoma which, as a result of repeated and prolonged trauma, became malignant. The lesson is that both single and multiple polypi or adenomata should be removed at the earliest possible moment after the diagnosis is made.

Villous tumor or adenoma differs in no way from a simple adenoma except in form and in its greater size. Histologically it is of the same structure. Its tendency to bleed may render it clinically malignant though microscopically benign. Allingham and others have reported cases as recurring in a malignant form after operation. Hence these growths should be extirpated early, thoroughly, and radically.

Multiple adenomata are the most important and serious type of benign growths of the intestine. Their usual site is the lower colon and rectum. They may, however, literally stud the mucosa of the entire colon, as in my case detailed above. At the 1909 meeting of this society, Tuttle reported eight cases of multiple adenomata, four of which in the hands of others and one in his own developed malignancy after local treatment by snaring, curettage, or cauterization; whereas in three children the growths were controlled by local flushing and snaring of the pedunculated forms. One of these children, irrigated through a cecostomy, developed recurrence five years later. Tuttle sagely asked: "May we not obtain better results by prolonged functional rest, especially when the growths are not well defined?"

Multiple adenomata, as such, may have a malignant effect as a result of the symptoms, diarrhea, hemorrhage, etc., to which they give rise, but the chief danger in their neglect or improper treatment is their liability to change into adenocarcinoma. In a large number of cases collected from the literature, more than 40 per cent. had undergone malignant transformation.

Treatment is palliative or operative. Palliative measures, as irrigation, suitable diet, tonics, etc., have kept the disease in abeyance for many years in certain cases—even some cures are reported.

Enterostomy above the growths prevents the feces from irritating the tumors. They shrink and sometimes disappear but the liability to recurrence is very great unless the enterostomy is maintained a long time after the disappearance of the growths.

Removal of the tumors singly by the snare or *en masse* by curettage or cauterization is very unsatisfactory, for, as pointed out, these measures are apt to be followed by a local malignant recurrence.

Radical extirpation of the portion of the colon involved is the ideal treatment. Practically the general condition of these patients precludes such radical measures at first for this would usually mean colectomy, partial or total. Lilienthal obtained a cure by operating in two stages, first ileosigmoidostomy and later colectomy. The curative, operative procedure indicated, then, is enterostomy, either in the colon above the growths, or in the terminal ileum when the entire colon is affected. If the tumors disappear, the enterostomy may be closed. If they persist, after prolonged trial of irrigations, and the patient's general condition warrants it, partial or total colectomy is indicated with implantation of the ileum low down into the sigmoid, the operation being performed either in one or preferably in two stages.

230 West Fifty-ninth Street.

FRACTURE AND DISLOCATION OF THE PROXIMAL END OF THE FIRST METACARPAL BONE AND FRACTURE OF THE TRAPEZIUM.

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The comparative rarity of such injuries, the obscurity of the diagnostic signs, and the necessity of Roentgenological examination suggested to the au-

thor the possibility that these two cases might be of interest to the general profession.

Sprains, fractures, and dislocations at the base of the first metacarpal bone and the trapezium are frequently met with in athletes—in fact any form of violence sufficient to tear the ligament either of the carpal or the metacarpal phalangeal joint, associated with violence in the direction of the long axis of the bone, is sufficient to produce the injury. The symptoms are pain, effusion, and stiffness in the joint. If a fracture be present, it is exceedingly difficult to determine crepitas on account of the swelling and the diminutiveness of the injured bone. The necessity of distinguishing a sprain from a fracture of the base of the first metacarpal bone and trapezium becomes immediately apparent.

Fig. 1 shows a case of fracture and dislocation through the base of the proximal end of the metacarpal bone of the thumb. This type of fracture was first described by Bennett of Dublin and has received the name of Bennett's fracture. The general diagnostic signs of fracture were absent at the time of the injury, and the symptoms suggested more of a sprain or dislocation than a fracture. If the *x*-ray had not been available a positive diagnosis would have been impossible. The following is the history of the case:

Case I.—J. B. athlete, high pole vaulter, fell on the outstretched hand and thumb at the Princeton University sports in the Spring of 1908. At the time of the injury there were only the usual diagnostic signs of sprain, and no fracture at the time could be detected. Only after the usual methods for the treatment of sprain had failed to remove the cause I was consulted for a radiograph. The Roentgenogram shows a fracture at the proximal end of the first metacarpal bone of the thumb. Whitelocke of Oxford University reports a similar case in person of the University wicket keeper.

Fig. 1.—Fracture and dislocation at the base of the metacarpal bone—Bennett's fracture.

Case II.—Fig. 2 illustrates a fracture of the trapezium due to a fall on the outstretched thumb and hand. The usual symptoms were parallel to the above case, that of pain and swelling at the base of the thumb-joint, without deformity. The question as to the possibility of fracture immediately presented itself. The Roentgenographic examination cleared the diagnosis, showing a transverse fracture of the trapezium at the outer end of the bone.

Fig. 2.—Fracture of the outer end of the trapezium

The object of this article is to illustrate the close parallelism between the two cases in the objective symptoms and the method of receiving the injury. The positive diagnosis, however, rested absolutely on the Roentgenographic findings, these findings being necessary to clear away all doubt as to the condition. Strange as it may seem in this modern era of accurate diagnosis, there is still tendency to neglect the *x*-ray examination of so-called sprains. I trust this brief review will emphasize again the necessity of the Roentgenographic examination of every sprain; for the possibility of a hidden fracture must be always considered.

I desire to thank Dr. H. E. Wright of Princeton, N. J., for the courtesy of reviewing the first case. Case II is from the service of Dr. H. H. Schall, Cumberland Hospital D. P. C., New York City.

234 Central Park West.

REPORT OF 77 CASES OF ACUTE POLIOMYELITIS TREATED IN THE NEW YORK THROAT, NOSE AND LUNG HOSPITAL BY INTRASPINAL INJECTIONS OF ADRENALIN CHLORIDE.

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It may be asked why an eye, ear, nose and throat hospital has been treating cases of infantile paralysis; in July, when the epidemic was rapidly growing, the city hospitals were not able to take care of all of the cases, and the board of health made an appeal to the private and semi-private institu-

tions of the city to take and care for some of the little patients. This institution opened its doors to the service and has treated seventy-seven of the cases.

Symptoms.—The prodromal or preparalytic disturbances are varied, and may extend over a period of time varying from a few hours to six or eight days. In none of the cases did paralysis develop without some premonitory symptoms.

FIG. 1.—Left facial paralysis of 5 weeks' duration. For the first few days of the disease the patient had general paralysis with respiratory embarrassment. All the paralysis has cleared up except the facial

Fever is one of the most constant of the initial symptoms. It usually ranges from 100 to 105°, and is maintained from two to six days as a rule. There were noted a few cases where the temperature went above 106°. The fall in the temperature is most frequently rapid, as in crisis. In most cases the subsiding temperature not only reaches normal but oscillations from normal to a subnormal level continue for a few hours or a few days. A second rise in temperature is infrequent unless as a consequence of some complication. The height of the temperature offers no index as to the extent of the subsequent paralysis. Accompanying the temperature are other initial symptoms which, however, are present in numerous other conditions, but are more or less constant in poliomyelitis and should arouse suspicion on the part of the examiner. The patient presents a history of becoming very irritable, and this may be the first indication of illness noted by the relatives. With this indispisition and averseness is found acute tenderness, which may be diffiuse or localized. In a large percentage of the cases the pain and tenderness are localized over the spine and the extremity or extremities which will subsequently be involved in the paralytic stage. The patient often expresses anxiety and protest if an attempt is made to disturb it. There is a great restlessness in bed, the child turning from side to side and refusing to lie on the back, which is hyperextended.

Headache may or may not be present; vomiting or attempts at vomiting are infrequent as initial symptoms. Perspiration often appears and may be very copious. Rigidity of the neck is a very important symptom, and with this is usually found hyperextension, which is rather marked at times

FIG. 2.—Same as Fig. 1, during a feeble attempt at smiling.

and lasting up into the paralytic stage of the disease, constantly keeping the attendant looking for a probable meningitis. Great pain is experienced by the patient upon trying to bend the head forward. The spinal rigidity usually clears up by the time the temperature has abated.

Valuable information of the impending disease can be acquired by a careful study of the reflexes, both skin (superficial) and tendon. Reflex disturbances are noted during the preparalytic stage and last for varying lengths of time, depending upon the severity of the paresis, but there is a marked predisposition toward the return of the reflexes.

The skin reflexes are more important in infants, as it is often difficult to determine the integrity of the tendon reflexes in these patients. They are readily elicited when present and their absence is easily affirmed. Absence of the plantar and cremasteric reflexes, the ones most frequently perverted, indicates some disturbance of the reflex arc between the second and third sacral and the first and second lumbar segments of the spinal cord, respectively. In one case were found the right plantar and the left cremasteric reflexes absent, while the left plantar and the right cremasteric were normal. Some cases, however, where the testes have not descended into the scrotum, would eliminate the testing for the cremasteric phenomenon. This was true in two children between the ages of 2 and 3 years. Absence of the abdominal, epigastric, and scapular reflexes which occurs in the majority of cases, is conspicuously determined. Both abdominal and epigastric may be absent in the same individual, or either one of them may be absent with the others intact.

One case exhibited an increase in the knee jerk on the right side and an absence on the left side,

with a beginning paralysis in both legs. After a day's progress of the paralysis the right knee jerk disappeared. Another was one of general paralysis, slight bulbar involvement and an increase in both patellar and tendon reflexes. Still another patient, in which there was a partial paralysis of the right arm only, showed an absence of the scapular reflex and the right elbow tendon reflex, with an increase in both knee jerks. The paralysis in this case cleared up in a few days, accompanied by a return to normal of all the reflexes.

Various skin eruptions are frequently found and may occur during any stage of the disease, but are more prominent in the first few days. The rash is transient, rarely lasting over a few hours, and occurs on any or all parts of the body. However, the face and chest are the parts more frequently affected. Quite interesting were two cases, in a brother and sister, 3 and 2 years of age, respectively, who were admitted with very severe impetigo contagiosa and paralytic involvement also. The impetigo lesions were to be found on all parts of the body; in fact the disease was so marked that attention was directed more toward its treatment than to that of the paralysis. The impetigo responded rapidly to the application of ammoniated mercury, and within two weeks was completely cleared up.

The preparalytic stage may show various respiratory symptoms. Bronchopneumonia was present in one case. Bronchitis is frequently found. Only a very few cases showed any inflammation of the tonsils. This is contrary to the findings of other men, for a majority of the writers on the subject have reported tonsillar involvement in most cases. More frequent than tonsillitis are pharyngitis and laryngitis, usually occurring simultaneously with some inflammation of the nasal mucous membrance. Conjunctivitis was often present. It has been infrequent to obtain a positive history of gastrointestinal disturbances prior to admission in the hospital. There have been a few cases of persistent constipation, in both the preparalytic and paralytic stages. Flatulence is a more frequent disturbance than either constipation or diarrhea, and is found in both stages of the disease.

It is usually ascertained, both subjectively and objectively, that there is an existing weakness in all the muscles that will subsequently be paralyzed. This phenomenon is sometimes noticed several days before the actual paralysis appears. As will be described later, this may be the only motor disturbance in the abortive cases.

Paralytic Stage. Many of the initial symptoms continue uninterrupted into the paralytic stage. The fever is always present when the paralysis appears and usually subsides within a few days unless kept up by some complication. The motor disturbances are found to occur some time during the first two or three days. As was previously stated, the first impairment in motion, noticed by the patient or relatives, is an existing weakness. The muscles are easily fatigued. Active movements soon disappear and the affected limbs become passive if the paralysis is complete or nearly so. The patient no longer moves the involved extremity. If the paresis is partial the motion is conspicuously limited. In case of affected legs, standing is impossible. If only one leg is involved the patient may be able to stand on the sound one. When attempts are made to stand on an affected limb, the marked hypotonicity of the leg muscles allows extensive hyperextension at the knee.

It is frequently observed that before the paresis has made much progress there is a decided diminution in the resistance offered to passive motion. This fact is of special consequence in the case of infants, for it is often difficult to determine whether or not there is any loss of active motion in these little patients. In the most severe cases it is rare to find complete paralysis of all the limb muscles, for there usually remains, if but slight, the power either to flex or to extend the toes or fingers, as the case may be. The reflex anomalies are found during the paralytic stage of the disease, but they usually precede the paralysis. There is marked hypotonicity of the affected muscles. This is noted by the flaccidity to touch and the abnormally slight resistance offered to passive movements. The hypotonicity is sometimes not only found in the paralyzed

Fig. 3.—Girl 9 years old with marked atrophic changes in the muscles of all the extremities after 7 weeks' duration of the disease. There is also a talipes equinovarus present in both feet.

muscles, but even the unaffected muscles may show loss of tone. In the cases of general paralysis, when the patient is lifted out of bed the head and extremities fall about as if in a lifeless state.

Inside of two or three weeks as the disease progresses, it is noticeable in connection with the motor disturbances and the hypotonicity, that trophic changes are beginning to take place in the paralyzed muscles. The atrophy progresses rapidly and may reach an extreme degree within a few weeks. The atrophic changes are due to the trophic disturbances and disuse. (See Fig. 3.)

The skin over the paralyzed muscles soon becomes extremely dry and adherent to the underlying connective tissue, and when one tries to pinch up the skin it cannot be separated from the underlying tissues as in health, but the whole mass is brought

up together. All reports state that bed-sores are never found. One patient, however, came in with a very bad bed-sore over the left gluteal region; this patient had been in bed with the disease for about three weeks. The temperature of the limb is very much lowered, there frequently being two or three degrees difference between the sound and paralyzed limb.

Incontinence of urine and feces is rare, except in the extreme cases approaching death. In some few cases retention of urine occurs. The longest time of retention in any case was fourteen hours. Catheterization was not necessary in any of them. The circulation in the affected limbs is greatly disturbed, the capillary circulation being sluggish, giving rise to a dusky purplish hue of the skin. Very frequently the surface has a mottled appearance.

The paralysis generally develops rapidly. The following table will show the distribution of the paralysis: Paralysis of one or both legs, 34 cases; Paralysis of one or both arms, 6 cases; Combined paralysis of leg and arm, 10 cases; General paralysis, 8 cases; Facial paralysis (see Figs. 1 and 2), 3 cases; Combined paralysis of leg and trunk, 8 cases; Laryngeal paralysis, 1 case; Abortive cases, 7.

The extensor muscles are by far the most frequently affected.

A few rare anomalies are sometimes seen. Spastic hemiplegia was found in one case. The sense of pain was absent in the same patient for about two weeks after the onset of the paralysis. The patient was a girl four years old and she did not complain of any pain when lumbar punctures were made to give the intraspinal injections of adrenalin. After about two weeks the sense of pain gradually returned to normal. In one case, for about thirty-six hours before death, there existed a paralytic diverging strabismus of both eyes. I have just learned that a physicion friend of mine has a little boy 4 years old with paralysis of the upper and lower extremities, and a few days ago there developed a converging strabismus of both eyes, but the condition is gradually clearing up. One patient 8 months old developed typical Cheyne-Stokes respirations, which lasted for about twelve hours before death ensued. The spleen seemed to be enlarged in a few cases.

Certain deformities of the feet occur in some cases where there is marked paralysis in the lower extremities. These conditions are minimized to a great extent by putting the feet up in plaster casts, but even then there will be found deformities in some cases. A few cases were admitted to the hospital with deformities, after having remained at home several days without the proper treatment. The feet anomalies observed are as follows: Equinus, 10; valgus, 2; varus, 5; equinvarus, 6; equinovalgus, 2. Contraction of the planta fascia is found in most all the cases with equinovarus.

The following case was unique from the involvement of the laryngeal muscles and the complications which later occurred, causing death as we were contemplating dismissing the case:

Female, aged 17 years; admitted to the hospital July 29, 1916. Gave a history of having had an organic heart lesion for eight years as diagnosed by several physicians. Six days previous to admission she became very hoarse with no other noticeable symptoms of any disturbance except headache; on the night of July 28, she complained of some spinal pain and later found that the left leg and arm had suddenly become paralyzed, and she was admitted with complete paralysis of those two extremities. There was also a complete wrist-drop on the left side. Other than the foregoing there were no alarming paralytic symptoms with the exeception that the laryngeal muscles seemed to be involved and patient talked only with difficulty and then just above a whisper. Examination showed that there was a paralysis of the left thyroarytenoid muscle and during the act of phonation the vocal band on the left side did not approximate the median line as did that of its fellow and as a consequence the rima vocalis was not reduced to its minimum size and the speech was impaired. Sections would have shown some inflammatory lesion at the origin of the left inferior laryngeal nerve whose fibers arise in connection with the spinal accessory.

The patient was given the routine treatment, improved rapidly and was walking in a few days, the wrist-drop having cleared up and the voice slightly better. The patient did have a slight mitral regurgitation which was only heard in the mid axillary line.

On Aug. 21, about 6 P. M., patient began complaining of difficulty in breathing and had to sit up so as to avoid the extreme suffocating feeling which came on if lying down. At this time examination showed the heart beating at the rate of 140 per minute with a marked mitral regurgitation; respirations 31 per minute, and no lung lesions. At 11 P. M. patient had not been able to lie in bed at all and was kept in a chair in as comfortable position as possible; all the valves of the heart were leaking; pulse 160; blood pressure very low; respirations more laborious and there were to be heard piping and bubbling râles all over the chest. She complained of severe abdominal pains and it was found that the abdomen was greatly distended by the presence of fluid in the abdominal cavity. The ascites had developed within an hour and a half. At 11.30 P. M. she vomited the copious meal which she had eaten at 5 P. M. when she was feeling normal. The heart and lung condition grew rapidly worse. I made a puncture into the pleural cavity and drew off 40 c.c. of turbid fluid; oxygen was administered under pressure by the Meltzer apparatus.

The oxygen gave great relief while it was being administered, but I saw it was only prolonging life by mechanical means and discontinued it. The patient died at 1 A. M. She could move all the extremities freely, held the head up and was perfectly conscious, talking all the time to within a minute and a half before death came. Immediately after death I lowered the head and drained off several ounces of hemorrhagic fluid from the lungs.

The immediate cause of death was a failure of compensation in the organic heart lesion and edema of the lungs. It is probable that the inflammatory area in the neighborhood of the left inferior laryngeal nerve revived and spread to the origin of the vagus and the heart was affected as a consequence.

Spinal Fluid. Due to the fact that we have not yet got a systematic report on all of the spinal fluid examinations, I shall not relate any of the data other than say that the most characteristic feature of the fluid examinations was the positive Noguchi reaction. Usually the spinal fluid is under an increased pressure in these cases, several cubic centimeters being removed at times. (P. M. Lewis. MEDICAL RECORD, July 29, 1916.) From one case 30 c. c. of fluid were removed at three different times, and from 15 to 25 c. c. were removed from several patients. The fluid was mostly clear when removed from the spinal canal; in some few cases it was opalescent. In only one case was there found a true hemorrhagic fluid, and it was a case where meningitis caused by the Friedlander bacillus complicated the poliomyelitis.

Complications are not very infrequent in this malady. The following complications were encountered in the cases under our care in the hospital: Measles, two cases; one of these developed early in the disease and was probably contracted before the poliomyelitis. Whooping cough developed in four cases after from three to six weeks' duration. Meningitis complicated two cases, one of which was caused by the Friedlander bacillus. Cultures of the organism were made from specimens of the spinal

fluid and the blood. The patient died after about eight days' duration. The etiology of the other case was never determined. The prognosis was very grave, but there was complete recovery in about ten days. Various rashes sometimes occur on different parts of the body. As would naturally be expected, there were marked gastrointestinal and nutritional disturbances in most of the little infants who had previously been breast-fed.

Abortive Cases. Of the seventy-seven cases seven of them were diagnosed as abortive cases. There are no signs or symptoms that will differentiate the abortive form of the disease from that of the true paralytic type during the initial stage, and not until paralytic disturbances occur can you tell whether or not the case will be abortive. There may be found all the initial symptoms that accompany the typical paralytic cases, *e.g.* fever, malaise, headache, pain in various parts of the body, spinal rigidity, and as was previously mentioned, there may be a distinct weakness to be found in various muscles. Instead of the condition progressing with an ensuing paralysis all the symptoms clear up and the patient is again normal. These patients were given the routine intraspinal injections of adrenalin until they proved to be abortive cases.

Prognosis. The figures and data that are given below could have no special importance when taken alone, for we have had only seventy-seven cases, as compared to the several thousand cases in various other hospitals. The essentials to be shown regard the mortality and the morbidity in these cases after treatment by intraspinal injections of adrenalin. Conclusions favorable to the adrenalin treatment can be reached by comparing the results with the results of others where adrenalin was not used. This is more satisfactory, since they are cases of the same epidemic and in the same locality. The following figures show that the mortality varies in different epidemics E. Austria, 1908, 22.5 per cent; N. Austria, 1908, 10.8 per cent; Germany, 1909. (Arnesberg), 12.3 per cent; Sweden, 1905, 16.7 per cent; Syria, 1908, 13.16 per cent; Norway, 1905. 14.56 per cent; Germany, 1909 (Hanover), 20.55 per cent.

Up to the present writing the mortality in the city of New York has been 23.9 per cent. It is hardly fair to include the deaths that occur after the first twelve or fifteen days of the disease, for if death occurs later than this it is usually due to some complication. Considering this, the mortality percentage due entirely to poliomyelitis would probably be decreased. Nor is it doing justice to the adrenalin treatment to include the mortalities that occurred within a short time after admission to the hospital, some of them not getting any and others only a few injections of adrenalin.

We may summarize the fatalities occurring in the seventy-seven cases, which form the basis of our study, in the accompanying table.

We would conclude, therefore, that out of the eighteen deaths only five children (6.49 per cent) died from poliomyelitis under the adrenalin treatment. The decision of all fair-minded critics will harmonize with the above figures.

The correct statistics as to the morbidity in these cases cannot be compiled until the end of from six to twelve months, for cases have been shown to recover several months after the onset of the disease. Of the fifty-nine cases surviving, the prognosis as to complete recovery is exceedingly gratifying.

	Deaths.	Per Cent.
Number of deaths that occurred between 5 and 20 hours after admission, in moribund cases	3	3.89
Number of deaths that occurred between 20 and 46 hours after admission, in moribund cases	3	3.89
Number of deaths occurring after the third day in the cases admitted in a moribund condition, but having had a fair chance under the adrenalin treatment	5	6.49
Number of deaths occurring in infants from gastro-intestinal and nutritional disturbances (having been previously breast fed) between 20 and 49 days after admission with complete or partial recovery from poliomyelitis	5	6.49
Number of deaths occurring on the 24th day after admission from an organic heart lesion (recovery from paralysis except in the case of some of the laryngeal muscles) probably aggravated by the poliomyelitis	1	1.29
Number of deaths occurring on the 15th day from cerebrospinal meningitis	1	1.29

In the epidemic in New York in 1907, in only 5.3 per cent a complete, and 1.8 per cent almost complete disappearance of the paralysis occurred.

The following table briefly outlines the condition of the fifty-nine case after six to ten weeks' duration from the onset of the disease:

	No. of Cases	Per Cent.
Complete recovery	21	35.57
Greatly improved with all indications that complete recovery will soon follow	21	35.57
Probably permanent disability in one or more groups of muscles	17	28.79
Total	59	

Of the twenty-one cases in which there was complete recovery four of them were admitted in an extremely moribund condition, and little or no hope was entertained as to their surviving. Their recovery may or may not be attributed to the action of adrenalin. The fact that it did them no harm has been well demonstrated.

Treatment. In searching medical literature for some remedial measure to be used in the treatment of acute poliomyelitis, about the only information found was this: No specific therapy is yet available and the treatment must be purely symptomatic. Facing this predicament on one hand, the numerous little innocent victims of the disease on the other, we would naturally use any rational measure suggested.

On the first day that we received any of the paralytic cases, Dr. S. J. Meltzer of the Rockefeller Institute, after having reached certain experimental results (S. J. Meltzer, MEDICAL RECORD, July 22, 1916) advised the intraspinal injections of adrenalin.

The remedy has been given a fair trial in our cases and its use is highly recommended.

The 1-1000 solution of adrenalin contains 0.5 per cent of chloretone. In order to get rid of this, a bottle of adrenalin, with the cork removed, was placed in a bath of boiling water for two or three minutes. The solution was then allowed to cool and the injections were made without diluting the adrenalin with anything. A fresh preparation of the drug was used each time.

In order to increase the space between the interspinous processes, a bottle 6 in. in diameter with a small pillow on it was placed on the table and the patient flexed across the contrivance. The skin over the area where the puncture was to be made was painted with tincture of iodine, normal strength,

and a moist dressing of saturated boric solution placed on after the injection. This procedure controlled the infection wonderfully well. As a result of the frequent punctures, most cases had a bit of traumatic exudate collecting under the skin, but only a very small percentage showed even the slightest signs of infection. A medium-sized, stout aspirating needle is best used, for a small flexible needle is hard to control and takes to the bone easily.

The punctures are best made between the fourth and fifth lumbar vertebræ. It is not wise to give more than one injection through the same skin puncture for fear of carrying infection into the spinal canal. If infection occurs it is always superficial. The skin can be moved over a limited radius, so it was pulled down, up, or to the side at will and new punctures made in order to miss the infection. If the traumatic exudate occurring under the skin tends to prevent the location of the spinous processes of the fourth and fifth lumbar vertebræ, the puncture can be made higher up or lower down. This was frequently done and as the wounds began to heal sufficiently the punctures could be made over the same area again. The individual skilled in making spinal punctures can always tell the moment his needle has reached the spinal canal and he can go as high up as the first and second lumbar interspaces without fear of doing damage to the cord.

Intraspinal pressure, if it was present, was always relieved and then 2 c. c. of adrenalin (1-1000 sol.) injected. The injections were given every six hours, day and night, until the temperature had remained normal for forty-eight hours unless kept up by something other than the poliomyelitis.

In the cases with respiratory involvement it is best to give the injections with the patients in the lateral prone position, for to put them face down embarrasses the respirations and marked cyanosis follows. If this does occur the condition can be cleared up by the administration of oxygen.

A local anesthetic was not used before the injections, for it would produce about as much pain in its administration as making the puncture.

By giving the adrenalin one clears the way for three very important measures, viz., one relieves any intraspinal pressure that may be present; the fluid can be collected for examinations, and adrenalin, the most valuable therapeutic remedy yet used in these cases, is given.

Urotropin was given in moderate doses during the acute stage of the disease. As soon as a tendency toward deformity was noticed in any extremity it was put up in plaster casts.

It being the hottest time of the year when the cases were brought in, it was exceedingly difficult, in the case of the little infants which had previously been breast-fed, to keep them in a normal state of nutrition.

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Adrenalin in the Treatment of Anaphylaxis.—Parhon and Buzgan have believed for a long time that adrenalin was indicated in anaphylaxis because in part of the hypotension present in anaphylactic shock. In a severe case of the latter following a cholera immunization, with cold extremities, extinction of voice, dilatation of pupils and other severe symptoms the body was surrounded by hot-water bottles and ether and caffeine injected. It was then adrenalin was first tested, fifteen minutes after the onset of the symptoms. Within five minutes the symptoms of shock had quite vanished. In two subsequent cases adrenalin was the sole remedy used and the results were the same.—*Comptes rendus de la Société de Biologie.*

REFLECTIONS ON POLIOMYELITIS.

By D. W. WYNKOOP, M.D.,

HEALTH OFFICER, BABYLON, N. Y.

It may be of interest to the profession to have a statistical report of twenty-four actual cases of anterior poliomyelitis that have come under my observation as Health Officer of the Village of Babylon, N. Y., during the month of August, 1916. When I say "actual" I am excluding all cases where there was doubt and only accepting those where the puncture diagnosis was made by the State Board of Health.

The average age was 5½ years; extremes, 16 years and 1 year. The average lapse of time from onset of the disease to examination and diagnostic puncture was three days; extremes 7 days and 1 day. The number of cases showing paralytic symptoms was 8 out of 24. The number of deaths was 1 out of 24 cases. There was partial or complete recovery from paralysis during the first month in 7 out of 8 cases.

Situation of paralysis: Both legs, 30 per cent; both feet, 10 per cent; right arm, 10 per cent; right leg, 10 per cent; deltoid, 20 per cent; lumbar muscles, 10 per cent; cervical and respiratory muscles, 10 per cent. (These last cases are usually fatal.)

Symptom of coryza or discharge of nose and throat were conspicuously marked by their absence in most of the cases I examined. This does not support the contention as to the probable source of infection.

Prodromal symptoms: Strawberry tongue, 90 per cent; fever, 100 per cent; pain in head, 90 per cent; stiff neck, 80 per cent; vomiting, 75 per cent; drowsiness, 80 per cent; pain in back, 40 per cent; gastroenteritis, 25 per cent; irritability, 30 per cent; conjunctivitis, 40 per cent.

(I have noticed the last symptom to persist for one and two weeks after the onset of the disease. It is in a mild form and may only be indicated offhand by the patient rubbing its eye frequently.)

The average time from the first symptom of illness to paralytic manifestation was one week. The most rapid case, ending fatally, apparently ran its course in forty-eight hours from the onset.

The average number of lymphocytes found in microscopic field was 233; the highest count showed 690; in this case there was no paralysis following; the lowest count showed twelve lymphocytes. A week following puncture in this case the child came down with a paralysis of both legs. That the count of lymph cells was not greater can be attributed to early puncture (day of onset). Had puncture been made four or five days later we would have undoubtedly found a larger count.

Therapeutic value of puncture. In 80 per cent of the cases where there was a marked increase of pressure of the spinal fluid, pain in the neck and headache ceased altogether or were greatly improved immediately following the operation of lumbar puncture. Where pressure was slight there was no noticeable improvement. Cases of paralysis in which no lumbar puncture was made were more severe than those occurring after puncture was performed. This latter may be accounted for, however, by the fact that the earlier cases of the epidemic seemed more severe than the more recent ones. Personally I am inclined to the belief that puncture is a distinct mechanical aid in relief of the disease through diminution of intraspinal pressure. Puncture is of no use after symptoms of paralysis have set in.

Puncture is of no diagnostic value after the tenth

day from onset. From this time on the microscopic examination will prove negative even with paralytic symptoms present.

Operation of Puncture. It is best in every instance to have the State Board of Health perform the operation. In a good many cases where the disease has run a light course the parents will begin to express a doubt that the little one was ever stricken. An unofficial surgeon without verified records will have some little difficulty in satisfying the family or a jury as to what he found under the microscope.

The sudden withdrawing of too much fluid when under high pressure may produce unfavorable symptoms (probably due to temporary hernia of the pons). The risk of this can be avoided by inserting the trochar back into the needle occasionally so that the flow shall not be continuous.

A second puncture made on following day, in doubtful cases, is apt to prove unsatisfactory, it being often difficult to obtain sufficient fluid to make a proper examination. It is better to allow two or three days to elapse between punctures. The use of cocaine in young children before inserting the spinal needle seems useless. They make just as much trouble over the hypodermic needle as the other. In children over eight years cocainizing the parts is advisable. An experienced person in holding a child greatly facilitates the operation. It is advisable not to have any of the members of the family present when the operation is performed. If the periosteum is scraped by the needle (it frequently happens) considerable indefinite pain is experienced. I have seen no ill effects following puncture.

Postparalytic pains occur in 100 per cent of the cases and are exceeding intense for the first week. The onset of the pain gives the sensation that the skin is being pricked by pins in the portion paralyzed. This pain is not well controlled by opiates and for the general condition they should be avoided. Massage of any kind is also contraindicated in this acute stage. The simpler analgesics and enveloping the paralyzed parts in cotton will probably prove the most effective. Except where paralysis has been very extensive the pains completely subside after one week from the onset of the paralysis.

The administration of drugs in an attempt at cure can be considered as a waste of time and in some cases most harmful. In particular I refer to urotropin in large continued doses. I have seen an acute bloody nephritis and cystitis following which was most painful. There were two doubtful cases in my series. In one it was necessary to exclude a possible diagnosis of epileptic hysteria. The other case was one in which a tertiary syphilitic condition of the meninges near the base of the brain was present. In both these cases, spinal puncture showed a low count, but the general symptoms were of an intense poliomyelitic character.

The theory of contagion is one that I should hesitate to accept without reservation. That the disease is highly infectious there can be no doubt. That it is selective to a high degree is also self evident. In one family of ten children, all under sixteen years of age, only one child developed the disease. This one was susceptible and the balance were immune.

I believe that a six weeks quarantine is unnecessarily harsh and does not accomplish much towards stamping out the disease. The fear of this rigid quarantine tempts the family to hide the presence of the disease. Were I asked what I considered the best means of stopping an epidemic, without qualification I should suggest the adoption by all families and doctors of the following rule:—"If a child is ill for twenty-four hours and household remedies, such as castor oil or calomel, have failed to ameliorate the condition, the family doctor should be called at once. If in turn the doctor is unable to make a positive diagnosis within twenty-four hours let him ask the State diagnostician to make a lumbar puncture. If this were done in every case we would soon get hold of the ambulatory ones who are only sick for a few days and are true carriers of the infection.

If the quarantine by the State is going to work unnecessary hardship to the family it will be impossible for the three elements (family, doctor, and State diagnostician) to work in harmony. I believe that a child who has this disease is only a carrier during the acute stage and that a three weeks quarantine is all that should be demanded. I think it extremely doubtful that a healthy adult or healthy child can be the carrier of the disease. These are all, however, individual opinions and as such can be considered for what they are worth.

THE CLINICAL DELIMITATION OF HYSTERIA.

By MEYER SOLOMON, M.D.,

CHICAGO.

In the New York Medical Journal for November 6, 1915, appeared a previous paper on this subject by the writer in which it was pointed out, as is so well known to all, that the term hysteria, like so many other terms in medicine, has been so generally abused by specialists in nervous and mental diseases as well as by the average physician, that nowadays one hardly knows what a particular physician means when he employs this term as a clinical diagnosis. And this in spite of the acknowledged fact that dismemberment of the hysteria concept of other days has been proceeding in progressive fashion in recent years. I need not here repeat the brief discussion which was entered into in the first paper when considering the clinical concepts of hysteria maintained by others, particularly by Babinski and by Dejerine and Gauckler.

It may be stated as a general proposition that in most cases, even in the writings of neurologists and psychiatrists, the term hysteria is by no means used with that definiteness which scientific medicine really demands. In truth, since there are a number of different clinical concepts of hysteria, it is impossible for the reader to know in what sense this term is being used by a writer, unless an explanatory note or apologia is added. No matter in what sense this name be applied, it is none the less true that from the etymological and scientific standpoint it is entirely out of place and actually has no meaning to fit into the clinical concepts of hysteria, be they what they may. It is an etiological diagnosis of the days gone by when the uterus was supposed to be the basic factor in the causation of the symptomatologic pictures classified under this disease-heading. Aside from the Freudian school, which, unwarrantedly and without proof, in fact, in spite of a mass of proof to the contrary, still attributes this disease to a so-called sexual etiology, the mass of physicians, specialists in neurology and psychiatry and the rest, generally agree that the insistence on such a one-sided and exclusive causative agent is baseless and contrary to fact and observation. Nevertheless, it is questionable whether this word, as a clinical diagnosis, can be dislodged from its

prominent place at this time, even if our wishes be limited to the specialists in this field. Moreover, until another more desirable and generally acceptable term is proposed or gains currency, it is necessary to adhere to this term, provided it be given some definite, clean-cut and undeniable clinical meaning, so that it will represent a clinical concept or syndrome which can be called to mind immediately and which will stand in our minds for such a manifest cut-off group of symptoms that we can impart our concept to another without annoying preliminary and circuitous explanation and elaboration. In the previous paper on this subject I endeavored to present such a clinical concept of this disease. The gist of it may be here repeated.

I advocated the limitation of the term hysteria to the gross sensorimotor, including the special sense disturbances which are the bodily affects of a lasting nature, flowing out of emotional upset; the pure or true crises being included in this picture.

In true or pure hysteria we may agree with Dejerine and Gauckler that a state of relative indifference or passivity with respect to the physical condition be required as the typical mental state accompanying the somatic picture. Where psychic states of another kind are present, an appropriate name, in accordance with present or current psychopathological or psychiatric nomenclature or otherwise, may be added as a diagnosis, to complete the clinical picture.

In other words I would speak (1) of true, pure, genuine, uncomplicated, typical hysteria (presenting the phenomena mentioned in this paper, and consisting sometically of functional or psychogenetic or emotogenetic disorders of the voluntary nervous system, and psychologically of a mental state of relative passivity or indifference); and (2) of false, complicated, atypical hysteria (presenting the somatic phenomena but a different or superadded mental state). The second group would thus include such complex syndromes as are found in dementia precox, where pronounced somatic phenomena are so frequently present in addition to the more frank mental states of protean nature.

It is thus seen that it is the somatic manifestations which are here considered as the real indication or stamp mark of what we have agreed to call by the old name, hysteria. And since the dividing line must be drawn somewhere between the associated mental states, I would provisionally agree with Dejerine and Gauckler and require an associated mental state of relative passivity or indifference for what we may call the pure, typical cases, while the mental states found present in what are called in this communication the atypical cases should receive their appropriate names.

In the physical sphere the following conditions should be carefully excluded from the syndrome or disease-picture which I have mentioned as being reserved for socalled hysteria: organic disease of the peripheral or other parts of the body, including the nervous system; syndromes belonging under the nosological label of the other psychoneurotic or psychotic (minor or major) states; simulation, deceit, and deception; Babinski's pithiatism (which includes symptoms due to suggestion and curable by mere suggestion-persuasion); Babinski's emotive (including for the most part the visceral manifestions of emotional origin and of a functional nature) and reflex phenomena (the reflex manifestations consisting, for example, of pilomotor, sweat gland, and other cutaneous phenomena of this type).

Dismembering the hysteria of old in this manner we find that there remains as the ear-mark of hysteria the group of symptoms above given: namely, the *sensorimotor disturbances, including the disturbances of the special senses, and the pure major attacks*, these not being due to suggestion or simulation, but being of the nature of protracted symptoms not removable by the suggestion-persuasion of Babinski.

In brief, we find that hysteria is here limited to functional disturbances of the voluntary nervous system, produced by emotion, and not due to mere suggestion or the like. The other features mentioned hitherto may complicate the picture, but the additional diagnosis necessary to a full understanding of the picture would make things so much clearer and more scientific. For instance, there may be true hysteria, complicated by simulation or deceit and deception, or by organic disease, or by by an anxiety state, or by some other somatic or psychic syndrome. But the presence of true hysteria, as given in this paper, would not be confused with these other conditions, and the term hysteria would not be employed to include these other conditions, but they would each be separately named. None of these other groups is characteristic of all hysterics, but their occurrence varies with the makeup of the individual in the particular case we may have under consideration and with the special circumstances there existing.

In this connection I may refer to the classification of diseases of the nervous system adopted by Jelliffe,[1] White,[2] and both of them together.[3] The division of the phenomena of diseases of the nervous system into those of the vegetative or involuntary nervous system, those of the sensorimotor or voluntary nervous system, and those of the purely psychical sphere harmonizes quite well with the viewpoint adopted in this paper. Considering this classification in relation to the functional disorders of the nervous system, as a result of emotion, hysteria would correspond to the middle group—functional sensorimotor syndromes, due to disorder of the voluntary nervous system, while functional disorders of the other two groups (the vegetative or involuntary nervous system and purely psychic manifestations) would be excluded from it.

In a paper on "Physiological Considerations in the Differential Diagnosis of Neurasthenic, Hysterical, and Psychotic Symptoms," I find that Donald Gregg[4] assumes the same standpoint.

Does not this give one a clinical concept of hysteria which is recalled without effort and of a far more definite nature than can be had from most previous clinical concepts of this disease? One can adopt this clinical concept without in any way committing one's self as to the exact nature of hysteria. And, to be frank, one can do away entirely with the word or name hysteria, and, without lessening the definiteness of our diagnosis, call this group of symptoms by its full name—*functional or psychogenetic disorders of the voluntary nervous system.*

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A FATALITY FOLLOWING ACUTE OTITIS.

By IRVING WILSON VOORHEES, M.S., M.D.,

NEW YORK.

In January, 1916, the writer was consulted by a well-to-do gentleman from a Western city regarding pain and discharge in the right ear. Some three or four weeks previously he had passed through a fairly mild attack of grip (respiratory type) which had kept him in bed for a few days only. At the time I saw him he had come East for the Christmas holidays, and had been able to enjoy the festivities with friends in a suburb of New York city.

There had been considerable discharge of mucopus from the nose and a persistent cough brought the same kind of material from the chest. Appetite was fair, bowels regular, and general health good in a man of forty-one who had been always well. There had been no previous aural disease of any kind.

Two days preceding my examination the patient experienced severe pain in the right ear which lasted for three or four hours, followed by discharge. This pain had then practically disappeared, but a sensation of fullness remained. He complained of deafness, slight noises, and moderate discharge.

Examination of the nose showed swelling of the mucosa and a small amount of viscid yellowish discharge in the middle meati. The nasopharynx was red and swollen, yet the tubal orifices could be distinctly seen. The larynx was normal, but the tracheal mucous membrane was red, swollen, and plastered here and there with exudate. The left ear was normal in all respects. The right drum was red and somewhat swollen, but the chief landmarks were still present. There was a perforation in the antero-inferior quadrant through which a small amount of thin discharge was pulsating on its way outward. There was no mastoid tenderness.

The usual expectant treatment was instituted and the patient was advised to return in forty-eight hours. This he did not do, however, and I did not see him until the fifth day following. He then came to my office and a thorough examination was carried out, including tuning fork tests, etc. The condition was much the same in every respect. There was no pain or discomfort.

The patient sailed for Bermuda on the day following and no more was heard from him until two weeks later when the writer was summoned by cable to "come and do a mastoid at once." Within six hours I was aboard the steamer fully prepared for any complication that might be encountered. Fifty-two hours later I entered the hotel and was informed that the patient had died eight hours after my departure.

Going over the history the following was gleaned: The voyage was marred by rough weather, constant rain and cold (it was the middle of January). The patient "caught cold" and when he arrived consulted a doctor. His ear was inspected, but nothing was related of its condition. At this time there was pain, but not much discharge. Symptoms in nose, throat, and chest were marked. The physician stopped the treatment outlined in New York and gave the patient a nose wash to be snuffed up "out of the hand." The ear was to be syringed with a solution of peroxide every two hours.

From this time on the patient did poorly. He suffered much from right-sided headache and complained of general malaise. The daily temperature range averaged 101° F., mounting a little higher as time wore on. The patient, a graduate of Harvard and a highly intellectual man, kept a secret daily record of his condition, which in the light of subsequent facts proved of great interest. He tried to conceal his symptoms from his wife, because this was "a second honeymoon" and they had planned to remain on the island for three months. Nevertheless, headache, high temperature, and weakness continued until he was driven to bed with a nurse in constant attendance. As yet no definite diagnosis had been made, so at the insistence of the patient's wife a surgeon was brought in from one of the great British cruisers lying in the harbor. At this time the temperature was 104° F., the unilateral headache was intense, there was beginning paralysis of the right external rectus, and the surgeon looked upon the case as one of extreme gravity. After much effort an ambulance was secured and the unfortunate man was hauled some two miles to a hospital. While shaving the head preparatory to operation the patient suddenly died. The nurse tells me that respiration stopped and could not be again started, but the heart continued beating for some minutes. Temperature at this time was 106°. No autopsy was performed. The consensus of diagnostic opinion was: Mastoiditis, brain abscess, rupture into the lateral ventricle of the brain.

I publish this clinical note because the case bears a tragic significance from which we may draw profitable conclusions:

1. Any apparently "simple" acute otitis media is capable of producing dire results.

2. The appearance of the drum may be very misleading. Behind it may be lurking the deadly streptococcus mucosus.

3. A culture should be taken in every case and the predominant germ identified if possible.

4. Any abrupt cessation of discharge accompanied by severe unilateral headache is an unfailing sign of some complication calling for operation.

5. No patient with an acute otitis should be allowed to get away from the watchful eye of a trained otologist until all symptoms have disappeared and a condition of restitutio ad integum has been obtained.

14 Central Park West.

Favorable Action of Hypertonic Solutions and Mineral Oil in the Treatment of Infected Wounds.—Goubaroff of Moscow uses the following treatment for infected wounds. The skin is first painted with iodine, the wound laid open, foreign bodies, etc., extracted and the wound irrigated with isotonic saline solution 1-200 or Dakin's solution. If there is much fetor or gangrene, hot air up to 300° C. is applied (method of Vignat); this resource is seldom necessary. Subsequently hypertonic solution of common salt 8 per cent. or 10 per cent. is used regularly for irrigation. These are well supported, cause no pain, have an intense hemostatic action as well as antiseptic and deodorant properties. The solution also causes the secretion of a flux of lymph which is a favorable *milieu* for leucocytosis. Large gutta percha tubes are used for draining and the wound cavity is now filled with dry gauze or gauze dipped in liquid paraffin. Another good resource is the application of direct solar light or therapeutic rays.—*La Presse Médicale.*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE MEDICAL RESERVE CORPS OF THE ARMY.

DURING the past few years much has been heard of the need for military and naval preparedness, and it has been pointed out repeatedly that this country is in no sort of a condition to repel a thoroughly organized, well equipped foe with any certainty of success. Especially stress has been laid upon the inadequacy of the Army Medical Department to cope with any untoward situation. It is a fact that the Army Medical Department, the members of which are able and well trained, is woefully inadequate in numbers. Even in times of peace this is evident, and if war were to come, unless matters were considerably bettered in the meantime, infinite trouble would ensue.

The means suggested, and to some extent carried into practice, to provide against this calamity, is to procure surgeons from civil life to supply the deficiency. The Medical Reserve Corps of the army will effect this to a limited extent, but in order to be prepared for war on a large scale the services of civil surgeons must be more largely called upon. However, there is another question of great importance. To be prepared implies being efficient and therefore the members of the Medical Reserve Corps should be so thoroughly trained in their military duties that they may attain at least a fair degree of efficiency.

As First Lieutenant L. D. Frescoln, Medical Reserve Corps, U. S. Army, points out in a paper published in *The Military Surgeon* for August, 1916, the Medical Reserve Corps stands for a body of military surgeons held as an additional force in case of emergency to aid in the same duties as the regular force, having necessarily a working familiarity with the duties of the Medical Corps of the army. Inasmuch as the medical forces connected with the army and navy try to furnish the greatest physical efficiency to the fighting forces, themselves noncombatants, it behooves the reserves in this branch of the service to acquire efficiency themselves along these lines and then instil the same in the combatants.

A medical officer of the army is required to possess knowledge of a wide-reaching and of a somewhat peculiar nature, which is beyond the scope of this article to go over in detail. In particular, however, attention may be drawn to the fact that he must be a more or less expert sanitarian and must be well acquainted with sanitary matters as applied to the army. Unfortunately, Frescoln says, the members of the Medical Reserve Corps generally do not possess sufficient knowledge to warrant them in undertaking military duties, and they are therefore not fitted to take the field as army medical officers. Thus the Army Medical Department may be said to be in a state of unpreparedness.

The happenings in Europe during the past two years and more have afforded a terrible object lesson on unpreparedness and in the case of Great Britain especially on unpreparedness of the Army Medical Department. Great Britain's position in this respect was somewhat analogous to that of this country. She had an army medical corps just adequate for the needs of her small army, and when she was compelled to raise an immense army civil medical practitioners with little or no military training had to be called upon.

Undoubtedly the members of our Medical Reserve Corps have volunteered with the highest patriotic motives, but they should also fully understand that in so doing they have incurred great responsibilities, and that it is their bounden duty to their country and to themselves that they live up to these responsibilties. They should avail themselves of every opportunity for training in the duties of a medical officer, in order that in case of war they may serve their country with efficiency. This is true preparedness.

MILK GRADING.

THE physician is particularly interested in the quality and safety of milk, because it forms the largest, and often the sole, food element of his commonest patient, the child. The quality, the solid content, of the milk is of lesser importance, except that if it is not of some degree of uniformity the calculation in respect of milk modification will not be accurate. Often that is a very important consideration. But the chief thing of interest to the physician is the disease factor in milk. Of all foods, it is the one most likely to carry infection, because it is itself such an excellent medium for the development and for the growth of pathogenic organisms. Wherever there is an opportunity for the initial introduction of even a slight amount of infection into the milk, the probability of these bacteria multiplying, especially when improperly maintained at a temperature conducive to the incubation, is very large indeed. The variety of pathogenic bacteria carried and maintained in milk covers nearly the entire gamut of bacteria. They include especially the tubercle bacillus, the typhoid bacillus, the Klebs-Loeffler bacillus, and the organisms causing scarlet fever, septic sore throat, and other infections.

About 50 per cent of all tuberculosis present in children is believed to be bovine in origin, and coming from the cow's udder; milk is a greater factor in typhoidal infection than water, because it affords a better pabulum for the Eberth bacillus,

and because in water the bacillus becomes attenuated by exposure in a poor medium, and reaches the consumer in a very diluted form. Because of the wide distribution of the milk, any infection must reach a great many, yet the limits of such infections can nearly always be definitely determined by those using the particular supply infected, provided milk from good and bad dairies is not indiscriminately mixed.

The aim and the problem with respect to the milk supply is to raise the quality of all the milk. This is a reform which, because of the very magnitude of the problem, cannot be accomplished at once, but gradually only, through the education of the public to the dangers of unwholesome milk. There should be a demand for higher grade milk at higher prices. The cost of handling milk in properly equipped and properly maintained dairies is higher than in carelessly maintained ones. Various communities have already established compulsory requirements in the handling of milk products with respect to equipment, handling, health of cows, the tuberculin test for the herd, bacterial count, and the temperature at which the milk is maintained. When all milk products—butter, cream, and cheese—are embraced in all these requirements, the ideal will nearly have been reached. The one-grade milk or milk product should be discouraged, since it does not lead to better handling and higher standards.

Perhaps the most forward step in the movement for better and safer milk is the certified milk movement, wherein the index of quality is based on the very lowest bacterial count, carried out in laboratories maintaining uniform bacteriological technique. The height of the whole bacterial content is in proportion to the height of the pathogenic bacterial content. Besides, the bacterial count is the best index of the amount of foreign, extraneous matter introduced into the milk. Milk handled with the least amount of care naturally has the most dirt, the highest bacterial content, and is of the greatest danger. But even the very best milk will always be a source of danger if it is not immediately cooled to a proper temperature and not allowed to rise above this temperature until it reaches the consumer.

For infants who depend almost entirely on milk for their food supply the milk problem during the summer months is a double one, unless the milk is of the highest quality. The heat-exhausted infants are better targets for the bacteria in the milk than during cooler seasons of the year; and the boiling of bad milk does not solve the problem, since spore-forming organisms are not killed by boiling, and, particularly, because boiled milk has not the food quality of raw or pasteurized milk. While pasteurization kills most of the few pathogenic organisms contained in good milk, it is generally believed not to destroy the food quality, although this has been disputed. It is quite certain, however, that the tendency to general malnutrition and even rickets is enhanced by feeding boiled milk over a long period. At any rate, where it is not possible to get the higher grade milk it is better to run the risk of malnutrition than of the many infections caused by bad, mishandled, and generally low-grade milk.

LEECHES IN THE LARYNX.

It is said that Hippocrates mentioned the leech as an occasional cause of blood spitting and writers on foreign bodies in the air passages have often included the leech among the parasites found at times therein. Nevertheless, it is very seldom that a modern laryngologist has an opportunity to see these cases, although they are by no means rare in parts of Spain, Portugal, Italy, and North Africa. The leech often enters the mouths of those who drink certain nonpotable waters, especially when there is no knowledge of the dangers involved. The victims may drink directly from wells, pools, ditches, etc., or water which is fetched and allowed to stand in dirty earthen jugs with narrow necks. The victim drinks from these with no opportunity to see the contents. The victims often know when they have swallowed leeches and apply first aid in the shape of tobacco smoke, vinegar gargles, etc. If the leech does not come away the local practitioner is sought. The nasal fossæ, nasopharynx, pharynx, larynx, trachea, or bronchi may shelter the creature. In some cases considerable tolerance is shown, while in others the picture of incessant cough, strangulation, and hemoptysis, with secondary anemia, demands immediate relief. Violent coughing sometimes expels the creature. When the symptoms are of some duration tuberculosis is readily simulated. The small punctures made by the leech do not pour out blood, but the latter is said to be forcibly sucked into its body and expelled at the caudal end.

Silverio Hernandez contributed an article on this subject to the *Revista Ibero-Americana de Ciencias Medicas* for July. The author relates a personal case, in which the leech had been in the throat for twelve days. The victim had drunk from a narrow-necked earthen jar. Since then he had suffered from dyspneic paroxysms, incessant cough, and hemoptysis. When he could expel large quantities of blood he felt some relief. There was constant and severe distress in the larynx. The nasal chambers and nasopharynx were empty. The laryngoscopic picture, however, could not have been more alarming. To facilitate exploration the throat was cocainized. The epiglottis and arytenoids were congested and much swollen, but the author could perceive a portion of the leech beneath. While an assistant drew forward the epiglottis the author by means of forceps grasped the buccal end of the leech and made traction in the anteroposterior direction. He was fortunate in extracting it at the first attempt. Since this experience the author has acted in five similar cases.

In 1910 Gallegos of Seville reported 112 cases of leeches in the air-passages seen by him in ten years. Of this number 84 involved the larynx. It should be stated that in Andalusia this leech danger is more in evidence than elsewhere in Spain, far more so than in Madrid. Reference to some American standard works shows almost no allusion to this subject, although leeches must be common enough in certain kinds of water which are also, no doubt, used for emergency thirst-quenching. The reason for this is probably that the local leeches, as they are commonly met with in this country, are much too large to enter the rima glottidis readily, and if taken in at all would be swallowed.

PURE AIR AND AIR IN MOTION.

VIEWS with regard to the physiological action of atmospheric conditions have changed considerably in recent years. It was formerly thought man needed pure air, that is to say, air containing but a small proportion of carbon dioxide and organic matter and a due amount of oxygen, but nowadays any kind of air seems to be acceptable if only it is kept stirred up.

Frederic S. Lee read a paper by invitation before the American Pediatric Society on May 8, 1916, in which he said that the most potent of the atmospheric agencies is undoubtedly temperature, but high temperatures exert greater effects when they are accompanied by great humidity. When an existing external temperature is fairly comfortable to the individual an elevation of it, especially when such elevation is accompanied by an increase of humidity, causes distress, and the disagreeable effects are more pronounced when the air is stagnant. Such effects may be modified if the air next the skin be put into motion, but an effective antidote is a reduction in the temperature of the air and this may be assisted by a reduction in its humidity. All experimentation and observation go to demonstrate that a moderately cool and moderately dry air in motion constitutes the most physiologically helpful aerial envelope of the body. Lee holds that artificial ventilating systems should not necessarily be condemned, but should be operated intelligently and may advantageously be combined with window ventilation. As to the merits of what is termed "fresh air," it should be pointed out that the freshness of so-called fresh air lies, not in more oxygen, less carbon dioxide, less organic matter of respiratory origin, and the hypothetical presence of a hypothetically stimulating ozone, but rather in a low temperature, a low humidity, and motion.

Leonard Hill was the first, or one of the first, to demonstrate that the harmful properties of stagnant air, containing a comparatively large amount of carbon dioxide (in the most greatly vitiated air the quantity of carbon dioxide, he claims, is very small) had been immensely exaggerated. The deleterious effects of the air in a closed room lie more in its stagnancy than in any injurious matter it may contain. Keep the air in motion, say these new theorists, and it will be comfortable and to a large extent harmless.

THE AVOIDANCE OF INDUSTRIAL DISEASES.

THE slogan "safety first" should be extended from its original application as a safeguard against accidents to safeguard against disease. There is for instance a tremendous economic loss going on yearly which might be largely prevented by hygienic measures. Dr. Schereschewsky in a recent Public Health Report has outlined a plan for the prevention of industrial diseases which is worthy of note. Estimating that there are from 25 to 30 million industrial workers in the United States and that each one loses from eight to nine days' work a year from illness, that would make the annual loss 600,000 years, or an economic loss of $360,000,000, supposing the workman's average pay was $50 a month. A great part of this loss is undoubtedly preventable and Schereschewsky calls attention to several ways to prevent it. He believes that more attention should be given in medical schools to the interrelations of occupation and disease—in fact he would give a chair to this subject. Death certificates, too, should be filled out with greater exactness and should indicate correctly and exactly the occupation of the decedent. Also information regarding industrial hygiene should be disseminated as industriously as crusades against tuberculosis and alcohol are being carried on now. He suggests six main parts of such an educational campaign: permanent exhibits, popular lectures, bulletins, popular articles in the lay press, and instruction in the public schools. In a great many cases investigated among industrial workers it has been found that disease has been the result of neglect of personal hygiene rather than from inattention to any sanitary precautions connected with the particular occupation. These fundamentals of hygiene should of course be taught in the home and, that failing, in the schools, but it does not seem that the instruction there has hitherto been sufficiently convincing to bear much fruit. When we consider that about one-third of our school children later become industrial workers the importance of including personal hygiene in every public school curriculum becomes evident.

A YANKEE TRICK IN ENGLAND.

THERE has come to our notice recently a description of a bit of commercial shrewdness which is of the kind commonly spoken of as "Yankee" although the scene is laid in the lanes of the Old England, instead of the New. It is not known whether or not the enterprising individual in question was English, but the whole thing sounds very much like one of the amazing tales with which Sam Weller regaled the ears of Mr. Pickwick. It seems that every autumn a man used to bring to a large wholesale drug house in London a quantity of hemlock seed which he sold at half the market price. Finally, says *Garden* in a recent issue, the curiosity of one of the members of the firm became aroused and he asked the man how he could afford to sell the drug so cheaply. The stranger was loath to tell at first, but after being promised that nothing would be done to interfere with his business, he described his method. Every spring he filled his pockets with the seed and went out into the country. Wherever he saw a good, wide hedgerow he sowed the seed broadcast. Then he went his way and worried no more over his crop until the fall when he revisited the scene of his labors. He would then call the farmer's attention to the "weeds" in his hedge, offering to cut them down for a shilling a hedge, an offer which the farmer gladly accepted. Thus was the ground furnished free and he was paid to cut the harvest. In view of the great shortage in drugs owing to the war a few such ingenious minds should be turned to the question of domestic drug-raising, not necessarily on some one else's land, but at least on United States land.

DIABETES MELLITUS IN JAPAN.

ACCORDING to various contemporary authorities diabetes runs a mild course in Japan and seldom leads to coma. Polyuria is absent throughout, and with it the symptoms which announce the onset of the disease. This behavior is the more singular because of the preeminently carbohydrate diet of those people. Where the disease is most severe,

on the other hand, the people are meat-eaters. Le Goff, whose researches into this subject were recently presented before the French Academy of Sciences (*Gazette hebdom. des sciences médicales de Bordeaux*, July 8) tested both healthy and diabetic Japanese for carbohydrate tolerance and found a better utilization of sugar in comparison with other races. It is not made clear to the reader why the benign diabetes of the Japanese cannot straightway be termed a glycosuria.

News of the Week

Poliomyelitis Epidemic Continues.—The decrease in the number of cases of poliomyelitis during the past week was not so great as had been hoped for, 254 being recorded up to September 16, as against 352 for the preceding week. The total number of cases to that date was 8,731, with 2,172 deaths. Because of this continuance of the disease, the United States Public Health Service decided that it would be unwise to discontinue its work of inspection of travel, which will, therefore, be carried on for an indefinite time, or as long as present conditions prevail. The theory that the disease is conveyed by rat fleas has been advanced, and is being studied in several laboratories. Fifty monkeys, to be used in studying infantile paralysis, were shipped last week from San Francisco to the Rockefeller Institute. They are the survivors of a shipment of 100 received in San Francisco from the Orient a few days before. Mr. Nathan Straus has called attention to the record of the Straus milk depots in New York, as suggesting the theory that infantile paralysis may be carried by milk. It is stated that not a single case of the disease occurred among the 2,500 children who received pasteurized milk from the milk stations. As good a guess as any is that the disease is due to a protozoan parasite, with an exogenous cycle in the mosquito, or some other invertebrate host, which is active in hot weather, and becomes more torpid during the cool spells, following which there is usually a temporary decrease in the morbidity rate. For breaking the quarantine regulations imposed by the Board of Health, because of the occurrence of a case of poliomyelitis in his family, a citizen of Long Island City was fined $5 in the Long Island City Police Court on September 14. The total number of cases in New York State outside of New York City to September 16, was 2,865, with 302 deaths. In New Jersey, up to the same date, 3,390 cases had occurred.

Some Practical Notes on Blood Pressure.—In the legend of Hemobarogram No. 5, in the article with the above title, published in the issue of September 16 (page 490), the word typical should have been atypical.

Sir Thomas Lauder Brunton of London died on Saturday of last week at the age of 72 years. He was widely known as a graceful writer on medical subjects, especially therapeutics. He was an M.D. of the Royal University of Ireland, LL.D. of the University of Edinburgh, a fellow of the Royal College of Physicians, and of the Royal Society of Medicine, of which he was also vice-president. He was knighted in 1900 and made a baronet in 1908.

Lectures at Yale.—The Silliman lectures for 1916 of Yale University will be given by Prof. J. S. Haldane, LL.D., F.R.S., on October 9, 10, 12, and 13, at the Lampson Lyceum, New Haven. Prof. Haldane's title will be: "Organism and Environment as Illustrated by the Physiology of Breathing."

New Psychopathic Hospital.—The directors of the Bureau of Social Hygiene, and the Board of Managers of the New York State Reformatory for Women, announce the opening on September 16, of the Psychopathic Hospital of the Laboratory of Social Hygiene at Bedford Hills.

The Wellcome Prizes.—The Henry S. Wellcome prizes, offered through the Association of Military Surgeons, and open for competition to all present and former medical officers of the Army, the Navy, the Public Health Service, the organized militia, United States volunteers, the Medical Reserve Corps of the Army and Navy, and the Officers' Reserve Corps of the United States Army, will not be awarded until after December 15, 1916, the council of the association having voted to extend the time of entry for competing essays to that date. This has been done because of the large number of members now on duty with the troops at the border. Two prizes are offered, the first, a gold medal and $300, and the second, a silver medal and $200. The subject for the first prize is: "The most practicable plan for the organization, training, and utilization of the medical officers of the Medical Reserve Corps, United States Army and Navy, and of the medical officers of the Officers' Reserve Corps, United States Army, in peace and war." For the second prize the subject is: "The influence of the European war on the transmission of the infectious diseases, with special reference to its effect upon disease conditions of the United States." The essays (five copies signed by a nom de plume), not to exceed 20,000 words exclusive of tables, must be addressed to the secretary of the Association of Military Surgeons, United States Army Medical Museum, Washington, D. C.

Murphy Field Hospital Disbanded.—In consequence of the death of Dr. John B. Murphy, the field hospital organized by him as the Chicago medical unit, and forming a part of the general field hospital of the British expeditionary force in France, has been disbanded. The unit had the distinction of winning the royal Red Cross medal, and of being twice mentioned in dispatches for effective work.

Sick Rate Among Troops.—The health of the New York division of the National Guard on duty in Texas was reported recently to have been slightly better during August than during July, notwithstanding the epidemic of paratyphoid, the respective percentages being given as 1.52 and 1.57. There were during August about 19,000 New York troops on duty near the border. The highest daily rate of illness during the month was 2.76 per cent. There has been a marked decrease in the number of cases of paratyphoid.

Gifts to Charities.—The $2,500 presented to New Jersey charities by President Wilson when rental for Shadow Lawn, his summer residence, was refused by the owner, has been divided among eight institutions, including the following: $500 each to the Monmouth Memorial Hospital, Long Branch, the Ann May Hospital, Spring Lake, and the Paul Kimball Memorial Hospital, Lakewood; $200 to the Methodist Episcopal Home for the Aged, Ocean Grove, and $100 each to the Home for the Aged, Asbury Park, and the Long Branch Visiting Nurses' Association.

By the will of the late Alice E. Lathrop, of Hartford, Conn., the Hartford Hospital receives a bequest of $2,500.

Tuberculosis in War Camp.—The Canadian Military Hospital Commission is investigating the conditions in the military camps of the Dominion as regards the incidence of tuberculosis. It is stated that the proportion of soldier's tuberculosis has been larger in the military camps than at the front.

Adopts Physical Training Program.—The New York State Board of Regents has given unanimous approval to the program for physical training as recommended by the State Military Training Commission. The program, which is intended for the use of every school in the State, calls for a minimum of twenty minutes a day to be devoted to physical exercise, and is said to be the most comprehensive plan for health education and physical training ever adopted by a State.

Physicians Licensed.—As a result of the recent examinations for admission to practise medicine in the State of Maine, certificates were granted to nine physicians. Twelve candidates took the examinations. In addition, three physicians were granted certificates without examination through reciprocity with other States.

Personals.—Dr. Hermann F. Biggs, Commissioner of Health of the State of New York, was operated upon at St. Mary's Hospital, Rochester, Minn., on September 13, for chronic appendicitis and gallstones. The operation was successful and Dr. Biggs is reported to be on the road to rapid recovery.

Reports from Paris tell of the illness of Dr. Joseph A. Blake, as a result of the strenuous work he has been doing among the wounded in his hospital in that city.

Dr. John B. MacDonald has been appointed superintendent of the Danvers State Hospital, Danvers, Mass., succeeding Dr. George M. Kline, who was recently made chairman of the newly-created State Commission on Mental Diseases. Dr. MacDonald has for a time been assistant superintendent at the hospital.

To Head Lunacy Board.—Dr. Charles W. Pilgrim, superintendent of the Hudson River State Hospital, Poughkeepsie, N. Y., has been appointed by Governor Whitman to serve as president of the New York State Lunacy Board. Dr. James V. May, former head of the board, resigned some time ago to accept a similar position in the State of Massachusetts. Dr. Pilgrim served as president of the board also in 1906-07, having been appointed at that time by Governor Higgins. The salary of the position is $9,000 a year.

Plagues in Mexico.—An apparent increase in both typhus fever and yellow fever is reported in official dispatches from Mexico. The diseases are prevalent especially in the coast ports, and the quarantine authorities are keeping a close watch on the situation.

Hospital Needs Funds.—The New York Ophthalmic Hospital, it is announced, may shortly be compelled to close its doors because of lack of funds, a marked falling off in subscriptions having occurred since the beginning of the war. Two of the free clinics for children have already been closed, and it is feared that it will be necessary still further to curtail the work.

Medical Colleges to Open.—The College of Physicians and Surgeons, Columbia University, New York, will open on September 27 the decline in the epidemic of poliomyelitis making unnecessary the postponement of the opening date.

The Long Island College Hospital, Brooklyn, N. Y., will begin the session of 1916-17 on September 25. The college courses given by Columbia University at the Long Island College Hospital will open on September 28.

The British Medical Association.—The annual representatives' meeting of the British Medical Association was held on July 28 and 29, and transacted the routine business, no scientific meetings being held. Mr. E. B. Turner of London was re-elected chairman of representative meetings, 1916-17, and Mr. T. W. H. Garstang of Altrincham, deputy-chairman. Sir Thomas Clifford Allbutt, K.C.B., LL.D., was elected president of the Association, 1916-17. A resolution was also passed congratulating Sir Clifford Allbutt on the attainment of his 80th birthday. Dr. G. E. Haslip of London, was elected treasurer of the Association for the period 1916-19.

Dover (N. H.) Medical Society.—At the annual meeting held in Rochester on September 8, the following officers were elected for the ensuing year: *President*, Dr. Thomas J. Morrison, Somersworth; *Vice-President*, Dr. John H. Bates, East Rochester; *Secretary-Treasurer*, Dr. Roland J. Bennett.

Teaching Hygiene to School Children.—A system of health care and instruction in hygiene is to be introduced into the New York City schools this fall under the direction of Dr. C. Ward Crampton, director of the department of physical training, hygiene, and athletics of the public schools. A program of hygienic events of the day has been prepared, including directions as to bathing, mouth hygiene, care in eating, exercise, etc., and in the school children are to be placed in seats suited to them, the matters of ventilation and temperature are to be carefully attended to, and pupils are to be organized in squads whose duties will be to care for order and cleanliness in the schoolroom, building, and neighborhood. All pupils are to have their eyes tested, and the parents will be supplied with copies of a pamphlet on "How to Safeguard the Health of the Child."

The Legality of Pay Clinics.—In response to a request of the Medico-Economic League, the office of the Attorney General of the State of New York has recently given the opinion that it is lawful for a dispensary which is conducted in compliance with the standards, requirements, and purposes of Section 291 of the State Charities Law, to make a charge of one dollar per visit. Whether a person who pays one dollar for treatment at such a dispensary, is a fit object for charity depends, the opinion states, entirely upon the circumstances in the individual case. If all that the patient can afford to pay is one dollar, and he can obtain treatment by a specialist at a dispensary for that amount, while treatment by the same specialist elsewhere would be beyond his means, there is no reason why he should not avail himself of the opportunity. Since Section 296 of the State Charities Law provides that "Any person who obtains medical or surgical treatment on false representations from any dispensary licensed under the provisions of this article shall be guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not less than ten dollars and not more than two hundred and fifty dollars," there seems

no reason to fear that the dispensaries will be abused by persons who can afford to pay the full quota for specialized surgical or medical treatment. In the opinion of the Attorney General's office, the establishment of dispensaries of the standard conducted by such institutions at Mt. Sinai Hospital and others, should be encouraged and assisted, rather than hampered and hindered.

Obituary Notes.—Dr. ENRIQUE NUÑEZ, secretary of sanitation for the Republic of Cuba, died on September 16 in the Presbyterian Hospital, New York, after a few days' illness from infection following a cut on his foot. Dr. Nuñez was graduated from the University of Havana in 1886, and received his doctor's degree from the same institution in 1893. For many years he had been one of the most prominent physicians in Cuba. He was in his forty-fifth year.

Dr. JAMES R. CANNON of Irvington-on-Hudson, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1903, visiting surgeon to the Tarrytown Hospital, and a member of the Society of the Alumni of St. Luke's Hospital and the Alumni of Sloane Hospital for Women, died suddenly at Walker, Minn., on September 5.

Dr. EUGENE POTTER STONE of New York, a graduate of the Medical School of Harvard University, Boston, in 1884, medical director in the United States Navy, retired, and a member of the American Medical Association and the New York State and County Medical Societies, died suddenly, at North Sutton, N. H., on September 5, aged 55 years.

Dr. SOLOMON BARUCH of New York, a graduate of the New York Homeopathic Medical College and Flower Hospital, New York, in 1876, died at his home, from arteriosclerosis, on September 6, aged 60 years.

Dr. JOSEPH SAMUEL CHAGNON of Willimantic, Conn., a graduate of Victoria University, Medical Department, Toronto, in 1883, died at his home, from edema of the lungs, on August 29, aged 57 years.

Obituary.

ADONIRAM BROWN JUDSON, M.D.,

NEW YORK.

DR. A. B. JUDSON, one of the first generation of orthopedic surgeons in this country, died of diabetes at his home in New York City, on Wednesday of this week. He was born in Burma, where his father long lived as a Baptist missionary, in 1837. After graduating in arts from Brown University, he studied medicine at the Jefferson Medical College, from which he was graduated in 1865. Before graduation he served as assistant surgeon in the Civil War. After coming to New York he took a course at the College of Physicians and Surgeons, where he obtained a second degree of M.D. in 1868. He was a fellow of the American College of Surgeons, of the New York Academy of Medicine, and of the American Medical Association, and a member of the New York State and County Medical Societies, and the New York Pathological Society, and ex-president of the American Orthopedic Association. During his period of active practice Dr. Judson wrote many journal articles and some books, and even after retirement he retained a keen interest in his profession and continued to contribute to its literature, having published a brief article in these columns as late as January of the present year.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

TREATMENT OF CONVALESCENT SOLDIERS—COMMAND DEPOTS—LIGHT DUTIES ON LINES OF COMMUNICATION—BALNEOLOGY—COMPRESSED AIR—TRAINING OF MUSCLES AND JOINTS.

LONDON, August 26, 1916.

THE treatment of convalescent soldiers by physical means has been discussed at the Royal Society of Medicine *a propos* of a paper by Major Tait McKenzie, R.A.M.C. He compared a great military hospital to a general post office as the sick and wounded are, as it were, sorted out in several classes. Cases that may be called first-class matter are at once on reception distributed to the regular hospitals, either Red Cross or military, when after a short course of treatment by operation or otherwise they may be able to return to the front. Second-class matter is composed of cases requiring a stay at a convalescent hospital where they can receive a longer course of treatment by an officer of the R.A.M.C. A large number of these patients eventually find their way back to the front. The third class comprises cases difficult to deal with as they are too tedious for hospitals or convalescent camps. Early in the war they were passed from one depot to another without giving satisfaction to any of the medical officers under whom they spent short periods. Last autumn the director-general arranged a series "command depots," under a combatant officer for discipline and general management. A medical officer was attached to each. To these depots were sent to all patients as to whom there was a reasonable prospect of recovery within five or six months. From there it was hoped to return every available man to service; those only fit for light service abroad might replace others in light duties on lines of communication and release others for more active service. So others again from whom no further service could be expected might be discharged from the army.

With the help of the society's committee on Balneology the ordinary hut was converted into an ideal hydrothertherapeutic establishment. The hot and cold douche had both rendered good service in treatment and also proved useful in diagnosis—especially in cases of suspected rheumatic origin. Serious cases of rheumatism were treated by a daily tub bath, of 15 to 20 minutes duration, at a temperature of 98 F., followed by general massage. The pool bath was kept at 94 F. and would hold twelve men sitting up to their necks on in the water. In it they staid an hour. This was the practice in all cases of shock with disordered cardiac action. The whirlpool bath was used for limbs with painful scars or frost-bitten, the water being kept at 110° F. and violently agitated. Compressed air introduced into the stream provided bubbling, effervescent envelope for the painful limb.

After twenty minutes of this immersion the part would be flushed, but the patient would express himself as comfortable and the circulation would be accelerated and remain so for hours. This is a good preparation for massage and other manipulations which often cannot be borne without it. When a sodden scar is undesirable dry heat should be used. Zander machines for passive movements are complicated and far too expensive. Following manipulations the muscles and joints require systematic

re-education by tasks of progressively increasing difficulties and in time a patient should be thrown more on his own resources and made to practice free gymnastics without the help of machine or operator. At this stage men suffering from shell shock or debilitated in any way may begin the exercises and gradually increase them up to the stage of nearly but not quite full training. A pulse which by faradism, baths, and rest had been reduced to 80 would mount up again to 120 or even 140 on attempting anything arduous. The command depots have given results which must be satisfactory to the director-general, for half the cases have been rendered fit to return to active service and have rejoined their units in the fighting line, 12 per cent. have been sent to lines of communication abroad, 12 per cent. to useful sedentary work at home, the residue of 28 per cent. being discharged as permanently unfit. These command depots, since their establishment seven months ago, have returned a full Army Division to the fighting line.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

ALASKANITIS ENDEMIC IN NORTHWESTERN ALASKA.

St. Michael, July 31, 1916.

To many readers this will be an unfamiliar term, but to persons who have passed at least one closed season in northern or northwestern Alaska the word "Alaskanitis" will remind them of many instances that have come under their observation.

Just as with general paresis, this condition seems to be more prevalent in the better class, the words "better class" in this sense meaning the white people in contradistinction to the native Eskimo or Indian, who seems immune. The condition probably prevails all over northern and northwestern Alaska, at least where white people have settled. It affects both sexes alike, and no age seems exempt. Although the condition is endemic with sporadic cases occurring the year around, it reaches an epidemic form after the close of navigation when Alaska is shut off from the outside world. The number of cases increases progressively from February to June and by this time all the white population has become more or less affected. Persons new in the country seem particularly prone to "Alaskanitis," but prolonged residence does not establish absolute immunity as the writer has seen a person forty-four years in the country have it in an acute form.

Now what is "Alaskanitis?" I don't know, but a description will be based upon the outward manifestations. As above said, "Alaskanitis" prevails after the close of navigation, that is when no new faces are to be seen. The various communities are but sparsely settled, necessitating the same faces to meet many times a day. Should you go to the store you meet the same faces; should you go to the post office, skiing, snow-shoeing, mushing, calling, or what not, the same faces are there, and, worst of all, there are no other faces. The outside world is cut off; there is no news, the days become progressively shorter and shorter until but three or four hours of light remain. The nights grow longer and longer until about twenty hours out of the twenty-four are consumed with the quietude and mystery of darkness almost continually hovering over you. You hear almost daily others' experiences of last summer and relate yours; the experiences of summer before last are also told, even experiences dating back to early childhood are in like manner related without the slightest emotion, humor, or wit. After a few months of these experiences one hesitates to meet another, knowing what will be related, so one seeks more or less solitude, but this, too, becomes tiresome. At this stage, you have become sensitized or highly susceptible to "Alaskanitis." About this time some one will start gossiping and with lightning-like rapidity you will grasp this piece of "news"—being the first in a long time—and with such additions and subtractions as seem necessary to make the story more interesting it passes from one to another. Finally the story reaches the originator, who does not even recognize it as his story, so there are two stories in the field. This will cause sociological segregation and retaliating stories will start. As the majority of the population is made up of persons about whom you may readily believe reports of questionable nature, divisions and subdivisions occur, until by June, or the opening of navigation, each person may represent a society of his own.

With the opening of navigation there is a great influx of new faces; gold seekers, tourists, and others come into the country by the hundreds. The bright, warm, sunshiny days with the wind in the right direction soon drive out the ice, and ships appear bringing news, new faces, new associates. The Sourdough's (a white person who has been in Alaska more than one year) troubles are forgotten and the condition of his mind that seemed chronic now disappears, only to relapse, however, during the coming fall or winter. This is "Alaskanitis" in a typical form and is more conducive to discontent during the long winters than probably all other elements combined which enter into the life spent in this part of the world.

"Alaskanitis" differs from "Philippinitis" in not presenting in so marked a degree the symptoms of nostalgia.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 7, 1916.

1. Some Theoretical Considerations of the Present Status of Roentgen Therapy. Joseph Shohan.
2. Some Efficiency Problems in Country Medical Practice. Frank H. Washburn.
3. Circulatory Disturbances in the Obese. Clifton J. Buck.
4. Jean-Pierre David: The Man who Potted Pott. John Ridlon.
5. Report of the Clinical Symptomatology and Laboratory Findings in Three Cases of General Paresis under Intravenous Arsenobenzol Treatment. G. E. Mott and S. M. Bunker.

3. Circulatory Disturbances in the Obese.—Clifton L. Buck says that beneficent results have been noted as a result of the method he uses in preventing the first signs of cardiac weakness in the slightly obese; in all cases suffering from diseases entailing an increased burden upon the circulatory system, and in the cases of extreme obesity. He believes that this is a particularly good field for prophylaxis and that it should be considered one of the most important duties of the family physician to prevent the development of obesity in all cases in which he recognizes cardiac weakness, as for instance, valvular trouble developing from some of the acute infections of childhood, and in families which show an hereditary tendency toward obesity. In severe cases with edema absolute rest is insisted upon for two or three weeks or longer. Digitalis or tincture of opium may be used as indicated. The diet at first should consist of skim-milk, cooked fruits, and eggs. When the condition has improved the diet may be in-

creased by adding solid food at short intervals, but there must be no overloading of the digestive organs. In the beginning a loss of three to five pounds a week may be obtained, but when the effects of this become evident, the diet should be adjusted so that but three to five pounds a month are lost. After a few months' treatment more freedom in diet may be allowed for a few months. Then the diet should again be restricted so that a gradual loss of weight results. This method should be persisted in until the weight normal for the individual is reached. The essayist finds that after a patient has undergone the course of treatment his dietetic habits have been corrected to such an extent that he is not likely to resume the habits responsible for his obesity as he so frequently does after a few weeks' treatment in a sanatorium under artificial surroundings. A number of cases are cited illustrating the course and results of this treatment.

5. **Report on the Clinical Symptomatology and Laboratory Findings in Three Cases of General Paresis under Intravenous Arsenobenzol Treatment.**—G. E. Mott and S. M. Bunker state that hitherto the diagnosis of general paresis has been made upon the appearance of such classical symptoms as the Argyll-Robertson pupil, altered knee-jerks, ataxia, loss of judgment, emotional instability, etc. Now they have come to look for the following six laboratory tests in confirmation of the diagnosis of general paresis: 1. Positive colloidal gold reaction of Lange. 2. Globulin—present and increased, Noguchi—butyric acid method. 3. Albumin —present and increased. 4. Number of lymphocytes per c.c. increased from 10 to 400. 5. Wassermann reaction of the blood serum. 6. Wassermann reaction in the spinal fluid. The recent work of Southard and other observers tends to show that the six positive laboratory findings are present months and perhaps years before the appearance of the classical clinical symptoms. In the cases reported arsenobenzol has been given bi-weekly, intravenously, in the arms. Following the earlier treatments there occurred a distinct reaction, namely, chills, fever, headache, nausea, and vomiting. The most constant symptom was a nervous chill lasting from ten to twenty minutes and appearing from ten to thirty minutes after treatment. Frequent urinalyses have shown only occasional traces of albumen in one case. After the injections there was some local reaction which readily yielded to the application of ice and massage. A summary of the cases shows that in one case the onset of the disease occurred ten days prior to admission to the hospital; in another case, fifteen days prior to admission, and in still another, one year. In the light of subsequent treatment, early diagnosis of general paresis, or at least of syphilitic involvement of the central nervous system, is of the utmost importance. Following treatment a definite clinical improvement has occurred in two of these patients. One patient has shown restiveness and a lack of cooperation to such an extent as to classify him as not improved. The definite results observed in the laboratory findings were: 1. The gold chloride test, although still positive, was much reduced in two cases. It was slightly increased in the case refusing treatment. 2. The albumen tests were reduced in all three cases from three pluses to one plus. 3. The globulin tests were slightly increased in one case; unchanged in the other two cases. 4. The cytological count was reduced in one case from 125 to 3 cells per c.c. There was a low normal count in both of the other cases. 5. The Wassermann reaction in the spinal fluid in one case changed from positive to unsatisfactory. In the other two cases it was unchanged, remaining positive. 6. The Wassermann reaction in the blood sera showed three negative and one doubtful reaction in one case; one unsatisfactory reaction in a second, and in the third case one unsatisfactory reaction and all the others positive.

New York Medical Journal.

September 9, 1916.

1. Tuberculosis in Relation to Feeblemindedness. Peter Bryce.
2. Some Thoughts on Prostatectomy. Henry H. Morton.
3. A Case of Hypopituitarism. L. Napoleon Boston.
4. Quartz Light in Cutaneous Diseases. Edward Pisko.
5. The Symptom Ataxia: Its Successful Treatment. Heinrich F. Wolf.
6. Dysentery in Serbia. J. Rudis-Jicinsky.
7. The Pre-existing Conditions of the Injured. A Medico-legal Study from the Standpoint of Employer's Liability and Accident Insurance. G. R. Doré.
8. A Test for Syphilis. Mercury Bichloride in the Blood Serum and Cerebrospinal Fluid. George B. Ubel.
9. Drug Addiction: A Study Made in Essex County Prison and Home of Detention. Edward W. Markens.
10. Recovery from Tetanus. B. Scheinkman.

1. **Tuberculosis in Relation to Feeblemindedness.**—Peter Bryce quotes from the observations of Tredgold and Goddard to bring out a fact frequently forced upon the attention of those who have had much to do with the tuberculous, and that is the relation of tuberculosis and what for the lack of a better term is called "nerve instability." He holds with Tredgold that primary amentia is a manifestation of a pathological germinal variation which has been produced by environment, and the germinal change is of the nature of a vitiation, that is to say, it consists of an impairment of the intrinsic potentiality for development, which may be widespread and affect the germ as a whole or which may be less extensive and confined to the neuronic determinant. This impairment is primarily due to the action of environment. Ancestral tuberculosis is but rarely the direct sole cause of amentia, but, like alcoholism, has an important indirect and possibly contributory influence. This indirect effect is seen in its potency to produce the milder and initial forms of nervous instability in the offspring, such as migraine, hysteria, and neurasthenia. The change in the mental and physical environment incident to the rapid urbanization of such a large proportion of the population of the United States and Canada during the past fifty years is the environmental condition that is largely responsible, operating against normal and physical causes. Among the other vices of civilization an irrational dietary and the use of foods of imperfect nutritive elements, due to the robbing of our common foods of their salts and vitamines, is not the least important. The effects of this changed environment on two generations are now becoming apparent and the question may be seriously asked whether phylogeny will disappear in its old normal developmental influences to be replaced by some modern man-created eugenics, adequate to cope with the changed environment, including habits of life, housing, occupation, and education. If by artificial methods we may greatly limit tuberculosis, the problem of feeblemindedness still remains to be attacked and will for an unknown period under modern conditions, give our legislators, educationists, clerics, and physicians ample occupation if they are to solve the problem satisfactorily.

2. **Some Thoughts on Prostatectomy.**—Henry H. Morton gives the results of their work at the Long Island College Hospital where, during the last three years, forty-three patients have been operated upon for hypertrophied prostate. The ages ranged from fifty-seven to eighty-two years. Of these forty-three patients, six died, two of the deaths being directly due to the operation, while the others were due to various other causes not dependent upon the operation. Thus the mortality rate for the series may be said to be 10 per cent. One should choose the route, supra-

pubic or perineal, which is best suited to the condition of the patient. The ideal anesthetic for old men is gas-oxygen with a little ether. Ether, if carefully given in small quantities, can also be safely used as an anesthetic. The after treatment of these cases is extremely important. The patient should be immediately put into a hot bed with an electric baker and the Murphy drip started at once. Water should be forced by the mouth as soon as the patient is able to swallow. The most dangerous symptom as a complication after prostatectomy is septic anuria. Its approach is heralded by the blowing up of the intestines, tympanites, dry brown tongue, scanty urine, and drowsiness. It demands the forcing of the water by the Murphy drip and by mouth. After suprapubic prostatectomy the writer uses silver wire sutures, which he leaves in. A big Freyer tube takes care of the clots. This is taken out on the fourth day. He also makes use of a rubber dam apron with a hole in the middle through which the urine runs out and is caught by gauze. This has proved a great comfort to the patients. He has found that incontinence of urine is more frequent after perineal section than after supropubic. As to the cause of death after operation, suppression of urine heads the list. Shock is rarely the occasion of death and hemorrhage ought never to cause death.

4. **Quartz Light in Cutaneous Diseases.** — Edward Pisko calls attention to the value of the Bach-Nagelschmidt modification of the Kromayer lamp in the treatment of cutaneous diseases. He says its use is indicated in all skin affections in which there is a dilatation of the blood vessels. He emphasizes, however, that the lamp's utlity is restricted to the treatment of small circumscribed lesions, such as are of an area no larger than the area through which the rays emerge. Conditions most amenable to treatment are furunculosis, folliculitis, acne vulgaris, and small patches of alopecia areata. Another group of skin diseases that can be influenced only by the deeper and more penetrating action of the rays includes lupus vulgaris, lupus erythematosus, naevus unius lateris, naevus vasculosus, naevus pigmentosus, and telangiectasis. The results obtained in the treatment of these cases have invariably been excellent, some times even startling. Gratifying results have also been obtained in cases of leg ulcer, intertriginous eczema, in a case of Duehring's disease, and in cases of obstinate and chronic eczema and psoriasis.

8. **A Test for Syphilis; Mercury Bichloride in the Blood Serum and Cerebrospinal Fluid.**—George B. Ubel bases this test upon the following facts: First, that bacteria react in accordance with all the established facts pertaining to colloids; secondly, one colloid may be absorbed by another colloid, preventing its precipitation when a mild precipitant is added. By assuming that normally there is a colloid present in the blood serum which is not present in the cerebrospinal fluid, the test may be satisfactorily explained. The addition of a 1 to 100 solution of mercury bichloride to the non-syphilitic blood serum will precipitate the colloid which is normally present, and a turbidity will result, but if the serum is syphilitic the colloid of *Spirochæta pallida* protects or absorbs the colloid normally present in the blood serum, and hence the serum remains clear when the precipitant is added. The reaction on the spinal fluid is just the reverse, that is, normally there is no colloid present, hence when the bichloride is added no precipitate is formed, but in a syphilitic spinal fluid the colloid of the spirachete is present and is precipitated by the solution. The technique is described and a series of cases tabulated which show that the results of this test are similar in most instances to those obtained by the other tests in common use.

10. **Recovery from Tetanus.**—B. Scheinkman reports a case of tetanus in which the administration of one dose of tetanus antitoxin of 6,000 units followed by three successive doses of 10,000 units failed to effect any change for the better in the condition of the patient. Five c.c. of a 2 per cent. carbolic solution were then injected and powders were prescribed consisting of quinine sulphate 2 grains, phenacetin, antipyrin, and caffeine citrate, each 1½ grains, and codiene 1/15 of a grain. These powders were given every two hours and the antitoxin discontinued. This treatment was continued for a period of two weeks, during which time the patient gradually recovered. Noteworthy features in this case were the facts that the patient's temperature never reached above 101° F., and only on a few occasions did the pulse show any erratic tendencies. The intellect remained unimpared throughout the entire attack.

The Journal of the American Medical Association.

September 9, 1916.

1. Removal of the Right Colon: Indications and Technique. Charles H. Mayo.
2. The Value of Ileosigmoidostomy and Similar Procedures in the Treatment of Chronic Multiple Arthritis. John T. Bottomley.
3. Splenectomy for Hemolytic Jaundice. Charles H. Peck.
4. Indications for Splenectomy in Certain Chronic Blood Disorders: The Technique of the Operation. Donald C. Balfour.
5. Pernicious Anemia Treated by Splenectomy and Systematic, Often-Repeated Transfusion of Blood: Transfusion in Benzol Poisoning. Roy D. McClure.
6. The Status of Physical Therapeutics in the Medical College Curriculum of To-day. E. L. Eggleston.
7. Report of Two Cases of Scoliosis, Accompanied by Pressure Paralysis of the Lower Limbs. John Ridlon.
8. The Heart and Active Service: Treatment of Convalescent Soldiers at Heaton Park. H. J. Seeuwen.
9. Trichinosis: A Study of Fifteen Cases. W. T. Cummins and G. R. Carson

1. **Removal of the Right Colon; Indications and Technique.**—Charles H. Mayo. (See MEDICAL RECORD, July 1, 1916, page 37.)

2. **The Value of Ileosigmoidostomy and Similar Procedures in the Treatment of Chronic Multiple Arthritis.**—John T. Bottomley. (See MEDICAL RECORD, July 1, 1916, page 38.)

3. **Splenectomy for Hemolytic Jaundice.**—Charles H. Peck. (See MEDICAL RECORD, July 1, 1916, page 36.)

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5. **Pernicious Anemia Treated by Splenectomy and Systematic, Often-Repeated Transfusion of Blood; Transfusion in Benzol Poisoning.** — Roy D. McClure. (See MEDICAL RECORD, July 1, 1916, page 37.)

6. **The Status of Physical Therapeutics in the Medical College Curriculum of To-Day.** — E. L. Eggleston says that it occurred to him that it would be interesting to know what attention was given to certain subjects in the medical schools of the United States, and the material he gathered forms the basis of his paper. He sent to each of the medical colleges listed and classified by the American Medical Association an inquiry as to the number of hours devoted to the presentation of the subjects of hydrotherapeutics, electrotherapeutics, mechanotherapeutics, massage, medical gymnastics, and dietetics. The replies to his inquiry indicated a decided interest in the subject. In summarizing the collected information, he finds that the average time devoted to the non-pharmacal subjects exclusive of psychotherapy was 62 hours, or about four times that recommended in the model curriculum. The majority of the schools were giving special courses in electrotherapeutics, a few considering the subject only in connection with other courses, such as neurology. Very few of the schools

were able to demonstrate the proper technique of the physical measures because of a lack of suitable equipment. The empiric use of hydrotherapeutic measures is fraught with grave danger in many cases of organic disease, and the same might be said with reference to massage and other physical measures, but this should not condemn them as of no value. When an individual has learned by experience of the fallibility of drugs, he has not infrequently lost confidence in his physician and has been led to employ as his advisor some one professing to cure physical ills without resorting to drugs. The number of such individuals has become so large as to provide a considerable field for the drugless healer. The day is past when the public is willing to be treated by medicines solely. Is it necessary that the patient be compelled to consult, in addition to the physician, a food expert and a gymnasium director to find out what to eat and how to exercise, or to consult an osteopath or a professional masseur to obtain the benefit from manual movements? It is high time that the physician be able to direct in all the activities having to do with the well-being of his patient, and that he so minister to all his physical needs that never again will the patient think of him as a dispenser of drugs only.

9. **Trichinosis.**—W. T. Cummins and G. R. Carson report of study of fifteen cases. The average incubation period was three weeks. One-third of the cases presented no orbital edema; three-quarters, no eruption; four-fifths, no bronchitis; none showed splenic enlargement. Eleven cases showed a disproportionately low pulse rate, to which little attention has been called. The maximum eosinophilia was 75 per cent. Of nine cases, eight showed trichinæ in the muscles; of the fifteen cases, none were found in the blood or feces; of twelve cases, one showed an embryo in the cerebrospinal fluid; of eleven cases, none were found in the urine; of fourteen cases, ten showed albumin in the urine. The mortality was 6.6 per cent. The fatal case presented a hypostatic pneumonia and a large pleural effusion. Evidently the parasites traverse the venous channels in very small numbers for mechanical reasons and probably none in some cases. It would appear that in many cases they suffer partial or complete disintegration in the intestinal tract. A routine spinal fluid examination may show that the nervous tissues are invaded in many instances; but it does not seem likely that this will serve as a useful diagnostic procedure in the study of the disease. If routine urinary examinations are made for parasites, it seems not improbable that invasion of this tract may be demonstrated.

The Lancet.

August 19, 1916.

1. Rivers as Sources of Water Supply. A. C. Houston.
2. Observations of the Effect on the Addition of Fresh Human Blood Serum to Artificial Media. Leonard S. Dudgeon, F. Bawtree, and Dudley Corbett.
3. Three Cases of Entamoeba Histolytica Infection Treated with Emetine Bismuth Iodine. George C. Low and Clifford Dobell.
4. The Intravenous Injection of Oxygen Gas as a Therapeutic Measure. F. W. Tunnicliffe and G. F. Stebbing.
5. On the Gluteal Fold in Sciatic Neuritis. Hildred Carlill.
6. A Case of Dilatation of the Hepatic Flexure of the Colon, Giving Rise to the Physical Signs Usually Associated with Subphrenic Pyoneumothorax. W. J. Morrish.
7. The Shiah Pilgrimage and the Sanitary Defences of Mesopotamia and the Turco-Persian Frontier. F. C. Clemow.

2. **Observations of the Effect on the Addition of Fresh Human Blood Serum to Artificial Media.**—Leonard S. Dudgeon, F. Bawtree, and Dudley Corbett, in view of the fact that the ordinary media which are employed for the cultivation of bacteria outside of the tissues are not ideal, have tested the effect of the addition of human blood serum to various media. They find that this procedure has the following effects: 1. It provides a most favorable medium for growth where culture under artificial conditions may otherwise fail. 2. It greatly increases the amount of growth in those media to which it has been added compared to those prepared without it. 3. It stimulates the growth of pathogenic organisms as opposed to non-pathogenic. 4. It prolongs the life of organisms which are prone to die out under artificial conditions as shown in the case of the meningococcus. 5. It greatly facilitates the culture of the diphtheria bacillus, and in its combination with different media helps to illustrate all aspects of the morphology of this organism. 6. It exercises considerable influence upon other organisms of variable morphology tending in the case of the pneumococci to reproduce the true types as found in the body fluids. 7. It profoundly alters the fermentation reactions of the streptococci and pneumococci, tending to obliterate the finer differences between types or the differences due to particular environment.

4. **The Intravenous Injection of Oxygen Gas as a Therapeutic Measure.** — F. W. Tunnicliffe and G. F. Stebbing state that one of them (Tunnicliffe) has made it a practice for some time, when using saline venous injections, either simple nutrient or medicated, to use not simple saline solution but oxygenated saline solution. They have found that when pure oxygen gas is introduced into the veins of animals the latter do not necessarily succumb to gas embolism. More recent observations have been made on man, as a result of which it has been demonstrated that oxygen gas can be introduced into the veins in quantities from 500 to 1000 c.c. at the rate of 600 to 1200 c.c. per hour. Cyanosis and the dyspnea attending it are rapidly relieved. The more cyanosed the patient, the better is a rapid rate tolerated. As the cyanosis is reduced the rate should be diminished. During the administration the pulse should be watched and the heart auscultated frequently. Loud cardiac murmurs, more allied to stomach or intestinal rumbles in character than to ordinary heart murmurs, may, in fact often do, develop during the administration. These murmurs are not an indication to stop the administration, but with careful administration they need not occur at all. The phenomenon to be feared as likely to cause serious symptoms during the injection of oxygen is dilatation of the heart. The ideal case for reaping benefit from this treatment is one in which the cyanosis and dyspnea are due to respiratory difficulty and in which the heart is fairly healthy. In the opinion of the writers the method is not likely to be of benefit in the cyanosis and dyspnea occurring in marked degeneration of the myocardium. Under such conditions if gas injections are deemed advisable digitalin and strophanthin should be given first. The object of the authors is not primarily to point out conditions in which the injections of oxygen are suitable but to point out that this method is available to the clinician and will give therapeutic results.

5. **On the Gluteal Fold in Sciatic Neurits.**—Hildred Carlill calls attention to the obliteration of the gluteal fold in sciatic neuritis, and says it must depend on flexion of the thigh or upon some alteration in the condition of the underlying structures beneath the fold. In his cases there was no flexion of the thigh. In some cases Laségue's sign was also negative—that is to say the thigh could be flexed on the trunk, with the leg extended, without causing pain. When the sign is positive, from stretching of the nerve, it is a certain indication of a degree of affection in the nerve fibers or their sheath. The test is employed in the same manner as that employed in testing Kernig's sign in cases of meningitis, but the significance of the posi-

tive test differs in the two instances. It has been shown that Laségue's sign may be accompanied by momentary dilatation of the pupil, together with a raised blood pressure and an increased pulse rate. These signs occur in association with pain and serve to support a diagnosis of sciatica when malingering is suspected. Those patients with neuritis in whom the writer has found the fold absent, invariably had abolition of the ankle jerk. This is an important point in the diagnosis between neuritis on the one hand and pain, whether local or referred, in the distribution of the nerve, on the other. It is submitted that the condition of the gluteal fold may be of considerable diagnostic value in these cases, and may, indeed, be of great importance in those patients in whom it is not possible to test the ankle jerk. The absence of the gluteal fold in people with peripheral neuritis would go to prove that the whole length of the nerve is affected, including the roots of the sacral plexus.

6. A Case of Dilatation of the Hepatic Flexure of the Colon, Giving Rise to the Physical Signs Usually Associated with Subphrenic Pyopneumothorax. — W. J. Morrish reports this case, not only on account of the rarity of the condition, but also because of the importance of recognizing the possibility of its occurrence when deciding the question for or against laparotomy in any case in which the normal liver dulness is replaced by a resonant note, but in which other evidences of intraabdominal or intrathoracic suppuration are absent. The patient, a soldier 20 years of age, complained first of diarrhea and after three weeks jaundice came on. He became emaciated, had moderate pyrexia, and peripheral neuritis of the lower extremities. Over the right lower quadrant of the thorax, which was considerably bulged, the liver dullness was replaced by a tympanitic note. It was unlike pneumothorax and was certainly not a pulmonary cavity. An *x*-ray examination showed the ascending and transverse colon much distended with gas coinciding with the tympanitic area. A skiagraph taken after a bismuth meal showed that the hepatic flexure of the colon corresponded exactly to the tympanitic area marked out on the first examination. On making a median incision it was found that there was marked distention of the cecum and ascending colon to the middle of the transeverse colon. The cause of this was an extensive adhesion implicating the great omentum and passing from the great curvature of the stomach across the transverse colon to the duodenojejunal flexure. The portion of the great intestine distal to the adhesion was collapsed. The patient eventually died, and at the autopsy there was no evidence of ulceration or inflammatory thickening or abscess. The mucous membrane was atrophied and denuded of epithelium. There were similar changes in the small intestine. The condition was one of chronic enterocolitis. To find practically the whole of the liver dulness replaced by a tympanitic area giving rise to a well-marked coin percussion note, without either acute atrophy of the liver, transposition of viscera, or evidence of some inflammatory condition in the abdomen or thorax, is unusual.

British Medical Journal.

August 19, 1916.

1. Injuries of the Bladder and Urethra in War. Andrew Fullerton.
2. A Case of Cyst of the Intestine. Charles Bolton and T. W. P. Lawrence.
3. Three Cases of Gastroptosis Treated by Gastropexy (Rovsing). Middleton Connon.
4. Perforation of a Gastric Ulcer Occurring in the Sac of a Large Congenital Diaphragmatic Hernia. Lennox Gordon.
5. Injuries and Destructive Effects of Aeroplane Bombs: With Suggestions on the Precautions to be Taken During Hostile Aërial Raids. Hardy V. Wells and H. Graeme Anderson.
6. An Appliance for Use in Severe Injuries of the Upper Extremity. Gilbert Arnold.
7. A Note on a Simple Method of Repairing Defects of the Scalp. Cuthbert Wallace.
8. A Simple Method of Putting up Fractures in the Region of the Elbow Joint in the Fully Flexed Position. Louis C. Rivett.

1. Injuries of the Bladder and Urethra in War.—Andrew Fullerton finds from his experience that there are practically only two lines of treatment adopted for these injuries at the casualty clearing stations, namely, the tying in of a catheter or suprapubic cystotomy. Though these procedures have a definite place there seems to be a want of appreciation of the objects to be attained and the dangers attending their indiscriminate use. He emphasizes the value of aseptic urine in cleansing and irrigating a fistula, and in summing up expresses the opinion that suprapubic cystotomy is not necessary in many cases of wounds of the bladder, provided the latter can be kept clean and the external wound adequately drained. If there is likely to be much sloughing of the bladder walls, if there be severe and continuous primary or secondary hemorrhage, or if there be uncontrollable sepsis of the bladder, systotomy will be the correct treatment. Cystotomy is performed not so much for the benefit it will have on the original wound, which must be dealt with on ordinary surgical principles, but in order to drain a badly infected bladder and to prevent the spread of infection to the kidneys. In the treatment of wounds of the urethra, the usual method of treatment seems to be catheterization, and if that fails cystotomy. The performance of this operation is quite unnecessary, except perhaps in those rare cases in which blood finding its way back into the bladder forms large clots incapable of being evacuated. If the urethra is so damaged that either the patient is unable to void urine or is likely to have extravasation in attempting to do so, perineal section is performed. In all cases of doubt the same procedure is adopted. When one is unable to find the proximal end of the urethra except by poking around in the perineal wound a perineal section should be done, clots and tags removed, hemorrhage arrested, free vent for the urine provided, and the wound cleansed and left wide open. If then the patient is unable to pass urine, an aseptic puncture of the bladder in the suprapubic region should be resorted to till micturition is established through the perineum. Here the normal urine of the patient acts as an efficient cleansing lotion and flushes the wound.

3. Three Cases of Gastroptosis Treated by Gastropexy.—Middleton Connon records the history of three patients who were the subjects of well-marked gastroptosis. They were all males, not females as is commonly the case, and they were not neurasthenics—the usual type of patient in this disease. Occupation seemed to be a predisposing factor in each case, as they were all workmen who, over long periods, had, from the nature of their work, to lift heavy weights. Gastropexy, according to the method of Rovsing, was employed in all three cases. Great benefit has accrued from the operation after three years in one case, after one year in another, while in the third case the operation has been comparatively recent. Scott Riddell, in commenting on these cases, calls attention to the marked similarity of symptoms in cases of gastroptosis and gastrostasis from pyloric obstruction; to the marked assistance in diagnosis which may be obtained by means of the skiagraph after a bismuth meal, particularly by screening and skiagraphing in the erect position; the remarkable benefit which followed on the operation of gastropexy, and which appeared likely to be permanent, and the great ease and success with which Rovsing's operation can be performed as compared with Beyea's and other operations.

4. Perforation of a Gastric Ulcer Occurring in the Sac of a Large Congenital Diaphragmatic Hernia.—Lennox Gordon reports this case in which it was evident that there was an acute abdominal condition, but no satisfactory explanation of the lung signs could be arrived at. These consisted in a hyper-resonant note over an area extending from the costal margin as high as the lower border of the second rib; above this the percussion note became normal. Over this area of hyper-resonance the breath sounds were absent, but were present and normal at the apex. Posteriorly the hyper-resonant note extended from the costal margin to the seventh costal interspace, with deficient breath sounds over the same region. No moist sounds were heard in any area. The patient grew worse rapidly and died with signs of acute general peritoneal infection. At the autopsy it was found that half of the stomach passed up through a large opening in the diaphragm and occupied a high hernial sac extending into the pleural cavity, and that the perforation had occurred within the sac at the pyloric end of the stomach. Few reported cases of congenital diaphragmatic hernia have been diagnosed during life. The signs and symptoms which would make one suspect that such a hernia was present are: 1. Restricted respiratory movement on one side of the thorax. 2. A tympanitic note on percussion with breath sounds limited in some part of the thorax. If the bowels which occupy the hernial sac contain contents, then no tympanitic note may be obtained. 3. The heart is usually displaced, the displacement, of course, depending on the relationship of the heart to the ring of the hernia. 4. Signs of intestinal obstruction if strangulation of the hernia occurs. 5. Borborygmi may be heard on auscultating the tympanitic ring. 6. The most certain sign is that obtained from *x*-ray after a bismuth meal. The bismuth will show the position of the bowel above the level of the diaphragm. The first four of the above signs were present in this case. Another sign which in this case was of interest, and which may be of some diagnostic value, was the peculiar attitude the patient adopted. He stood, or sat up in bed, with the body bent well forward and the knees bent. This attitude appeared to be one which most relieved the tension of the diaphragm. The large contents of the sac and the large hernial ring (4 inches in diameter) made it evident that operation would have offered little hope of recovery. The hernial ring in this case was situated in the right anterior portion of the central tendon of the diaphragm in front of the liver, which is a rare position, and does not fall in with what we know of the development of the diaphragm.

Il Policlinico.

August 1, 1916.

Clinical Studies of Pernicious Anemia.—Roccavilla reports three cases of this affection. The first patient presented clinically the Biermer-Ehrlich syndrome. The second died eighty days after admission to the hospital, and the clinical diagnosis had been anemia perniciosa luetica, the Wassermann having been intensely positive throughout. Antiluetics could not prevail over the symptoms, and there was a positive intolerance toward mercury. The number of hemorrhages made any plan of intravenous medication difficult. There seems to have been nothing in the autopsy to suggest syphilis. In the third case the clinical diagnosis was anemia aplastica. All cases were hopeless from the start, and the author for personal reasons declined to make a trial of splenectomy. At autopsy lesions were found throughout nearly all the important organs, in part because of the generalized punctiform hemorrhages and transudations. Nephritis was a constant find and interstitial hepatitis with or without cirrhosis was present in all cases. Radical changes in the heart and great vessels were not of constant occurrence. The gastroenteric system generally suffered, and dryness of the mouth, throat and fauces is especially mentioned along with vomiting, anorexia and gastralgia. The finds in the blood, spleen and bone marrow are those to be expected in pernicious anemias.

Simulation of Typhoid Fever by Leucemia.—Bolaffi reports a case of subacute leucemia with small lymphocytoids, and another of chronic myeloid leucemia simulating typhoid fever. The last-named is of special interest, the author having been requested to make an autopsy on a victim of typhoid fever with bronchopneumonia. There seemed to have been no doubt as to the clinical diagnosis; the patient had high continued fever, diarrhea, abdominal meteorism, enlarged spleen, etc., along with the pulmonary complications. However, the widal had been negative, and blood cultures negative, although the latter find could not exclude typhoid. The liver was swollen greatly. Aside from numerous small hemorrhages and a general hypertrophy of viscerial and superficial lymphnodes, there had been nothing to cause suspicion of leucemia. However, a careful histological study of the visceria showed evidence of the myelocytic form of this disease. Was the syndrome of an infection due to some unknown complication, or was it a phase in the evolution of leucemia? The author holds to the second possibility.

El Siglo Médico.

August 5 and 12, 1916.

Hemopathies.—Pittaluga writes on the proper method of classifying diseases of the blood and introduces some innovations. For example, he recognizes a class which he terms hemodystrophies, which comprises hemorrhagic diathesis, polycythemia and chlorosis, Anemias (oligohemias) comprise the dysplasias (progressive pernicious anemia) and the orthoplastic forms. Eight forms of leucemia are enumerated. Under lymphoid hyperplasias, including splenomegalies, eight forms are also given. Under this group we find included the status lymphaticus. Here also belong the splenic anemias. Under granulomatoses we find the blood states of non-tuberculous scrofula and other conditions which simulate Hodgkin's disease, excluding all the leucemias. To a sixth group belong lymphosarcoma and congeners which are styled neoplastiform, in contrast with true neoplasms of the lymphatics. Blood parasites form a separate class, and from this the author naturally passes to bacteriemias, etc., closing with the blood states of non-infectious general diseases. The author discusses especially the dystrophies, as a new conception of blood pathology. Under hemorrhagic diatheses he includes all the acute, acquired forms, such as purpura, scorbutus, Barlow's disease, acquired hemophilia, Winckel's disease, paroxysmal hemoglobinuria and icterus hemolyticus, the two latter, however, belonging only partly in this group. Polycythemia is placed in the dystrophies because of its possibly neurotrophic character, as shown by the coexistence of vasoconstruction and vagotonia, and also by reason of the biochemical changes in the blood plasma. There can be no doubt that chlorosis is of dystrophic origin because of its nervous substratum, and endocrinic and metabolic factors.

Case of Encephalopathia Paludica.—Fernández Sanz relates the following case. Four years earlier, when patient was nine years old, she suffered from typical attacks of intermittent fever. These at the outset occurred daily for a week. At first diurnal the attacks

became nocturnal. There were in both cases periods of remission. At the period of highest temperature there was slight delirium. The child recovered spontaneously and exhibited some mental confusion and pareses, attributed to weakness. There had been no marked evidence of organic brain lesion. About three years later the fever reappeared, and on the ninth day, when temperature was highest, patient was seized with loss of consciousness and convulsions which became continuous (status epilepticus), and were followed by pareses of the face and extremities which slowly improved. When first seen by the author (*February*, 1916) she seemed in some ways remarkably well, but was seen to suffer from cough, tachycardia and tachypnea. The face was turned slightly to the right, and the innervation of the left side was inferior. There was weakness in some of the muscles of the extremities, and ataxic gait. The left half of the tongue showed paralysis, which was also notable in the left velum and left vocal cord. The tendon reflexes in all four limbs were exaggerated. Foot clonus was absent. Plantar reflex weakly positive with foot in plantar flexion. The patient probably had received some quinine during her last malarial attack, but exact data were lacking. A review of the case for its entire four years showed first the very insidious inception of nervous disorders dating from the periods of high temperature with delirium. The earliest nerve symptoms represented a left-sided paresis of the tongue, velum and larynx, and the isolation of these symptoms suggested a Jacksonian epilepsy, due to a bulbar lesion, perhaps a slight hemorrhage. The vagus was clearly implicated as shown by the behavior of the thoracic organs. This focal lesion was apparently the sole intracianial accident of the first attack. Three years later the nervous manifestations appeared suddenly as a convulsive crisis. The bilateral involvement of the muscles of the limbs suggested a second hemorrhage of unknown locality, producing temporary pressure symptoms, and capable of a considerable degree of recovery, in contrast with the Jacksonian lesion which left permanent consequences.

La Presse Médicale.

August 17, 1916

Radical Cure of Cancer of the Pylorus. — Panchet writes in the interest of gastrectomy with gastrojejunostomy (termino-lateral). The first pylorectomy was done by Pean in 1879. In 1895 Doyen published a full technique of the subject. The author has operated several hundred times by gastric resection. Cancer of the stomach is the most frequent of all cancers and 80% of it is pyloric. This location really has the advantage of giving the patient a much better chance for recovery under radical procedure. Precocious diagnosis may often be made by the combined aid of the *x*-ray and tubage followed by cytologic study. Exploratory laparotomy is practically without risk. It should be done, on a large scale, under local anesthesia and many cancers may be discovered in the early stage, and radically cured. Gastric chemistry is secondary in importance. Early operation means a benign operation. It is necessary that the four groups of gastric glands in association with the four vascular groups should be thoroughly extirpated, the vessels having been ligatured. The so-called benign operation need not last over 40 minutes; while for the more severe cases up to an hour and a quarter is required. The author is strongly opposed to two stage operations as favoring cancer grafts in the suture line in preliminary gastroenterostomy, while the secondary gastrectomy must be done within narrower limits and in general is rendered more difficult by the adhesions which result from the first stage. Again, many patients, once the gastroenterostomy is established, refuse to submit to gastrectomy; and a simple gastroenterostomy is indicated solely when metastases are present. It is seldom that exploratory laparotomy is contraindicated; this occurs in the main only in inoperable cases recognized to be such without its need (peritoneal metastases, adhesions to ribs, etc.). After the exploratory incision has been made, various conditions may be disclosed which render the cases inoperable, such as secondary nodules in the liver or peritoneum. In such cases, if there is pyloric obstruction in a small adherent stomach, jejunostomy should be performed; if there is no pyloric obstruction nothing should be done. If the case is operable save for hepatic and peritoneal metastases an anterior gastroenterosty (Y) or posterior gastroenterostomy should be performed according to location. If there are no metastases the case is radically operable. Gastrectomy may be simple or difficult according to circumstances. The former is the case in mobile pylorus. If numerous adhesions are present it is a question between pylorectomy and gastroenterostomy, and the majority of operators prefer the latter because of its low mortality, especially when done under local anesthesia. Other surgeons, like the author, prefer the added risk of a resection, because even if it be only palliative, the result is far better. Instead of a few months' survival we often get a year or more. The mortality from "mutilating gastrectomy" may vary from 4 to 30 per cent. On account of the short survival inevitable in gastroenterostomy the author would assume the 25% operative mortality risk in order to give a much longer survival to the others. Long survivals from gastroenterostomy are sometimes seen in chronic gastric ulcers which have finally become cancerous, but this is quite a special class of cases. The following rational signs aid in directing suspicion to a cancer: Loss of appetite and vigor, digestive disturbances not sufficient to account for the asthenia. Examination of stomach contents shows slight stasis and diminution of HCl. The *x*-ray examination shows either stasis or motor disturbance, thickened wall or a lacuna corresponding to the tumor. If cumulation of evidence justifies the step, exploratory lapurotomy is made. If a chronic ulcer is found which has not developed cancerous degeneration, it should be removed (71% of cancers are grafted upon ulcers). A simple resection of the pylorus may be regarded as a preventive of cancer. Before gastrectomy the patient should have his teeth scaled and gums painted with iodine, the colon evacuated and the stomach washed out with hydrogen peroxide. For 8 days before operation the patient drinks sterile drinks from sterile receptacles. He also practices respiratory gymnastics in the interest of prevention of post operative (hypostatic) pneumonia. Even in the most radical of operations the author does not use ether or chloroform anesthesia, but relies upon local or spinal analgesia with only brief inhalations of ethyl chloride. Gastrectomy is first done and the gastric stump at once implanted into the jejunum. The incision for resection is done with the thermocautery after previous use of the écraseur. The duodenum has previously been treated with the latter instrument and ligated, the stump being covered with a bit of omentum. At the close of the operation the patient is at once fed. Temperature and vomiting mean a clot of blood in the stomach and the latter should be irrigated with hydrogen peroxide solution until all washings come away clear. This condition may delay feeding, which consists of hot drinks, slightly alcoholized, followed after a few days with milk.

Insurance Medicine.

The Size of the Fee and the Value of the Examination.—Dr. C. L. McClellan says that the insurance companies should get what they pay for, although country practitioners unfortunately are not always prepared to give the companies what they should have for the money. Nevertheless, whenever the five dollar fee is cut down, the value of the examination is cut down. Instead of the fee being cut down, he would ask for an increase in certain cases. If an additional fee, say, only one dollar apiece, was given, when it was necessary to make a blood pressure test, then it would be some inducement for the country practitioner to buy a testing machine, for which he has little use outside of life insurance work. He further believes that if the insurance companies would insist on a tuberculin test in every case in which the policy was over five thousand dollars, or where the applicant was of tuberculous tendency, it would be inexpensive and it would be the best investment they could make.—*Texas State Journal of Medicine.*

The Full Duty of the Examiner.—Dr. H. C. Black says we make an examination of a man and find he is a good physical risk and we answer all our questions; have we done our full duty then? He was referee for a New York Company at one time and all examinations made in Texas came to him to see if there were any omissions, etc. An examination by a good reliable man came to Dr. Black with the statement, "this man is worthy of a ten-thousand dollar policy." Physically he was; he was a farmer and there was no doubt that he was in perfect health, but the writer happened to know him. He knew that when at home this man did not drink whisky, but every time he went to the city he would go down into the tough district of the town and stay there for weeks, drunk from the time he got there until he got home. Dr. Black wrote the facts to the company.—*Texas State Journal of Medicine.*

Life Insurance in the Tropics, Römer says, is profiting by the progress of recent years in tropical medicine. Life expectancy for officials in the Dutch East Indies is 5 years less, up to 35; 4 years less at 40; 2 years less at 50; while at 70 it averages the same as in the Netherlands. No statistics are available for non-officials. The intestines are in a condition of lessened resistance, the result of errors in diet, especially overloading with rice. The mortality among Europeans seems to be highest the third year of their residence in the tropics, then the fourth and fifth. On return to a temperate climate they are liable to pneumonia, and amebic dysentery may be responsible years later for an abscess in the brain or liver. Chronic malaria, sprue, heart disease and, especially, gout may reduce the life expectancy after return to Europe. An assumed simple cardialgia or gastritis may be the first manifestation of an ulcer or cancer. He urges that careful records be kept of persons who have returned from a residence in the tropics.

Tuberculosis runs a particularly malignant course in the tropics, attributed to the fact that the heart beat is accelerated on an average ten beats a minute and the respiration often by 4.5. Especially in the tropics, married men are better risks than the unmarried, as there is more attention to hygiene. Lands newly opened to colonization reduce the life expectancy somewhat. A tendency to corpulence is particularly risky in the tropics on account of the disinclination to exercise and the tendency to overeat.—*Nederlandsch Tijdschrift voor Geneeskunde,* January, 1916.

Life Insurance as a Specialty.—Dr. Irving McNeil says that there is a need for more careful selection of risks as shown by the mortality statistics: For instance, as Smith has brought out, quoting from figures given by W. R. Harrison, 60 per cent. of the deaths from tuberculosis in fraternal insurance companies occur within the first two years after being insured. Again, the statistics of the United States Government show a greater longevity among women than among men, yet the mortality tables of insurance companies show a lesser longevity. Why is this so? It is because women applying for insurance, as many do upon a premonition of their being something wrong, as a rule, are less carefully examined than are men.

But why, it may be asked, do life insurance companies accept examinations alike from the competent and incompetent, the careful and the careless, the painstaking and nonpainstaking examiners? It is because life insurance companies in spite of the large philanthropic element in their make up, are after all merely business organizations, like other business organizations and out for business and competition is so keen between the rival companies that they are inclined to forget some of the finer points and ideals. Whether in future the philanthropic element will get the better of the purely commercial, remains to be seen, but it is safe to predict that either on account of a lofty idealism or else because it will be found to pay in plain dollars and cents, life insurance companies will become more particular as to who makes their examinations and how and the physician who is properly equipped and who is willing to give his time and attention to this kind of work will find himself appreciated. A closer relationship between the medical director and his examiner should improve matters.—*Texas State Journal of Medicine.*

Metabolic Diseases in Relation to Obesity.—In a paper on the relation of disease to obesity, read before the Assurance Medical Society in London, Dr. F. Parkes Webber said that the not uncommon association of obesity with gout, uric acid gravel, and diabetes mellitus was so well recognized that there was no need to enter into any detailed discussion of the subject. Such associations could not seem surprising, if we remembered that obesity itself, whether inherited or acquired, was a metabolic disease or a metabolic abnormality. Moreover, over-eating and sedentary habits were certainly not rarely factors in the causation of gout and diabetes mellitus, as they were in the causation of obesity. It was especially the mild form of diabetes mellitus occurring in middle-aged and elderly persons that was associated with obesity.

The Relation of the Medical Examiner to the Medical Director.—Dr. M. B. Grace criticises somewhat severely the attitude frequently assumed by the medical directors of insurance companies to their medical examiners. However, Dr. Grace says this attitude of the medical director is undergoing a rapid change for the better and he believes that the time is not far distant when both eyes of the medical directors will be wide open and their sensitive appreciation of honest work carefully executed will reduce them to reward instead of castigating medical examiners for their work.—*Texas Journal of Medicine.*

Book Reviews.

TUBERCULOSIS, A PREVENTABLE AND CURABLE DISEASE; Modern Methods for the Solution of the Tuberculosis Problem. By S. ADOLPHUS KNOPF, M.D. (New York and Paris), Professor of Medicine, Department of Phthisiotherapy, at the New York Post-Graduate Medical School and Hospital. New Edition. Octavo; 394 pages, with 115 illustrations. Price, $2.00 net. New York: Moffat, Yard & Co., 1916.

THIS book comes from one whose authority on the subject is so unquestioned that his unwavering optimism is like a call to victory for the race. Dr. Knopf is far from minimizing one iota of the dread details of this frightful scourge; he knows it from its insidious beginnings to its fatal end, but his whole book is written to show that it need have no beginning, or, if too late for that, that it may be balked of its end; in short, it is both preventable and curable. The author's style is of the clearest; it would be as impossible for the plain man to misunderstand him as for the literary to fail to enjoy him. He frankly gives to the public all necessary data. . . . Dr. Knopf outlines with a vivid clarity all his own the duty of every member of the community in this crusade, and ends in a note of splendid optimism that, coming for such a source, may well put heart and hope into the most fearful.

We have repeated here what was said in our review of the first edition of this work. The reviewer has nothing to add in reference to the new edition, except to state that in it many of the typographical and some historical errors of the first edition have been corrected and a chapter which might be called a reply to the criticisms on the first edition, with comments by prominent authors, has been added. If anything, this should make the new edition even more interesting than the first. For those who are not familiar with the former edition we reproduce the titles of the twelve principal chapters, which speak for themselves: What a Tuberculosis Patient Should Know of His Disease; What Those Living With Patients Should Know Concerning the Disease; The Duties of the Physician Toward His Patient, the Family of the Patient, the Community He Lives in, and Other Communities; How the Sanatorium Treatment May Be Adapted to and Imitated in the Home of the Consumptive; How Sanitation and Proper Housing May Help Toward the Prevention of Tuberculosis; The Duties of Modern Municipal Health Authorities; The Duties of State and Federal Authorities in the Combat of Tuberculosis; What Employers, of Every Kind, Can Do to Diminish Tuberculosis Among the Men and Women Working for Them; The Duties of School Teachers, Educators in General, and of the Public Press in the Combat of Tuberculosis; The Duties of the Clergy, Philanthropists, Charitable Individuals, and Charity Organizations; The Duties of the People in the Combat of Tuberculosis; Prospect of Ultimate Eradication of Tuberculosis.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc. Edited by H. R. M. Landis, M.D. Volume II. Twenty-sixth Series, 1916. Price $2. Philadelphia and London: J. B. Lippincott Company.

IN this issue of the Clinics there are twenty-four articles of treatment, medicine, psychiatry, obstetrics, public health and surgery. The subjects range from a timely article on venesection and its indications by Beardsley through interesting discussions of auricular fibrillation by Canby Robinson and immobility of the diaphragm by Pryor to the first portion of an extensive analysis of fifty cases of dysthyroidism by Swan. Other articles on varied topics help to make this number one of the more interesting and instructive issues of the International Clinics.

THE KINETIC DRIVE, Its Phenomena and Control. By GEORGE W. CRILE, M.D., Professor of Surgery, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland. Wesley M. Carpenter Lecture, 1915. Edited by AMY F. ROWLAND B.S. Price, $2 net. Philadelphia and London: W. B. Saunders Company, 1916.

To those who are familiar with the writings of Dr. Crile upon this subject this small book will bring nothing especially new. It is in effect an epitome of his larger work "Man—An Adaptive Mechanism," such as could be presented in a single lecture and embodies the same ideas and suggestions, put forward in the author's always interesting and attention-compelling style. The book makes a handsome appearance but is quite small.

STUDIES IN ETHICS FOR NURSES. By CHARLOTTE A. AIKENS, formerly Superintendent of Columbia Hospital, Pittsburgh, and of the Iowa Methodist Hospital, Des Moines; formerly Director of Sibley Memorial Hospital, Washington, D. C. Price, $1.75. Philadelphia and London: W. B. Saunders Company, 1916.

THE author of this work is well known as a writer of books for nurses; the present volume is probably the most useful of the set. The author has evidently observed carefully and pondered deeply over the many factors which enter into the life and success of nurses. In this volume will be found a discussion of such topics as Loyalty, Responsibility, Habits, Temper, Truthfulness, Obedience, Economy, Tact, Hospital Accidents, Honesty in Bedside Records, Response to Calls, Picking Cases, Too Much Dignity, The Nurse Who "Tells Things." The book is well and brightly written and is well worth reading. Many a patient can indorse what the author has to say about "preventable noises," the "hospital manner," and the nurse "with a commanding presence." There is much in the book which should make readers stop and think; and the result will be appreciated by doctors and patients.

REFRACTION OF THE HUMAN EYE AND METHODS OF ESTIMATING THE REACTION, Including a Section on the Fitting of Spectacles and Eyeglasses, etc. By JAMES THORINGTON, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine; Member of the American Ophthalmological Society; Fellow of the College of Physicians of Philadelphia, etc. Price, $2.50. Philadelphia: P. Blakiston's Son & Co., 1916.

THE author's preface gives an excellent idea of the aims and scope of the book. It is to teach the student the necessary physics and mathematics for an understanding of his subject, and then give him the methods by which refractive errors may be found, analyzed, and corrected. It is an excellent book for beginners, because it is written with unusual clearness, gives necessary details as to technique, and yet is not overburdened with mathematics. The organization of the book is good, leading from detail to detail of the study and work logically and clearly in spite of the marked condensation necessary to cover a large subject in 400 pages.

A MANUAL OF GYNÆCOLOGY AND PELVIC SURGERY FOR STUDENTS AND PRACTITIONERS. By ROLAND E. SKEEL, A.M., M.S., M.D., Associate Clinical Professor of Gynæcology, Medical School of Western Reserve University; Visiting Surgeon and Gynæcologist to St. Luke's Hospital, Cleveland; Fellow of American Association of Obstetricians and Gynæcologists; Fellow of American College of Surgeons. With 289 illustrations. Price, $3.00. Philadelphia: P. Blakiston's Son & Co., 1916.

DR. SKEEL'S book adds one to the present list of good texts in gynecology. It is a convenient size and the type is good. The illustrations are numerous, clear, and well chosen. Operative technique is adequately illustrated and explained, and diagnosis is carefully covered. The book, as Dr. Skeel planned, is a satisfactory one to put into the hands of student or practitioner. The discussion of "Treatment of Menstrual Disorders" is brief and unsatisfactory. No mention is made of the value of exercise, both intermenstrual and at the onset of pain, nor of the value of belladonna in the spasmodic type of dysmenorrhea.

THE MEDICAL CLINICS OF CHICAGO, March, 1916. Volume I, No. 5. Price $8 per year. Published bimonthly. Philadelphia and London: W. B. Saunders Company.

THIS number contains eighteen case presentations from seven different clinics and follows the style of the previous numbers. The cases are given a little more space than in some of the previous numbers which is a decided improvement. The best contribution is the discussion of congenital syphilis by Abt. One good feature of this issue is the subsequent report of two cases previously presented. This is a good thing, but one cannot help feeling that the report would be a little more instructive if it had been withheld until the whole case could be presented at once. The serial method lacks impressiveness.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Seventeenth Annual Meeting, Held at Detroit, June 9 and 10, 1916.

THE PRESIDENT, DR. ROBERT T. MORRIS, NEW YORK CITY, IN THE CHAIR

President's Address. — Dr. MORRIS stated that in the midst of rapid advancement in special studies he would ask the question whether the physician to-day really cared to know what was the matter with a patient, or did he prefer to find in the case something in which he was very much interested. A concrete example was diabetes mellitus, which was only a symptom. Did the physician attend to make a diagnosis of diabetes as a diagnostic entity? No; it was a signal or sign to him, and he now proceeded to find out what was the matter with the patient. He knew that diabetes mellitus was always due to hyperglycemia. He knew that some peripheral irritation or some focal infection might be exciting the adrenals, which in turn excited the whole thyroid, the chromaffin system, the liver, causing disturbances of function, so that in considering diabetes from a therapeutic standpoint one should begin with the question of what peripheral irritation or what focal infection might be driving the adrenals up to the point where there was cough as a symptom of diabetes mellitus. If one did not do this and was interested only in the symptoms, the patient as a whole was left out. In the rapid advance of laboratory methods one man did not know what another man was doing. This was true not only in medicine but in chemistry. The layman in trying to select a competent medical adviser to-day was very much like a client in a court of law trying his own case. The time was coming when we should have a new kind of consultant, one who took the word of the analyist, applied the lines of his synthetic mind, and brought together parallel rays in such a way as to focus them upon the case as a whole. When we had the new ideas of Lane with regard to colonic infections presented to us, we all became intensely interested, and it was soon found that Lane had struck the germ of a great truth; but something was behind the colon or the enteron causing functional disturbance, and if one merely took out the red flag he did not try to determine what the red flag stood for. If he took a lot of cases of gastric ulcer and of goiter that were sent to him for operation, the patients having decided that an operation was the thing to be done, he found by putting them through the laboratory and making a careful study of their cases they were not surgical cases at all. He had found this over and over again. He doubted if he operated upon one-half of the patients who were sent to him for operation at the present time. We were dealing with very deep questions when we were working out those of peripheral irritation and focal infection, and the patient should be considered from every point of view.

What Therapy Means.—Dr. OLIVER T. OSBORNE of New Haven, Conn., stated that practitioners should not forget to use every means to prevent the spread of contagion and the infection of others, if the disease was contagious. If the disease was not contagious, the general hygiene and care of the secretions of the nose and mouth and of the excreta were always of more or less importance. If the cause of a disease could be removed or actively combated, that was the part of the treatment that took precedence of all others. If the disease, or its localization, or its lesion, or a simple condition, as a cold or a headache, could be aborted, that was another primary object of treatment. The direct treatment of the cause might do this or local measures, as ice, heat, hyperemia, leeches, purges, simple surgical measures, or various drugs might so act as to prevent, control, or abort an impending lesion of functional disturbance. A lesion having occurred, the patient would not be well until it had disappeared, resolved, or been removed, and hence as soon as a lesion had been established, it was the aim of all of our science to eradicate it. Time and nature's own antagonistic and recuperative powers might unaided accomplish this object, but very frequently we could aid and hasten nature's processes by various means. Frequently, only surgery could remove a lesion. At other times a lesion became permanent and the patient was permanently damaged to that extent. He might be apparently well in spite of this defect, or he might be well as long as he modified his food, life, and activities; or he might be an invalid; or the lesion might be the cause of his death sooner or later. However, in any of these eventualities the treatment or management of the lesion and its pathological results was the main object of treatment. Whether or not the lesion could be successfully treated, objectionable or disturbing symptoms must be stopped or ameliorated. Students were not sufficiently taught, and the practitioner did not often enough consider the disturbances of function due to or caused by the disease that was present. The diet must of necessity be modified by the intensity of the illness, the character of the illness, and the condition of the organs of digestion. The food and drink must always be carefully considered, regulated from day to day to meet the conditions and then gradually increased during convalescence, or perhaps be modified by a lesion that was permanent.

Dr. FRANCIS M. POTTENGER of Monrovia, Cal., stated that one should not only consider the lung, the heart, the stomach and intestinal tract, but the nervous system in dealing with cases that presented themselves. Modern medicine centered its attention largely on scientific facts and forget the fact that the patient was not a thinking being, and in so far as this fact was forgotten did the practitioner fail. The idea of the essayist was broad and he was following out the best of what modern therapeutics stood for.

The Relationship Between the Nervous System and Therapy in Pulmonary Tuberculosis.—Dr. FRANCIS M. POTTENGER of Monrovia, Cal., said there were several facts which led him to believe that the more important factor in the production of temperature was an interference with normal heat dissipation, rather than an unusually active heat production. In support of this theory he offered the following facts: (1) The experimental introduction of protein produced a general sympathetic stimulation. (2) The manifestations of clinical toxemia were those of general sympathetic stimulation. (3) It had been noted on experimental animals that when protein was injected parenterally that there was a constriction of the vasomotors of the surface, as determined by the constriction of the vessels of the ear of the rabbit (Jona). (4) A rise of temperature was accompanied by other symptoms of toxemia, and was accompanied by constriction of the superficial blood vessels, which, at times, manifested itself by a sensation of chilliness. (5) The action of toxins and adrenin was practically the same; both acted chiefly upon the nervous system. The introduction of adrenin caused a constriction of the superficial blood vessels, and a rise in body heat. From these facts he was led to believe that the rise in temperature which occurred in natural infections, or whenever a foreign protein of any type was introduced parenterally into the body of either man or animal, would not occur apart from their action through the sympathetic nervous system, which produced a general vasoconstriction of the superficial blood vessels, and interfered with the dissipation of heat. He was further convinced of this from the fact that emotional states, particularly the depressive emotions, such as those of fear, disappointment, anxiety, discontent, and worry, produced a general sympathetic stimulation; and that all of these depressive conditions were associated with a rise in temperature, at least in the tuberculous individual. Since sympathetic stimulation was produced by toxins, no matter what their source, we might find it in tuberculosis as a result of the absorption of protein from the bacillus itself, probably also as a result of the absorption of destroyed tissue and from any other bacteria that might complicate the process. While toxemia could not be caused by the depressive emotional states, yet these produced sympathetic stimulation and acted in the same manner as toxins; consequently, they must also be relieved the same as toxemia, if we would relieve the organisms from the inhibiting action of the sympathetic system.

Rest was an essential in treating toxemia. It was valuable whenever exercise increased the sympathetic stimulation by pouring forth into the tissues an increased amount of toxins. Thus we note that patients with rapid heart's action, poor appetite, deficient digestive activity, constipation and rise of temperature might experience an improvement, or even lose all of these symptoms under rest; and, as they disappeared, encouragement followed and a general improvement took place.

The influence of *food* might be greatly enhanced by relieving the sympathetic stimulation due to toxemia and depression. He usually noted that the appetite and digestion, and, therefore, nutrition of the patient improved when he was put at rest in the open air and given hope and encouragement.

There was a time when *exercise* had an important and beneficial influence upon the patient. Exercise called for increased metabolism. Increased metabolism was met by increased food intake; consequently, after toxemia had passed and the patient could exercise without producing toxic symptoms we could greatly improve his nutrition by permitting exercise.

The effect of *baths*, either air, sun, or water baths, was exerted through the nerve endings in the skin and extended to every cell of the body. If the reactivity of the skin was well cared for, as it might be through the stimulating effect of water, light, or air, upon it, the vasomotor tone was improved, the metabolic activity of the patient's cells was hastened, and the elimination of heat, moisture, and various toxic products was hastened.

Dr. Ernest Zueblin of Baltimore, Md., was gratified that Dr. Pottenger had discussed the problem of therapeutics and of therapy in general on such a broad basis. In connection with the therapy of tuberculosis and varied manifestations of the disease the sympathetic nervous system played an important rôle. From personal study and observation, the speaker had found that in most infections the sympathetic nervous system was deranged. A very interesting fact was that the rise of temperature in cases of tuberculosis could be explained by the retention of heat. We could explain certain psychogenic causes in connection with the rise of temperature by the existence of toxemia and disturbed action of the sympathetic nervous system. It was known how the gastrointestinal tract was affected under the influence of disturbed reaction of the sympathetic nervous system.

Dr. Oliver Thomas Osborne of New Haven thought the time had passed when we should have a series of books on the practice of medicine or anything else when treating disease of this or that particular type. We should simply consider that we had types of infection, and with specialization that particular view should be held. Headache, backache, fever, dry tongue, nausea and vomiting were all symptoms of infection. The treatment of the condition depended on what the future prognosis was and how actively the patient was treated.

Oxygenated Milk.—Dr. Clifford G. Grulee of Chicago read a paper on this subject and drew the following conclusions: "(1) It would seem from our experience that oxygenated milk has a definite place in hospital régime. It offers us the safest milk from all standpoints at a very much lower expense than that at which certified milk—with which it compares very favorably—can be obtained (about six cents to the quart). (2) There is always fresh milk to be had, a great advantage to a diet nurse who is rushed for time. (3) All danger of infection from pathogenic organisms present in the milk is removed. (4) There is no danger to the infants from sour milk which contains no specific pathogenic microorganisms, whatever this danger may be." As to whether it would be possible to market this milk on a large scale or whether this would be desirable, he was not willing to put himself on record. Certain things had led him to think that this could be done and possibly to advantage. That it had worked out to entire satisfaction in the Presbyterian Hospital of Chicago he had no hesitation in asserting.

Dr. Francis M. Pottenger asked Dr. Grulee what was the process of aeration.

Dr. Grulee replied that the milk was heated to 122-128° F. for one half hour, and was stirred by a fan in the reservoir so that it was kept in motion the whole time.

Dr. Noble P. Barnes of Washington, D. C., asked Dr. Grulee if he found that the natural enzymes were destroyed by this process, or whether the lactic acid bacillus was killed from prolonged heating in these cases, as was sometimes observed in feeding sterilized or pateurized milk.

Dr. Grulee in speaking of whether there was killing of the lactic acid bacillus in the milk, stated he had not observed any harm from it. This milk was being used with increasing frequency in the hospital, and some of the men in the internal medical service thought that this milk was better in feeding typhoid cases than ordinary milk. They got the milk in ten gallon tanks from the farm and it cost five cents a quart.

Dr. Robert T. Morris asked as to the effect of sterilized milk when given to babies.

Dr. Grulee replied that he could not answer the question satisfactorily, but he had always felt that the danger of sterilized milk given to babies had been exaggerated. He happened to know of only one case of scurvy which occurred in the practice of a colleague who gave the child raw milk. He then boiled the milk, gave it to the child, and the scurvy cleared up.

The Therapeutics of Cerium. — Dr. Reynold Webb Wilcox of New York said we could safely assert that cerium oxalate resembled bismuth subnitrate in its therapeutic action, with the advantage that it did not give rise to such an unpleasant odor to the breath as did the latter, owing to the tellurium contained in it, and that it was not so likely to be contaminated with arsenic as was the latter. The therapeutic uses of cerium oxalate were very similar to those of bismuth, which were for local effect, and success required that the doses should be of a magnitude commensurate with the results which it was desired to obtain, namely, 10 grains every four hours. Further than this, this dose should be frequently exceeded, as it was known that it could be done with safety, 30 grains having been administered with good results. Bearing these facts in mind, the results of twelve years' experience in the use of this remedy had been confirmed by skillful therapeutists in internal medicine, and had shown conclusively that cerium oxalate was an agent which, when used in proper dosage and with due discretion, would produce typical and satisfactory results, and its therapeutic value could not be disputed.

Experimental Pathology of Goiter.—Dr. Ernest Zueblin of Baltimore called attention to the point that Kocher had already reached the conclusion that goiter must have a certain etiological relation to certain admixtures and impurities of the soil, which must be of an organic or organized nature, of a short lifetime, since the disease only increased as long as the suspected water was used. Wilms, based upon the experiments of Bircher, expressed the following theory: He admitted as the cause of goiter a toxic substance not of parasitic nature but containing the dried animal residues found in the geological layers characteristic for the periods of marine submersion. The water passing through these layers became polluted by these substances and became goitrogenous. Heredity and disposition played no doubt a rôle in endemic cases of goiter, while changes in the internal secretion must be thought of, particularly in cases of sporadic, to a lesser extent in instances of endemic, goiter. The suprarenal bodies, ovaries, pancreas, etc., no doubt influenced each other in their functions and a diseased condition of these organs must have a disturbing influence upon the general functional equilibrium. As regards the influence of heredity, opinions differed considerably. The general impression gained from the present knowledge of the goiter problem was, that we had not yet reached a satisfactory understanding of the etiological factors. Further contributions studying the possible influence of geological strata, of colloid substances, the water supply, the influences of altered internal secretion, and of other possibilities upon the production of goiter would certainly help our understanding of the complex goiter problem.

Suggestions for Locating Focal Points of Infection.—Dr. Noble P. Barnes of Washington, D. C., pointed out that beginning with the introduction of bacterial vaccines, when Koch recommended and used tuberculin, practitioners witnessed one reaction after another and had failed to take advantage of one very important practical application. Koch's tuberculin treatment was then a failure because of misapplication. Time after time was a focal smouldering ember fanned into an active and destructive inflammation because of an overdose of tuberculin. This focal reaction had presented itself in most every injection he had carefully observed. The flaring up of a boil or carbuncle after administering a suitable vaccine, the appearance of urethral discharge, frequent urination, or strangury, after using gonorrheal vaccine, and the bursting forth of embryo pimples after injection of acne vaccine were common observations. Having these facts in mind, after prolonged treatment of a case of gonorrheal arthritis with prostatic massage, irrigation, and carefully measured doses of vaccine, in which there were days of encouragement, although the end result was nil, the author decided to give the patient an unusual dose of the vaccine and thus incite an intense reaction in the joints

from which he always experienced a marked improvement. Within twenty-four hours his patient had a temperature of 103.5° F. with all the symptoms of a general infection. Pain in the affected parts was severe. Interesting and suggestive was the stimulation of an unsuspected focal point of infection resulting in a most distressing epididymitis. The patient informed the author at this time of a similar inflammation of the same structure during one of his outbreaks of unpleasantness over twenty years ago. Here then was a focal point of infection he had overlooked. Upon this suggestion of locating focal points of infection by obtaining a reaction following a larger than the therapeutic dose of vaccine, he had been working with a number of cases. Focal reactions were caused best, if not only, by injection of the killed infecting microorganisms, and, as some of these organisms had a wide range of affinity and adaptability, the selection of the vaccine was very important. Vaccines and serums prepared with due regard for tropic conditions would be the requirements of the future and no doubt many of the failures to-day would be successes to-morrow.

The Means of Prevention and Retardation of Cardiovascular Disease.—Dr. CHARLES LYMAN GREENE of St. Paul, Minn., drew the following conclusions: (1) It has now become possible measurably to retard and, to a considerable degree, prevent cardiovascular diseases. (2) That it is imperatively necessary in the interests of the cardiopath and of the race that a justifiable optimism should replace the almost universal pessimism now existing. (3) A knowledge of the specific bacterial origin of diseases of the heart should be promulgated together with the means best adapted to control of causative conditions. (4) Our old ideas with relation to cardiac dimensions should be radically revised and brought into correspondence with the actual facts as at present definitely established. (5) Modern methods of percussion, accurate and definitive, should replace the older practice still in vogue. (6) The cardinal value and importance together with the nature and diversity of subjective symptoms of cardiac inefficiency should be given their full value as means of early diagnosis and indicators for therapeutic initiative. (7) The extraordinary usefulness of test doses of digitalis with or without reinforcement by physical rest constitute the very foundation of timely diagnosis. (8) A thorough understanding of the anatomic peculiarities of the drop heart, its association with a definite constitutional state, its remarkable prolificacy with respect to the production of symptoms of a most varied and obscure character, together with the misleading narrow diameters present even in dilatation, making the condition one of great clinical importance. (9) The common occurrence of the drop heart, its constant relationship to general visceroptosis of which it is a part, its frequent association with so-called nervous dyspepsia, and the almost universal tendency to lose sight of the true cause of its symptoms by referring them to the bastard symptom conglomerate long known as "neurasthenia" are facts of decided clinical importance. (10) The existence of the drop heart in the male is a matter of great importance with respect to the fitness of its possessor for hard manual labor and actual service in warfare. (11) An application of such of the newer discoveries in the cardiovascular field as are here enumerated cannot fail to exercise a striking effect both with relation to the prevention of cardiovascular disease and the retardation of established cases."

Notes on the Blood and Its Vessels in Epilepsy, and Their Treatment.—Dr. THOMAS E. SATTERTHWAITE of New York contributed a paper on this subject, in which he gave a brief survey of the relation of cardiovascular phenomena to epilepsy, and then drew the following conclusions: "(1) Abnormalities of cardiovascular phenomena occur in the vast majority of epileptic seizures. (2) The grosser forms of cardiac disease occur rarely in epilepsy. In fact, they are present in so small a proportion as to indicate that they are accidental incidents rather than determining factors of it. (3) That a cerebral disease or abnormality may produce epilepsy is well established. The evidence of it has been that removal of enlarged veins or nevoid growths adjacent to the base of the skull has been followed by cessation of the seizure. (4) There is, therefore, a reciprocal relation between circualtory disorders and epilepsy to this extent: that epilepsy causes circulatory disturbances and that abnormalities of blood or vesse'ls cause epilepsy. This reciprocal relation I believe to have been overlooked hitherto. (5) In most forms of epilepsy there is cerebral anemia, and this is relieved effectively by various heart stimulants, the high frequency current, and radiant electric light. The importance of the use of cardiac stimulants in epilepsy I believe has not been properly appreciated by the profession at large. In a certain number of cases, of course, permanent relief is obtained only by antiluetic treatment or some surgical procedure."

Mercurialized Serums.—Dr. F. E. STEWART of Philadelphia drew the following conclusions: "(1) Corrosive sublimate becomes non-corrosive and non-irritating when dissolved in normal serum. (2) The compounds thus formed are just as toxic and probably therapeutically as efficacious as mercuric bichloride itself. (3) When prepared from heterologous serums, mercurialized, serums must be regarded as heterologous serum preparations, requiring conformity to the same rlues in their administration as applied to other heterologous serums, such as diphtheria antitoxin, and antibacterial serums. (4) Mercury in the form of mercurialized serums is an ideal form for administering mercury subcutaneously, intramuscularly, intravenously, and intraspinally. (5) Subcutaneous and intramuscular administration are the methods of choice. Intravenous and intraspinal administration should be the methods of resort only when especially indicated, as outlined in the publications of Dr. Byrne and Dr. Thompson, who have made a special study of the subject, and whose papers in contribution to this symposium will inform you in regard to their use."

The Comparative Toxicity of Mercurialized Serum and Bichloride of Mercury When Injected Intramuscularly, Intravenously, and Intraspinally.—Dr. PAUL S. PITTENGER of Philadelphia drew the following conclusions: (1) Mercurialized serum whether injected intramuscularly, intravenously, or intraspinally, is equally as toxic as corresponding amounts of plain bichloride of mercury. (2) The addition of an excess of serum to bichloride of mercury does not reduce its toxic properties but merely deprives it of the property of destroying tissue by precipitating and then dissolving the albumin of the tissue, without changing its toxicity or therapeutic efficiency. (3) Intramuscular or subcutaneous injections of mercurialized serum are practically painless and are not followed by sensitiveness, pain and sloughing which usually accompany injections of the plain bichloride. (4) Intravenous injections of mercurialized serum are not followed by pain or sensitiveness at the site of injection. (5) Overdoses of mercurialized serum when administered intravenously produce the same untoward effects, such as blood in the stools, vomiting, retching marked increased and troubled respiration, etc., as plain bichloride of mercury and care should be used, therefore, not to produce toxic effects by overdosage or administration at too frequent intervals. (6) Mercurialized serum in proper doses may be safely injected directly into the spinal canal. (7) In systemic syphilis very favorable results can be obtained by the intramuscular or subcutaneous injection of mercurialized serum. (8) Intramuscular or subcutaneous administration of mercurialized serum is to be preferred in the treatment of systemic syphilis except in patients where quick results are imperative in which case the serum may be administered intravenously."

Mercurialized Serums.—Dr. LLOYD O. THOMPSON of Hot Springs, Ark., said that upon reading Byrnes' original article upon the intradural injection of mercurialized serum in syphilis of the central nervous system the thought suggested itself to him that if mercurialized serum could be injected intradurally without irritation, it could be infected intravenously without causing phlebitis. He had tried it with perfect success and in May, 1915, reported 66 injections in 8 cases. The method of procedure was as follows: From 40 to 50 c.c. of blood were collected by venepuncture and placed in a large test tube which had been boiled in salt solution. After separation the serum was poured off and thoroughly centrifugalized. A watery solution of mercuric chloride was prepared so that each cubic centimeter contained 22 mg. (1/3 grain) of the salt. The serum was then measured and divided into two parts, one-third of the amount placed in one tube and the remainder in another. The mercury solution was added to the first part in the proportion of 1 c.c. to each 2 c.c. of the serum. A heavy precipitate of albuminate of mercury appeared which was completely dissolved on the addition of the remainder of the serum. It would be seen that the mixture would contain 22 mg. (1/3 grain) of mercuric chloride in each 7 c.c. At first there was great difficulty encountered in keep-

ing the albuminate in solution for any length of time, and it was necessary to prepare the solution fresh before each injection, but later it was discovered that if the mixture was heated in the water bath for one-half hour at 55°C. it would remain in solution indefinitely. Mercurialized serum for intravenous injection prepared from horse serum had been placed upon the market, but owing to the danger of anaphylaxis he had not employed this serum and did not recommend its use. Recently, he had used ascitic and hydrocele fluids in the preparation of mercurialized serum for intravenous injection with very favorable results. These fluids, however, varied somewhat in their ability to hold the mercury albuminate in solution, some of them requiring as much as 10 c.c. to each 22 mg. (⅓ grain) of the bichloride. It had occurred to him that the use of these fluids might present an opportunity for placing mercurialized serums upon the market from the use of which there would be no danger of anaphylaxis. It might be well to state parenthetically that ascitic and hydrocele fluids should be tested for the presence of tubercle bacilli before using for intravenous injections. He had not used mercurialized serum intravenously as a routine procedure in the treatment of syphilis but had used it mainly in those cases in which the pain of intramuscular injection was so great that the patient would not tolerate them.

Head Colds; Their Results and Treatment.—Dr. THOMAS F. REILLY of New York in a paper on this subject emphasized the following conclusions: (1) That there was a special type of head cold that preceded by from four to eight days most, if not all, cases of so-called muscular rheumatism, lumbago, etc., and that this was more satisfactorily treated by treating the original site of infection in the nose than by the usual methods of treatment. (2) That bronchitis following such head colds was likewise more satisfactorily treated by taking care of the original source of infection in the nose. (3) That this field of nasal treatment was quite as much the province of the internist as the use of the stomach pump in gastric lavage. (4) That a fair proportion of post-operative pneumonias was due to infection of the patient by the anesthetist who was suffering from a severe head cold.

Strychnine As a Tonic.—Dr. W. F. MILROY of Omaha, Neb., said that one of the most gratifying therapeutic results he personally had ever witnessed had been in the use of strychnine in pneumonia. There was no more reliable sign of approaching trouble in this disease than the appearance of edema in the dependent portion of the sound lung. He had observed this edema disappear promptly after the injection of 1/40 grain strychnine and, recurring after a few hours, again vanish with the injection of the drug. He had observed this happen repeatedly in the same case and believed he had seen patients by this means carried over a crisis to recovery. The mode of action of strychnine he must mention as concisely as possible. It acted primarily upon the nervous system, including the sympathetic system, probably most strongly upon the medulla and spinal cord. Without discussing the precise mode of action, whatever this might be, it resulted in a stimulation of the physiological activity of practically the whole body. Admitting that cardiac muscular power and blood pressure were not influenced by strychnine, the fact nevertheless remained that the heart action was influenced favorably in certain conditions. For instance, he knew a doctor with a crippled heart which became irregular and intermittent, with distressing subjective symptoms, whenever he overtaxed it a little. Invariably a few doses of strychnine, in this condition, restored the action to normal with disappearance of the unpleasant symptoms. Now, cellular nutrition was not a process of passive absorption. It was an active, vital process which was under the direct control of the nervous system. Therefore, the profound stimulation of the nervous system by full doses of strychnine, directly promoted a new and vigorous cell activity of the whole body, thus tending to restore the opsonic index. The nervous disorders to which he had referred as capable of being successfully treated by strychnine, represented conditions of depression. The nervous system still retained the ability to respond to powerful stimulation which the big doses of strychnine supplied. In reference to administration he would add that though the drug might not be wholly eliminated from the body for as long as eight days, it was mostly gone at the end of twelve hours and therefore the doses must not be too infrequent. Also it was worth while to mention that there was no tendency to habit formation and the largest doses might be abruptly broken off with impunity. Further he would state that this method of treatment was not dangerous. A perfectly safe margin existed between the first appearance of muscular spasm and a really poisonous dose. He had by no means attempted to enumerate the many conditions in which ascending doses of strychnine were indicated. He was convinced that it should be given in much larger doses than was customary and this he was hoping to encourage.

Chronic Appendicitis and Chronic Intestinal Toxemia; Their Association and Differentiation.—Dr. G. REESE SATTERLEE of New York said that a careful study of all cases diagnosed as chronic appendicitis was necessary as was also the use of the *x*-ray in every case. The symptoms of chronic appendicitis and cecal disease was often very similar. Cooperation between surgeon and internist was necessary in the study and treatment of these cases, before and after operation. The proper treatment for chronic intestinal toxemia might clear up symptoms resembling chronic appendicitis. Autogenous colon vaccines should be tried in every case. The internist should be always on the guard for appendicitis in every case of chronic intestinal toxemia, and the surgeon for chronic intestinal toxemia in the case of appendicitis. Medical students should have instructions along these lines and not be taught to diagnose intestinal conditions on symptoms alone.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

THE PRESIDENT, DR. J. WESLEY BOVEE, WASHINGTON, D. C., IN THE CHAIR.

AN address of welcome was delivered by Dr. Harvey W. Wiley of Washington, D. C., which was responded to by Dr. Edward P. Davis of Philadelphia.

Syphilis in Its Relation to Obstetrics.—Dr. EDWARD P. DAVIS of Philadelphia said that modern knowledge on this subject dated from the discovery of the *Spirocheta pallida* in 1905-6 as the cause of syphilis. The discovery of the Wassermann reaction as a means of diagnosis and that of salvarsan in treatment were important factors. Syphilis could be positively diagnosticated in a newborn infant by finding the characteristic germs in blood taken from the umbilical vein and from the tissues about the umbilicus and umbilical cord. Examination of the bodies of infants dying soon after birth from syphilis showed this germ abundantly present in the important organs of the fetal body. A woman apparently healthy giving birth to a syphilitic infant was herself syphilitic, although she might show for some years no clinical signs or symptoms. In these cases syphilis was conveyed from the ovum to the mother through the medium of the placenta. The mother was said to have latent syphilis and could nurse her child without disturbance in her own health, and with positive benefit to the child. She might, however, at any time develop symptoms of secondary or tertiary syphilis. The Wassermann reaction was unreliable as a positive test for syphilis in parturient women. It might give a positive reaction in cases of severe toxemia and eclampsia where syphilis was absent, and in some other conditions where the mother's general health was seriously disturbed. In the lack of a more reliable means of diagnosis, the Wassermann test should invariably be made in selecting wet nurses, and in all suspicious cases. Syphilis in the acute stage attacking a pregnant woman could often by the use of salvarsan be promptly checked. While the germs causing syphilis would be destroyed, the toxins which they produced would usually cause death of the fetus. If syphilis occurred early in pregnancy, the best result for mother and child would be obtained by mercurial treatment accompanied by the use of iodide of potassium. Where skin lesions were present, hypodermatic or intravenous injections of mercurial solutions were useful. In treating active syphilis in the newborn, salvarsan had been given in the cubital vein with good results. Where salvarsan was used with mother and child, the urine of the patient should be repeatedly examined to determine the presence or absence of arsenic, and the presence or absence of signs of irritation of the kidneys. Should traces of arsenic disappear from the urine, arsenical poisoning might be feared. Syphilis in parturient women greatly increased the mortality and

morbidity for the mother through mixed infection and lesions of the genital organs. Unless promptly detected and treated, it was one of the most important causes of fetal death. No syphilitic man or woman should be allowed to marry unless such had been under observation for six years after the last appearance of symptoms of syphilis.

Syphilis in Relation to Some Social Problems.—Dr. SIGMUND POLLITZER of New York City under the above title dealt with three distinct subjects: (1) Hereditary Syphilis in the Light of To-day. The fact that syphilis could be transmitted from the syphilitic mother to her unborn child was recognized four hundred years ago; but the fact that syphilitic children were born of apparently healthy mothers led to the conclusion that syphilis might be transmitted to the offspring by way of the semen of the father without infecting the mother. In fact, paternal syphilis was regarded as the most frequent form in syphilitic heredity. More extended and definite clinical observation, the discovery of the spirochete on the maternal aspect of the placenta, and the results of the Wassermann test had completely changed our views in this respect. Transmission of spirochete to the ovum might be regarded virtually as a physical impossibility; a spirochete was three times as long as the diameter of a spermatozoid head, and, furthermore, an infected ovum would not develop into a fetus. Colles' law and Profeta's law were true only in the sense that the mother of a syphilitic child and the child of a syphilitic mother already had syphilis, and therefore apparently could not acquire it. The apparently healthy mothers of syphilitic children invariably had a positive Wassermann reaction and generally presented symptoms of syphilis if we followed them long enough. The failure to show a history of the infection in these cases was not very remarkable in view of the statistics of syphilis in women; in only about one-third of the cases that were seen with definite tertiary lesions could a history of infection be elicited. The author emphasized the importance of making a Wassermann test in every case of unexplained abortion instead of resting content with the inadequate explanation of deflections, adhesions, etc. (2) When May the Syphilitic Marry? Recent progress, Dr. Pollitzer said, had greatly changed our view on the gravity of syphilis, especially with reference to lesions of the heart and central nervous system, and at the same time had greatly improved prognostic and therapeutic possibilities. The question of the medical sanction to marriage of the syphilitic had been most earnestly considered forty years ago by Fournier and the principles laid down by him generally followed. The syphilitic might marry when there was a reasonable certainty of his cure. No criterion of cure being possible, formerly a definite period of time and treatment were arbitrarily fixed upon, based on clinical experience. The syphilitic might marry if he had received three years of treatment and had remained free from symptoms for another year or two. Millions of happy marriages proved the wisdom of the rule, but the thousands that resulted in infection of their wives and the birth of syphilitic children proved its inadequacy. The Wassermann test afforded a reliable criterion of cure. The syphilitic woman might marry without risk of infecting her husband after she had reached the tertiary stage of the disease, but she could not bear children without the risk of bearing syphilitic children until she was permanently Wasserman negative. (3) The Control of Syphilis. The attempt to control the incidence of syphilis by segregation, he said, had proved of slight value and, moreover, in Anglo-Saxon countries met with too much prejudice to permit of its enforcement. The control of syphilis must come through education of the public in the risks and dangers of illicit intercourse and education of the physician in the importance of early diagnosis and proper treatment. Various educational bodies were undertaking a campaign of instruction in these matters; even the public press which a few years ago had never printed the word "syphilis" to-day contained educational articles which dealt with the subject frankly. The public was being educated. How far knowledge of the risks and dangers of illicit intercourse would serve as a deterrent was a mooted question. The speaker referred to the excellent results obtained by the prophylactic use of calomel ointment in the armies and navies of the world, a procedure which, if generally employed, would as effectively control the great pox as the smallpox had been controlled by vaccination. The author contrasted the generous provision made for the care of the syphilitic in the hospitals of European cities with the attitude of our American hospitals in most of which the patient with an active syphilis was refused admission. He concluded with a plea to his hearers to exert their personal influence to the end that better hospital facilities be provided for the syphilitic.

Syphilis of the Internal Genital Organs in the Female.—Drs. GEORGE GELLHORN and HUGO EHRENFEST of St. Louis, Mo., contributed a joint paper on this subject, saying that syphilis had always been assumed to be considerably commoner among men than among women; but from certain investigations this supposition could not yet be accepted as conclusive. At any rate, syphilis was common enough in women to constitute a gynecological problem in the widest sense. Not every disease in a syphilitic woman was syphilitic in nature, but syphilis, if present, would exert an influence of its own upon coexistent diseases. Latent syphilis prevailed more in women than in men. The course of syphilis in men differed in many points from that in women. To instance but one of the differences, the relative frequency of tabes and paresis in the two sexes was well known. Primary chancres of the vagina were rare, probably because of certain histological and biological characteristics of the vagina. Tertiary luetic manifestations of the vagina were also extremely rare. They represented, as a rule, the continuation of secondary lesions in the vulva, uterus, or adjoining organs. The isolated submucous gumma broke down early and appeared in the form of a more or less characteristic ulcer. The more destructive processes which eventually led to the formation of fistulæ and strictures, almost always originated in strictures surrounding the vagina. Tertiary lesions of the vagina did not exhibit characteristic symptoms, such as pain or discharge. The primary chancre of the cervix represented the best known and most common type of syphilitic affections of the female internal genitalia. Its frequency had probably been overestimated. Statistics based on a large number of observations had never shown a frequency over 1.5 per cent. of all primary chancres found on the genitalia. Eight personal observations were added by the authors to the few cases found in literature of secondary lesions of the cervix. Syphilis manifested itself upon the cervix in the form of macules, papules, and ulcerations. These forms probably represented three successive stages in the development of a lesion caused by scattered accumulations of the *Spirocheta pallida* in the squamous mucosa of the cervix. The parasite could readily be recovered from the secretion of any of the three forms, and this explained the great infectiousness of secondary lesions. Wassermann reaction was positive in this stage. Syphilis of the pelvic cellular tissue appeared in the form of a diffuse gummatous infiltration which secondarily involved the pelvic peritoneum. To the few cases on record the authors added a personal observation. In almost all instances a diagnosis of malignancy had been wrongly made. In their own case the positive outcome of the Wassermann reaction together with other unmistakable signs of tertiary syphilis about the outer genitals aided in arriving at the correct diagnosis. Specific treatment produced amazingly quick improvement of an apparently hopeless condition. Familiarity with syphilitic lesions in the genital tract must needs prove of eminent practical value to the gynecologist in view of the frequent confusion in the diagnosis of cancer and syphilitic ulcerations or gummata. That occasionally a patient is subjected to a serious radical operation who could have been cured by antiluetic treatment there could be no doubt.

The Specificity of the Wassermann Reaction.—Dr. RUDOLPH BUHMAN of St. Louis, Mo., gave the results of the Wassermann reaction in a series of diseases from individuals supposed to be free from syphilis, with especial reference to malignant diseases. Of 132 cases of malignant diseases, including carcinoma, sarcoma, and malignant adenoma, nine gave a positive reaction; six of these nine cases suffered from both malignancy and syphilis; the other three cases were not under observation long enough.

Occurrence of Syphilis in the University of Michigan Obstetrical and Gynecological Clinic.—Dr. REUBEN PETERSON of Ann Arbor, Mich., presented the following summary and conclusions: (1) Only by routine Wassermann tests would the obstetrician and gynecologist best serve the interests of his patients. (2) Especially was this true in hospital practice where even careful histories failed to arouse suspicion of latent

syphilis. (3) Out of 2,000 in-patients in the University Hospital, excluding two services, the proportion of syphilitics was 6 per cent. (4) The nature of the hospital material would determine the percentage of lues, but in the average hospital the ratio would not be far from 8 to 10 per cent. if the entire hospital population be included. (5) The same held true for the proportion of syphilis in any special clinic, the percentage varying according to the nature of the material. (6) The percentage of lues in 381 cases in the University Maternity was 4.7 as shown by the Wassermann reactions and expert physical examinations. (7) In 18 cases of syphilis among the number examined, only eight or less than half gave a history of lues. (8) In only the same number (eight) were there positive physical signs of lues. (9) As shown by the histories of the 18 cases, there was a greater chance for the syphilitic mother treated by salvarsan and mercury to give birth to a living full-term child than where no treatment be given during pregnancy. (10) The newborn infants of the mothers so treated did not give positive Wassermann reactions, although undoubtedly they were syphilitic and later would probably show signs of the disease. (11) A certain proportion of the newborn children of untreated syphilitic mothers would give positive Wassermanns. (12) Out of 390 gynecological patients subjected to the Wassermann test, 22 or 5.6 per cent. gave positive reactions. (13) In only five of the 22 luetic patients was there a history of syphilis. (14) Hence the importance of such examinations, or a serious general disease would be overlooked and the gynecological patient would remain uncured.

Relationship of Syphilis to Miscarriage and Fetal Abnormalities.—Dr. Fred L. Adair of Minneapolis presented data from a series of cases showing the relative frequency of miscarriage in cases giving evidence of syphilis and those showing no signs of lues. The frequency of luetic manifestations in mothers who gave birth to monstrosities and malformed children was considered, after which he presented some observations on the relationship of syphilis to habitual abortion.

How Closely Do the Wassermann Reaction and the Placental Histology Agree in the Diagnosis of Syphilis?—Dr. J. Morris Slemons of New Haven, Conn., stated that in 360 consecutive confinements the Wassermann test had been made on the mother's blood and the placenta had been studied for evidences of syphilis. The most notable disagreement occurred in cases of toxemia of pregnancy which not infrequently presented a faintly positive Wassermann reaction, though the placenta was normal. Except for this fact, the results of the Wassermann test and of the placental examination stood in very close agreement.

Experimental Syphilis.—Dr. F. W. Baeslack of Detroit stated that the causal relationship of the treponema pallidum to lues was established (*a*) by the observation of the occurrence of the organisms in the syphilitic lesions incident to the various stages of the disease; also, the distribution of the pallida in the lesions of acquired and congenital syphilis. (*b*) The successful inoculation of lower animals from human lesions, thereby producing syphilis experimentally in rabbits, monkeys, and other animals; the methods employed and discussion of the character of the lesions, and the observation of generalized syphilis in experimentally inoculated animals. (*c*) The growing of the treponema pallidum in culture media free from contamination, the transfer of these cultures through many generations, and the successful inoculation of lower animals with the cultivated organisms; the loss of virulence of the organisms against the lower animals after extended cultivation; and the cultural characteristics and morphology of the pallida. (*d*) Immunological studies, pseudoprimary lesions, and true reinfection, as well as superinfection, as expressed in the lesions in the various stages of syphilis, which do not harmonize with our conception of immunity. The author spoke of attempts at immunization by means of pallida vaccines, and described the occurrence of agglutinins in the serum of animals treated with suspensions of dead pallida. He spoke of the absence of immunity as demonstrated by the ability to reinoculate animals which had recovered spontaneously or subsequent to treatment. He pointed out that an altered reactivity of the body was the possible explanation for the occurrence of the lesions peculiar to the various stages of syphilis.

Syphilitic Fever.—Dr. Frederick J. Taussig of St. Louis, Mo., read a paper on this subject, in which he presented the following summary: "(1) The diagnosis of syphilitic fever can rarely be made with absolute certainty, but we should more often consider it as a possibility and institute antiluetic measures in suitable cases. (2) Secondary syphilitic fever occurs in a mild form in 20 per cent. of patients at the outbreak of the rash and at times is prolonged and more severe in its course. (3) Late secondary syphilitic fever is occasionally seen in a pronounced form after confinement or in gynecological patients. (4) Tertiary syphilitic fever is practically never due to syphilitic lesions in the female genital tract. One such case is reported by the author. It may, however, complicate a gynecological or obstetrical condition, and, owing to the difficulty in locating the site of the tertiary lesion, lead to a wrong diagnosis as to the cause of the fever. All doubtful cases should be subjected to a Wassermann test and, if positive, given antiluetic treatment. (5) Syphilitic fever is probably due to the reaction of the body to the toxins produced by the spirochete which, under certain circumstances, or in certain individuals, gain an entrance into the circulation.

Syphilis of the Body of the Uterus.—Dr. Charles C. Norris of Philadelphia stated that it was only since the discovery of the *Spirocheta pallida* and the development of the Wassermann test that the true frequency of syphilis had been recognized. Probably 1 to 4 per cent. of women were syphilitic. The disease was rare in the body of the uterus. Theoretically chancres might occur in the body of the uterus as the result of spermatozoic infection and this avenue of ingress might account for some of the cases of syphilis which developed without demonstrable primary sore. No chancre had, however, ever been demonstrated in this location. Some authors believed mucous patches might occur in the endometrium. This, however, was unproven. There were two varieties of syphilitic endometritis: (*a*) gummatous, and (*b*) a less characteristic form in which the blood vessels were especially affected. Syphilis of the myometrium occurred as (*a*) gumma and (*b*) a diffuse metritis, the most characteristic lesions of which were in the blood vessels. Many cases were reported as syphilis on insufficient grounds. Hemorrhage in the form of menorrhagia was a frequent symptom. Leucorrhea and pain occurred. The author reported the following case: Patient aged 36 years; married 12 years; III-para; last child seven years ago. Six years ago she contracted syphilis, and since then had had three miscarriages, two, three, and five months respectively, the last six months ago; mixed treatment until nine months ago. Menorrhagia developed five months ago; hemorrhages profuse and produced severe anemia with its accompanying symptoms. When brought to the hospital she had been bleeding for 12 days. Physical, abdominal, and pelvic examinations negative; hemoglobin 52; red blood count 5,000,000; white blood count 4,500; Wassermann strongly positive; diagnostic curettage during which fundus was perforated. Because of age of patient, three living children, history of intractable bleeding, and perforation of uterus, supravaginal hysterectomy was performed; convalescence normal; salvarsan administered; pathological examination of specimen showed uterus normal in size and shape, but so friable that its walls could be squeezed through at any point with thumb and forefinger. Histological examination showed the endometrium slightly thickened and infiltrated, with chronic inflammatory products. Angiosclerosis of vessels; myometrium more or less inflamed; much edema; marked angiosclerosis of vessels and complete obliteration of some; inner coats of vessels chiefly affected; lymphatic spaces dilated. In many fields muscle fibers partially separated from one another. The diagnosis of syphilis in this case was not positive, as the *Spirocheta pallida* was not demonstrated or searched for. Etiology was suspected, and the Wassermann report was not secured until some days following operation, by which time specimen had been fixed in formalin solution, thereby making the demonstration of the *Spirocheta pallida* very difficult. The diagnosis was based upon the following: that the patient contracted syphilis six years ago, and since then had had three miscarriages; that the symptoms referable to the uterus developed three months after cessation of antisyphilitic treatment, and one month after the last miscarriage; that these were the symptoms usually produced by syphilis of the uterine body; that the histological findings, especially blood vessel changes, were those of syphilis. The hemorrhage and

discharge were not the result of pyogenic infection following a miscarriage as they did not occur with either of the two former miscarriages, but developed one month after the last. These facts led the author to ascribe the uterine lesions to syphilis. Three similar cases were recorded in the literature.

Incontinence of Urine in Women.—Drs. Howard C. Taylor and Charles H. Watt of New York City contributed a joint paper on this subject, in which the following conclusions were drawn: (1) While incontinence of urine is due to a lesion of the sphincter vesicæ only, it is relatively an infrequent symptom. (2) Incontinence of urine due to a lesion of the sphincter vesicæ associated with other lesions is a frequent and important condition. (3) In pelvic operations for lesions associated with incontinence of urine as a symptom, care should be used to remove all drag or downward traction on the anterior vaginal wall and frequently to infold the sphincter vesicæ.

(*To be continued.*)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

State Board of Medical Examiners of Maryland.

June 20, 1916.

ANATOMY.

1. Describe articulations of superior maxillary bone.
2. Describe the elbow joint, name the ligaments, and give their attachments.
3. Give location and size of stomach when empty.
4. Superficial and deep origin and arrangement of fibers in commissure, of optic nerves.
5. Where would you locate lesion in a case of aphasia?
6. Describe valves of heart.
7. Give origin, insertion, action and nerve supply of following muscles: (*a*) Obliquus internus. (*b*) Obturator externus. (*c*) Omohyoideus. (*d*) Serratus magnus.
8. Through what vessels would circulation be established after ligation of brachial artery in lower third?
9. Where are semicircular canals located, and by what bony openings do they communicate with the middle ear and with the cranial cavity?
10. What is the mesentery?

PHYSIOLOGY.

1. (*a*) Describe the normal flow of blood through the arteries, capillaries and veins, and factors which cause the flow of each. (*b*) Give the relative rates of circulation in the arteries, capillaries and veins, and state how long it takes the blood to make a complete circuit of the body. (*c*) What is the total quantity of blood as compared with weight of the body?
2. (*a*) Define absorption and secretion. (*b*) Give some of the theories of absorption. (*c*) State difference between internal and external secretions, and give examples.
3. (*a*) Define animal heat and give sources. (*b*) State some of the conditions which produce variations in the normal temperature. (*c*) Give normal temperature in axilla, mouth, and rectum.
4. What is accomplished physiologically by the portal circulation?
5. Where is the respiratory center located and what is internal respiration?
6. (*a*) What are the functions of the bile—the ingredients and how secreted? (*b*) Give tests for bile salts and bile acids.
7. Describe the function of the Eustachian tube, retina, iris, cornea, and tympanic membrane.
8. Give the locations at which the various heart sounds can be best heard and state the cause of each sound.
9. Discuss briefly the physiology of the nervous system and give a classification of the nerve cells.
10. What is blood pressure—mode of ascertaining—the average blood pressure in male and female.

CHEMISTRY.

1. Give symbol, valence and one important compound of each of ten elements.
2. Describe nitrogen. In what form is it chiefly eliminated from the body? Name several compounds containing nitrogen and give formulæ.
3. Describe lead. (*a*) Which of its compounds is used in medicine? (*b*) From what sources may chronic lead poisoning come?
4. Give two antidotes for phosphorus and explain their action.
5. Give a chemical antidote for each of the following and explain mode of action: Phenol, nitric acid, oxalic acid, mercuric chloride.
6. Wood alcohol and grain alcohol: (*a*) Give formulæ and state the class of chemical substances to which they belong. (*b*) How would you treat a case of poisoning by the former, supposing the case were seen shortly after ingestion of the substance?
7. Why is a salt of mercury incompatible with KI?
8. What is synthesis? Name three synthetic organic substances used in medicine.
9. Describe method of determining the sugar content of the blood.
10. What substance is used as an antidote for most alkaloids and how does it act?

MATERIA MEDICA.

1. Mercury; the official preparation, doses, and incompatibles.
2. Lead; the official preparations and incompatibles.
3. Write a prescription using official terms, containing at least three ingredients, for diarrhea in an adult. Also one for a child 2 years old containing three ingredients.
4. Give the average hypodermic dose for an adult of apomorphine, morphia sulphate, nitroglycerin, atropine sulphate, and pituitary extract.
5. Ergot; the official preparations and doses.
6. Potassium: the official preparations and doses.
7. Name three drugs which are motor nerve depressants; three which are sensory nerve depressants, and give adult dose of each.
8. (*a*) Define antiseptics and name three that are used internally with adult dose. (*b*) Name three that are used externally and give strength of same, using official terms.
9. Write a prescription as a diuretic containing three ingredients, using official terms.
10. Define antitoxins and vaccines. Name those in most general use, give source and method of administering.

THERAPEUTICS.

1. Flexile collodion, and cantharidal collodion; their therapeutic uses.
2. Give the therapy of boric acid and methods of use.
3. Acid salicylicum, its therapy and usual combination for internal administration.
4. Sodii bicarbonas, properties and uses, incompatibles.
5. Spiritus ætheris nitrosi, its properties, uses and adult dose.
6. Aethylis chloridum, properties and uses, and objections to its use.
7. Alumen, properties and uses, value of the exsiccated.
8. Arseni trioxidum, therapy, liquid preparations and state which can be administered with acids.
9. Hexamethylenamin, properties and uses, mode of action and danger from large doses.
10. Write a prescription in Latin, without abbreviation, containing four ingredients (with "Fowler's solution" as one) stating condition for which used.

ANSWERS.

ANATOMY.

1. The *superior maxillary bone articulates with*: The frontal, ethmoid, malar, nasal, lacrimal, palate, vomer, inferior turbinated, and the superior maxillary of the opposite side; sometimes it articulates also with the sphenoid.
2. The *elbow-joint* "is a ginglymoid articulation formed above by the lower extremity of humerus, below by upper extremities of ulna and radius. Its ligaments are external and internal lateral, anterior and posterior ligaments. *External lateral* arises from external condyle of humerus and is inserted into outer margin of ulna. *Internal lateral*, much stronger, consists of two portions; *anterior* arises from fore part of internal condyle to be inserted into coronoid process, and *posterior* from back part of condyle to inner margin of olecranon.

Anterior ligament arises above coronoid fossa, and is inserted into coronoid process of ulna and orbicular ligament. *Posterior ligament*, attached above olecranon fossa, and below to olecranon process of ulna. The anterior and posterior ligaments become continuous with the lateral to encircle the joint."—(*Young's Anatomy.*)

3. The *stomach*, when empty, lies in the epigastric and left hypochondriac regions, at the back part of the abdomen, and is immediately below the diaphragm; its length is about 10 inches, its breadth 3 to 4 inches, and its antero-posterior diameter about 2 to 3 inches.

4. The *optic nerves* arise from the forepart of the optic commissure, which is the decussation of the fibers in the optic tract; most of the fibers decussate (these are arranged internally), a few pass to the eye of the same side, and a few of the posterior fibers do not decussate but pass across the commissure from one cerebral hemisphere to the other.

5. In *aphasia* (in a right-handed person) the lesion would be located in the posterior part of the third frontal convolution of the left cerebral hemisphere.

6. *The valves of the heart* are: In the *right auricle*, the Eustachian and coronary valves; the former is situated between the anterior margin of the inferior vena cava and the auriculoventricular orifice. In the fetus it directs the blood from the inferior vena cava through the foraman ovale into the left auricle; the coronary valve prevents the regurgitation of the blood into the coronary sinus during the auricular contraction. In the *right ventricle* are the tricuspid and semilunar valves; the former prevents the blood in the right ventricle from flowing back into the right auricle during ventricular cystole; the latter guards the orifice of the pulmonary artery. In the *left ventricle* are the mitral and semilunar valves; the former acts similarly to the tricuspid; the latter guards the orifice of the aorta. The *tricuspid valve* consists of three cusps, or segments, the bases of which are attached to a ring around the auriculo-ventricular opening, while the edges are free in the ventricle and are attached to the upper end of the chordæ tendineæ. The *pulmonary semilunar valve* is composed of three segments, attached at their bases to the wall of the pulmonary artery and having on their free edges a nodular projection, the *corpus Arantii*. The *initial valve* has two cusps, and is otherwise of similar structure to the tricuspid valve. The *aortic semilunar valve* resembles the pulmonary valve in structure.

7. OBLIQUUS INTERNUS. *Origin*: Outer half of Poupart's ligament, anterior two-thirds of crest of ilium, and from lumbar fascia. *Insertion*: Crest of pubis, pectineal line, linea alba, and cartilages of seventh, eighth, and ninth ribs. *Action*: Compression of abdominal viscera (thus aiding in vomiting, urination, defecation, and parturition), compression of thorax (thus aiding in expiration). *Nerve supply*: Lower intercostal nerves, and iliohypogastric.

OBTURATOR EXTERNUS. *Origin*: Body and ramus of os pubis, ramus of ischium, and obturator membrane. *Insertion*: Digital fossa of femur. *Action*: External rotator of thigh. *Nerve supply*: Obturator nerve.

OMOHYOIDEUS. *Origin*: Upper border of scapula. *Insertion*: Body of hyoid bone. *Action*: Depresses and retracts hyoid and larynx. *Nerve supply*: Descendens and communicans hypoglossi.

SERRATUS MAGNUS. *Origin*: Eight upper ribs. *Insertion*: Inner margin of dorsal border of scapula. *Action*: Elevates ribs in inspiration, is used in pushing, and raising the arm. *Nerve supply*: Posterior thoracic nerve.

8. When the *brachial artery is ligated in the lower third*, the *collateral circulation* is carried on as follows: The superior profunda anastomoses with the radial recurrent, and posterior interosseus recurrent; and the inferior profunda anastomoses with the posterior ulnar recurrent and anastomotica magna.

9. The *semicircular canals* are located in the internal ear, above and behind the vestibule. They open into the vestibule by five apertures: The ampulla ossea superior, crus commune, ampulla ossea posterior, macula cribrosa inferior, and ampulla ossea lateralis.

10. The *mesentery* is the fold of peritoneum which connects the jejunum and ileum with the posterior abdominal wall.

PHYSIOLOGY.

1. The *circulation of the blood* is the course or circuit of the blood from the heart, through the body and back to the heart. Beginning at the left ventricle of the heart, the blood flows through the left semilunar valve into the aorta, from which branches are distributed to every part of the body, through the capillaries to the veins, from the veins to the venæ cavæ, thence to the right auricle of the heart. From the right auricle, through the tricuspid valve to the right ventricle, thence through the right semilunar valve to the pulmonary artery to the lungs, from the capillaries in the lungs to the pulmonary veins, thence to the left auricle, and through the mitral valve to the left ventricle, to begin the circuit again.

The circulation of the blood is regulated in (a) *the arteries* by: (1) The elasticity and tone of the arteries, (2) the force and frequency of the cardiac contractions, (3) the resistance in the capillaries; (b) in the *capillaries* it is regulated by (1) the action of the heart, (2) the action of the arteries; (c) in the *veins* it is regulated by (1) the action of the heart, (2) aspiration of the thorax, (3) the contraction of the muscles, and (4) slightly by the valves in the veins.

The velocity of the blood current is about 1 foot per second in the arteries; about 1 inch per minute in the capillaries; and about 8 inches a second in the veins. The complete circulation around the body is said to occupy a little less than half a minute.

The total quantity of blood was formerly said to be about one-thirteenth of the weight of the body; recently this figure has been altered to one-twentieth of the body weight.

2. *Absorption* is the process by which the products of digestion are taken up into the general circulation. It occurs with greatest activity in the villi of the small intestine.

The products of digestion find their way into the blood by two routes: (1) By the blood-vessels of the gastrointestinal tract, which unite to form the portal vein; and (2) by the lymph vessels of the small intestine, which converge to empty into the thoracic duct. The water, inorganic salts, proteids and sugar go by way of the portal vein to the ascending vena cava; and the fats go by way of the thoracic duct to the junction of the left subclavian and internal jugular veins.

The process by which absorption is accomplished is partly physical (osmosis and filtration), and is also due in part to selective action. To be absorbed by the blood-vessels or lacteals the substances must be in a fluid state, and the more dilute the solution the more rapid the absorption. The absorbed matter must be rapidly removed and fresh blood supplied to the capillaries.

Secretion means the process by which some of the constituents of the blood are separated from the blood stream (by the activities of the capillary endothelium, as the blood passes through the capillaries) and elaborated into other material. The products of secretion vary with the gland or membrane where it occurs. Thus: Saliva, tears, milk, bile, gastric juice, synovial fluid, serous fluid, pancreatic juice.

Internal secretions: It is generally held now that the glandular organs, chiefly the pancreas, liver, and the ductless glands, produce a secretion, peculiar in each case to the particular gland producing it, and which is supposed to be given off to the blood or lymph, and to have some peculiar value in the general metabolism of the body. Such secretions are called internal secretions, in contradistinction to the previously known secretions, which are carried off by a duct, and are known as external secretions.

3. *Animal heat* is the heat produced in living organisms by the processes of oxidation.

Heat is produced in the body by: (1) Muscular action; (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart; and (6) the thermogenetic centers in the brain, pons, medulla, and spinal cord.

Conditions which produce variations in the normal temperature: Age, time of day, position, whether sleeping or awake, whether working or resting. The normal temperature, in *axilla*, is about 37° C.; in *mouth*, about 37.5° C.; in *rectum*, about 38° C.

4. The function of the portal circulation is to carry the venous blood from the stomach, intestines, pancreas and spleen to the liver. The blood thus carried is loaded with the products of absorption. In the liver this blood enters into close relation with the hepatic cells, and is finally carried to the inferior vena cava. Further, the ordinary functions of the liver are due, in part, to the portal circulation. These functions are: Manufacture and storage of glycogen; formation of urea, uric acid and creatinin; formation of bile, and manufacture of heat.

5. The *respiratory center* is situated in the lowest part of the floor of the fourth ventricle, at the calamus scriptorius. *Internal respiration* is the interchange of gases between the blood or lymph and the cells of the various tissues of the body. The term is used in opposition to *external respiration*, which is the interchange of gases occurring in the lungs.

6. The *functions of the bile* are: (1) To assist in the emulsification and saponification of fats; (2) to aid in the absorption of fats; (3) to stimulate the cells of the intestine to increased secretory activity, and so promote peristalsis, and at the same time tend to keep the feces moist; (4) to eliminate waste products of metabolism, such as lecithin and cholesterin; (5) it has a slight action in converting starch into sugar; (6) it neutralizes the acid chyme from the stomach, and thus inhibits peptic digestion; (7) it has a very feeble antiseptic action.

Bile is composed of water, sodium glycocholate, sodium taurocholate, mucin, cholesterin, lecithin, fats, pigments (bilirubin and bilverdin) and inorganic salts (chiefly sodium chloride, potassium chloride, calcium phosphate, magnesium phosphate, and iron phosphate).

"The *secretion of bile* is a continuous process, and in periods when digestion is not taking place, bile accumulates in the gall-bladder. About the third hour after a meal is taken the gall-bladder is emptied into the lumen of the duodenum, but the mechanism by which the contents are expelled has not yet been ascertained. Bile continues to flow into the intestine during the digestive process, and, later, again accumulates in the gall-bladder. . . . So far as is known, the secretion of bile is independent of nervous action, and is excited (1) by the reabsorbed bile salts, and (2) by secretin."—(Bainbridge and Menzies' *Essentials of Physiology.*)

Test for bile-salts: Sprinkle some flowers of sulphur on the surface of a solution containing bile salts; the sulphur will sink, whereas on most other liquids it will float.

Test for bile-acids: To a thin film of bile in a capsule add a drop of solution of cane sugar and a drop of concentrated sulphuric acid; a purple color is obtained.

7. *Function of the Eustachian tube* is: (1) To maintain equilibrium between the atmospheric pressure in the middle ear and the outside air. (2) The cilia on the epithelium lining the tube filter the incoming air from the pharynx and so aid in keeping bacteria out of the middle ear. (3) It may act as a drainage tube for the middle ear. (4) It may possibly have some function as a resonating tube, as may be observed when it is closed in catarrhal conditions, when the voice sounds strange both to the patient and to others.

Function of the retina is to receive the stimulus of light and transform it into a nervous impulse which is carried to the brain by the optic nerve.

Function of cornea is to allow light to pass from outside to the retina.

Function of iris is to regulate the amount of light which enters the eyeball and falls upon the retina; it also regulates the size of the pupil, and reduces both spherical and chromatic aberration.

The *function of the typmanic membrane* is to receive the vibrations of the atmosphere which are transmitted to it.

8. There are two normal heart sounds which follow in quick succession, and are succeeded by a pause. The first, or systolic, sound is dull and somewhat prolonged, the second, or diastolic, sound is sharper and shorter. The sounds may be expressed by the syllables *lubb—dup.*

The first sound is heard best at the apex beat in the fifth left intercostal space; the second sound is heard best over the second right costal cartilage.

The *causes* producing the *first* sound of the heart are not definitely ascertained; the following are supposed to be causatory factors: (1) The vibration and closure of the auriculo-ventricular valves, (2) the muscular sound produced by the contraction of the ventricles, and (3) the cardiac impulse against the chest wall.

The *second* sound is caused by the vibration due to the closure of the semilunar valves.

9. *Physiology of the Nervous System:* "The primary elements of the nervous system are the neurones and the neuroglia, the former being the discharging and conducting structures, and the latter the supporting. The *neurone* is the essential element of the nervous system, which may be regarded as built up of an enormous number of them arranged in series, and occupying definite tracts. A neurone consists of a nerve cell and its branches (axon and dendrons or dendrites). The *dendrons* belonging to a single cell may be many, or there may be but one; in either case they are short processes, soon subdivided into many terminal branches forming an arborisation. They are made up of fibrillæ, and of granular matter lying between the fibrillæ, which are continuous, through the body of the cell itself, with the fibrillæ of other dendrons or of the *axon.* This process, entirely composed of fibrillæ, gives off collaterals at right angles to its course, and these, like the axon itself, often end in an arborisation around the dendrons of another nerve cell. These places of linkage of one neurone with another are called synapses. An axon may be either long or short; in the former case it does not branch for a considerable distance, becomes surrounded with myelin, and passes as a nerve fiber into the white matter; in the latter it breaks up into branches close to its cell, which is known as a "link cell," and is confined to the gray matter alone. The dendrons conduct impulses *toward* the cell, the axons *away* from it.

"The *nerve* cell itself, besides its nucleus and nucleolus and the fibrillæ which traverse it, contains a series of angular granules (Nissl's bodies) similar to those of the dendron. They stain deeply with methylene blue, and are an index of the state of health, or degeneration of the cell. The multiplication of nerve cells ceases shortly after birth, but their growth is active, and they have great reparative power.

"The *neuroglia* is composed of a network of delicate interlacing fibrils containing a number of nucleated cells (Deiter's cells) embedded in it. It everywhere interpenetrates the nervous elements, but is most abundant round the central canal of the cord and the ventricles of the brain, and in the substantia gelatinosa of Rolando, which lies at the tip of the posterior cornu of the cord. In the various "scleroses," it is increased at the expense of the nervous elements.

"A neurone is 'efferent' or 'afferent,' according as its axon carries impulses from the central nervous system toward the periphery, or from the periphery toward the center. By the superposition of one efferent neurone upon another, or of one afferent neurone upon another, efferent, descending, or *motor*, and afferent, ascending, or *sensory* paths are built up, which occupy definite positions in the spinal cord and brain."—(Wheeler and Jack's *Handbook of Medicine.*)

Classification of nerve cells.—Schäfer classifies nerve cells as follows: "1. *Afferent cells*, which receive impressions at the periphery to convert them into impulses. The latter then pass toward the central nervous system. 2. *Efferent cells*, which send out nervous impressions toward the periphery. 3. *Intermediary cells*, which receive impressions from afferent cells to transmit them directly or indirectly to efferent cells. 4. *Distributing cells*, which occur near the periphery and, receiving impulses from efferent cells, distribute them to involuntary muscles and secreting cells. The cells of this class belong to the so-called sympathetic system."

10. *Blood pressure* is the pressure of the blood due to the ventricular systole, the elasticity of the arterial walls, and the resistance of the capillaries. The normal arterial blood pressure varies; the systolic pressure being (in males) about 120 to 150 mm. of mercury, and the diastolic from about 90 to 120 mm. of mercury. In females, the pressure is from 10 to 15 mm. lower. Blood pressure is *maintained* by the contraction of the heart, the peripheral resistance, and the elasticity of the arterial walls.

Blood pressure is estimated by a sphygmomanometer. The individual whose blood pressure is about to be recorded should be placed in such a position that his heart, the artery the blood pressure of which is to be determined, and the manometer are at the same level. It is usual to record the pressure in the brachial artery. The india-rubber bag of the instrument should be wrapped round the bared arm, the metal covering of the bag should then be adjusted, and firmly strapped in position. The india-rubber tube leading from the bag is then adjusted to the proximal limb of the U-shaped manometer which contains mercury. The experimenter places the index finger of his left hand over the radial pulse of the subject, and with his right hand he compresses the syringe and so drives air into the india-rubber tube and the india-rubber bag around the individual's arm. The pressure of the air in the bag around the arm is recorded by movement of the mercury from the proximal to the distal limb of the manometer. The operator keeps on pressing the syringe until oscillatory movements are seen at the surface

of the mercury in the distal limb of the manometer; the mean point of maximum oscillations registers the diastolic pressure. If the pressure in the bag is still further increased, the oscillations diminish in amplitude and finally disappear, and at this point the pulse can no longer be felt at the wrist. The height of the mercury supported then registers the amount of systolic pressure. It will then be noted that the mercury has descended in the proximal limb of the manometer, and has ascended in the distal limb of the manometer: the difference between the two mercurial levels will be the blood pressure of the brachial artery. The normal systolic pressure in man is about 120 mm. Hg, and the diastolic pressure about 100 mm. Hg. In women the pressures are about 10 per cent. less. In children the systolic pressure may be as low as 90 mm. Hg, with a diastolic pressure of about 80 mm. Hg.—(R. Hutchison.)

1. CHEMISTRY.

Element.	Symbol.	Valence.	One Compound.
Hydrogen	H.	1	Hydrogen monoxide, H_2O
Oxygen	O.	2	Nitrogen monoxide, N_2O
Carbon	C.	4	Ether $(C_2H_5)_2O$
Nitrogen	N.	3 or 5	Ammonia, NH_3
Chlorine	Cl.	1	Hydrochloric acid, HCl
Potassium	K.	1	Potassium iodide, KI
Sodium	Na.	1	Sodium chloride, NaCl
Arsenic	As.	3 or 5	Arsenic trioxide, As_2O_3
Calcium	Ca.	2	Calcium sulphate, $CaSO_4$
Iron	Fe.	2 or 4	Ferric chloride Fe_2Cl_6

2. *Nitrogen* is a colorless, odorless, tasteless gas, noncombustible, very sparingly soluble in water, very slow to enter into combination; it is not poisonous, but it does not support respiration.

It is chiefly eliminated from the body in the form of urea.

Compounds containing nitrogen: Urea, CON_2H_4; ammonia, NH_3; nitrogen monoxide, N_2O; nitrogen dioxide, NO; nitrogen monoxide, N_2O_3; nitrogen tetroxide, N_2O_4; nitrogen pentoxide, N_2O_5; nitrous acid, HNO_2; nitric acid, HNO_3; hydrocyanic acid, HCN; lead nitrate, $Pb(NO_3)_2$; ethyl amin, $C_2H_5NH_2$.

3. *Lead* is a bluish-white metal, soft and pliable; not very ductile or malleable, a poor conductor of electricity but somewhat better conductor of heat, is readily oxidized when exposed to air; its atomic weight is 207, and its valence 2.

The compounds used in medicine are the acetate, oxide, iodide and nitrate.

Sources of chronic lead poisoning: Contamination of drinking water which has been in contact with lead; the use of food or chewing tobacco which has been wrapped in tinfoil containing excess of lead; drinking of beer or other beverages which have been in contact with pewter; handling of lead or its alloys; manufacturing processes in which lead or its compounds are used.

4. *Two antidotes for phosphorus*: I. Old, acid, unrectified French oil of turpentine, which forms with the phosphorus an inert compound of phosphorous acid. 2. Copper sulphate, which, besides being an emetic, may coat the phosphorus with copper.

5. *Chemical antidote for phenol*, sodium sulphate, which with phenol forms the insoluble phenolsulphonate.

Chemical antidote for nitric acid is magnesium oxide or hydroxide, which will dilute and neutralize the acid.

Chemical antidote for oxalic acid is syrup of lime, which forms the insoluble calcium oxalate.

Chemical antidote for mercuric chloride is milk, which forms an insoluble albuminate.

6. *Wood alcohol* is methyl alcohol, $H.CH_2OH$; *grain alcohol* is ethyl alcohol, CH_3CH_2OH. They both belong to the class of hydrocarbon hydroxides.

Treatment of poisoning by wood alcohol: Wash out the stomach, and administer a hypodermic of pilocarpine; strychnine is a serviceable tonic, and the iodides are said to benefit the amaurosis. Rectal injections of normal saline solution are useful.

7. Mercurous chloride is incompatible with KI because by the union of these two the soluble mercuric iodide is formed, which is poisonous. Thus $Hg_2Cl_2 + 2KI = 2KCl + Hg_2I_2$.

8. *Synthesis* is the chemical building up of a compound out of simpler compounds or elements.

Three synthetic organic substances used in medicine: Salicylic acid, antipyrine, and urotropin.

9. *To detect sugar in the blood*: A small amount of blood, obtained by wet cupping, is first freed from proteids, by adding an equivalent weight of sodium sulphate, and then boiling, and filtering, the filtrate thus obtained being used for the test. A solution is now made in a test-tube, by mixing two parts of phenyl-hydrazin hydrochloride and four parts of sodium acetate with about six cubic centimeters of water, and gently heating the fluid, if necessary, to effect solution. Five cubic centimeters of the proteid-free filtrate, while still warm, are added to an equal volume of the test solution. This mixture is then placed in a test-tube half filled with water, heated for half an hour in a water-bath, and allowed to stand until cool. When cooling of the mixture has occurred, it shows under the microscope the presence of the characteristic yellowish crystals of phenyl-glucosazon, either detached or in clusters, together with colorless crystals of sodium sulphate. (DaCosta's *Clinical Hematology*).

10. The antidote for most alkaloids is tannin; it precipitates the alkaloids and their salts and forms tannates which are comparatively insoluble.

MATERIA MEDICA.

1. MERCURY. *Preparations and doses*: Emplastrum hydrargyri; Hydrargyrum cum creta, dose 4 grains; Massa hydrargyri, dose, 4 grains. Unguentum hydrargyri; Unguentum hydrargyri dilutum; Hydrargyri oxidum rubrum; Unguentum hydrargyri oxidi rubri; Hydrargyri oxidum flavum; Unguentum hydrargyri oxidi flavi; Oleatum hydrargyri; Hydrargyri chloridum corrosivum, dose 1/20 grain; Hydrargyri chloridum mite, dose (laxative), 2 grains; (alterative) 1 grain; Pilulæ catharticæ compositæ, dose 2 pills; Hydrargyri iodidum rubrum, dose 1/20 grain; Liquor arseni et hydrargyri iodidi, dose 1½ minims; Hydrargyri iodidum flavum, dose, 1/5 grain; Liquor hydrargyri nitratis; Unguentum hydrargyri nitratis; Hydrargyrum ammoniatum; Unguentum hydrargyri ammoniati.

Incompatibles: *Mercuric chloride* is incompatible with alkalies and their carbonates, potassium iodide, tartar emetic, silver nitrate, lead acetate, lime water, and tannic acid; with *mercurous chloride*, mineral acids, alkalies, ammonia, carbonates, chlorides, cocaine, iodides, lead salts, lime water, sodium bicarbonate, and sugar.

2. LEAD. *Official preparations*: Plumbi acetas, plumbi iodidum, plumbi nitras, plumbi oxidum, liquor plumbi subacetatis, liquor plumbi subacetatis dilutus, ceratum plumbi subacetatis, emplastrum plumbi, emplastrum adhæsivum, unguentum diachylon.

Incompatibles: Alkalies, mineral acids and their salts, opium, potassium iodide, vegetable acids, bromides, carbonates, chloral hydrate, glucosides, salicylic acid, sulphates, tinctures.

3. *For diarrhœa, in an adult*:

℞ Salolis, 5j.
Bismuthi subnitratis.
Cretæ preparatæ āā 5iv.
Pulveris acaciæ q.s.
Aquæ cinnamoni q.s. ad ℥vj. M.
Sig.: A dessertspoonful every 2 or 3 hours.

For diarrhœa, in a child 2 years old:

℞ Bismuthi salicylatis, 5ij.
Glycerin, 5ij.
Misturæ cretæ, q.s. ad ℥iij. M.
Sig.: One teaspoonful every 2 or 3 hours, as necessary.

4. *Average hypodermic dose*: Of apomorphine hydrochloride, gr. 1/10 (as an emetic); of morphine sulphate, gr. ⅛; of nitroglycerin, ♏.j; of atropine sulphate, gr. 1/150; of pituitary extract, ♏.x.

5. ERGOT. *Official preparations and doses*: Extractum ergotæ, gr. iv; fluidextractum ergotæ, ♏.xxx; vinum ergotæ, 5ij.

6. The *potassium salts, with doses*, are: The acetate, gr. xxx; bicarbonate, gr. xxx; bitartrate, gr. xxx; bromide, gr. xv; carbonate, gr. xv; chlorate, gr. iv; citrate, gr. xv; effervescent citrate, gr. lx; cyanide, gr. 1/5; dichromate, gr. 1/5; ferrocyanide, gr. vij; hypophosphite, gr. vij; iodide, gr. vij; nitrate, gr. vii; permanganate, gr. j; sulphate, gr. xxx; and potassium and sodium tartrate, 5ij.

7. *Three motor depressants*: Aconite (dose of tincture, 10 minims); digitalis (dose of infusion, 5ij); camphor (dose of monobromated camphor, gr. ij).

Three sensory depressants: Opium, dose gr. j; belladonna (dose of tincture, ♏. viij); chloral hydrate, dose gr. xv.

8. *Three antiseptics used internally*: Phenol, dose gr. j, well diluted; creosotum, dose ♏. iij; hexamethylenamine, dose gr. iv.

Three antiseptics used externally: Phenol, 1 to 5 per

cent. solution; hydrargyri chloridum corrosivum, 1:1000 to 1:5000 solution; iodoformum.

9. *A diuretic*:

℞ Potassii acetatis.
Potassii bitartratis.
Potassii citratis, āā ʒij.
Aquæ q.s. ad ʒviij. M.

Sig.: One tablespoonful in half a glass of water after each meal.

10. "A *serum* is a product obtained by injecting into an animal, usually a horse, a culture (*e.g.* Diphtheria) or the toxin from a culture (*e.g.* Streptococcus) of the organism. Serums may be subdivided into—(a) *Antitoxic serums*, such as Diphtheria and Tetanus, which are obtained by injecting filtered cultures into the animal used to provide the serum. (b) *Anti-bacterial serums*, such as Anti-Streptococcus and Anti-Gonococcus, in the preparation of which unfiltered cultures are used. Serums are usually injected in the flank or between the shoulder blades, the skin having previously been cleansed and the syringe carefully sterilized. Cases are on record where they have been given intravenously with normal saline solution and also per rectum.

"A *vaccine* is a finely divided suspension of killed cultures of a microorganism which is injected directly into the human subject. The object is to stimulate the individual to elaborate his own antibodies, which results in increased resistance to the ravages of bacterial infection. Vaccines are of two kinds—(a) *Autogenous*—prepared from the organism isolated from pathological material taken from the patient. (b) *Stock* prepared from virulent cultures of the organism, isolated from other cases of similar bacterial origin. Vaccines are administered by subcutaneous injection by means of an all-glass hypodermic syringe. The site of injection may be the flank, thigh, shoulder, or back. The skin is first sterilized by a pledget of cotton wool saturated with a suitable antiseptic, *e.g.* lysol.

"Briefly, the difference is that with a serum the opposing influence to the toxins is produced outside the human body, while with the vaccine it is produced inside and the degree of immunity conferred is greater with the latter than the former. It should also be noted that the dose of a serum is much higher, from the standpoint of the amount of fluid injected, than in the case of a vaccine. With the former the dose usually ranges from 10 c.c. to 50 c.c., while with the latter it is, as a rule, not more than 1 c.c." (*Holland's Pharmacy Handbook.*)

THERAPEUTICS.

1. *Flexible collodion* is used as a protective application, also to prevent bedsores, seal wounds, close punctures made by aspirators. *Cantharidel collodion* is used as a blistering agent.

2. *Boric acid* is a feeble disinfectant; in dilute solution it is antiseptic and soothing to mucous membranes; it is used as a dusting powder and in lotion and ointment in cases of ulcers, eczema, wounds, burns; in cystitis it may be used to wash out the bladder; it is also used as a disinfectant in conjunctivitis.

3. *Salicylic acid* is used externally as an antiseptic; internally, it is given for rheumatism, migraine, gout, sciatica, cholelithiasis. It is a specific for rheumatic fever. It is generally given in the form of sodium salicylate, but the lithium, ammonium, and strontium salts are also used.

4. *Sodium bicarbonate* is an odorless white powder, with a salty taste, soluble in 12 parts of water, insoluble in alcohol. It is used as an antacid, antipruritic, and analgesic; internally, it is sedative to the stomach, but in large doses it stops the gastric digestion. Given after meals it relieves hyperacidity of the gastric juice. It is *incompatible* with acid substances, heavy metals, and alkaloidal salts.

5. *Spiritus ætheris nitrosi* is a transparent liquid with a peculiar penetrating odor and a sharp and sweetish taste; it is inflammable. It is used as a diffusible stimulant; it is also diaphoretic and diuretic and slightly antipyretic. Dose 15 to 60 minims.

6. *Ethyl chloride* is a gas at normal temperature and pressure, but it is usually supplied condensed into a liquid which is volatile, colorless and inflammable. It has a pleasant ethereal odor. It is used as a general anesthetic in short operations where ether is not desirable. It is not so safe as nitrous oxide, and is followed by headache and vomiting. It does not relax the muscles. It is said to give rise to erotic sensations.

7. *Alumen* is alum, a crystalline solid, of sweet and astringent taste, and acid reaction; soluble in about ten parts of water, freely so in glycerin, insoluble in alcohol. It is used as an astringent and styptic, and is useful in stopping bleeding from the nose, gums and superficial cuts. The *exsiccated alum* absorbs more moisture, and so is somewhat caustic as well as more powerfully styptic, and has been found useful in bleeding tooth cavities, hemorrhoids, and soft corns. Internally alum is used as an astringent mouth wash or gargle; also as an emetic.

8. *Arsenic trioxide* is antiseptic, irritant and caustic; it causes inflammation, severe pain and necrosis of tissue; it is used as an aid to digestion, in dyspepsia, in the vomiting of alcoholism or pregnancy; in anemia and leukemia it increases the number of the red cells; it is a general tonic and improves the appetite, digestion, bodily vigor and body weight. The *liquid preparations* are: Liquor acidi arsenosi, liquor potassii arsenitis, liquor sodii arsenatis, liquor arseni et hydrargyri iodidi. All of these liquid preparations (except the liquor potassii arsenitis) can be administered with acids.

9. *Hexamethylenamine* is a crystalline solid without odor, and of a sweetish taste. It is readily decomposed by acids and by heat, is insoluble in ether, slightly soluble in alcohol and in water. It is used in infections of the genitourinary tract, bacteriuria, typhoid, infections of the gall-bladder and in cerebrospinal meningitis. Its action is due to the splitting up of the compound, and the release of formaldehyde. The danger of large doses lies in the fact that the patient may suffer from frequent micturition, hematuria, pain in the bladder, irritating urine; sometimes the kidneys may be irritated; headache, skin eruption and gastric irritation may also follow large doses.

10.

℞ Liquoris potassii arsenitis ʒjss.
Sodii salicylatis ʒv.
Glycerini, ʒj.
Aquæ menthæ piperitæ q.s. ad ʒiv. M.

Sig.: Take one teaspoonful in water, gradually increasing to a dessertspoonful, after meals.

This prescription may be used for cases of diabetes mellitus.

(To be concluded.)

Books Received.

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THE MEDICAL CLINICS OF CHICAGO. Published by W. B. Saunders Co., Philadelphia and London, Bi-Monthly, July, 1916. Volume 2, No. 1. Illustrated; 220 pages. Price $8.00 per year; foreign, 35 shillings.

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Original Articles.

SYPHILIS OF THE NERVOUS SYSTEM.*

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THE number of patients who show involvement of the spinal fluid in the secondary period of syphilis bears a certain relation to the total percentage of cases with lues of the nervous system. In a series of cases of secondary syphilis examined in my hospital service two years ago less than 20 per cent. revealed abnormalities in the spinal fluid. Recently another series of 63 cases were punctured; 10 showed very slight changes as to lymphocytosis and globulin content, coming well within the borderline cases, while 15 exhibited a definite increase in cells and globulin with a positive Wassermann reaction in 7. Thus 25 per cent. of the cases gave evidence of a definite pathological condition of the cerebrospinal axis, while 16 per cent. showed trifling abnormalities. The significance of the latter we are not prepared at this time to state, but it may be assumed that they are only transient and part of the systemic affection.

The standard used was a cell count over 5, a globulin content demonstrated by the Pandy test, a positive Wassermann reaction in amounts to 2.0 c.c. of fluid, and the color changes elicited by the Lange test. Statistics in the literature treating of abnormal fluids in the secondary stage of lues are variously quoted at from 10 to 90 per cent. In criticism of this disparity, it is possible that too much significance has been attached to minor changes as increased pressure, increase of a few cells or a trace of globulin. My belief is that only such individuals who show very conspicuous changes as evidenced by a definite cell count, globulin and positive Wassermann are candidates for one or the other of the different clinical types of cerebrospinal syphilis and that in a large majority of patients the spirochaetae must be destroyed spontaneously or by therapeutic agents administered in the ordinary way. It is said that from 9 to 25 per cent. of all syphilitics develop disease of the nervous system. These figures have little value at present as they were compiled before the era of laboratory diagnosis and must be revised on the basis of more exact data. With our modern aids of diagnosis we are in a position not only to differentiate the specific from the non-specific types of disease but also to make the diagnosis of syphilis in many cases that would otherwise go unrecognized.

Our greatest hope in the cure of syphilis of the nervous system lies in the adequate handling of the infection in its early inception. In other words it must be prophylactic. Failing this, too great stress cannot be laid upon the early recognition of signs or symptoms which point to involvement of the cerebrospinal axis. The syphilographer and dermatologist by contact with cases of secondary syphilis are in a position to discover the earliest clinical signs of involvement, such as irregularity of the pupils and irresponsiveness to light, exaggeration of the knee jerks, headache, auditory and ocular defects, or oculomotor paralyses. These are all positive indications for lumbar puncture. If dermatologists and genito-urinary surgeons were familiar with the earlier manifestations of nerve involvement they would uncover many cases of nervous syphilis against which a therapeutic attack could be made and the patient rendered secure from future degenerative changes.

The treatment in the early active stage must be intensive and systematic and should consist of a combination of salvarsan and mercury, for we have learned that salvarsan alone is apt to be followed by neuro-recurrences. It has also been shown that in patients inadequately treated a pleocytosis, marked increase of globulin and a strongly positive Wassermann reaction may be present without evincing any subjective discomfort, the condition remaining latent for years until symptoms of tabes or paresis make their appearance. When these cases are clinically developed irreparable damage has already been done to the nerve tissue. It is therefore incumbent upon the syphilographer to treat the fresh infection energetically and wherever practicable to examine the spinal fluid at the completion of the treatment or, in the absence of physical signs, after a provocative injection of salvarsan which should be given one year after the Wassermann reaction has been continuously negative.

In the treatment of luetic affections of the nervous system it is important to properly instruct patients that the procedure is a long drawn out one and unless they are willing to place themselves under the care of a physician for one or two years it is hardly worth while to undertake it. It is true that the progress of certain types can be arrested by intravenous therapy alone combined with mercury and potassium iodide. I have had under observation for the past five years cases of cerebrospinal syphilis of the basilar meningovascular type where salvarsan was administered only intravenously and the fluid findings have become negative, the symptoms have disappeared, and there has been no relapse. In a few cases of tabes and optic atrophy the condition has been brought to a standstill and even shown marked improvement. This method, however, is inadequate for the great majority of sufferers for I have repeatedly seen patients who have had 10 to 15 intravenous injections of salvarsan with the pro-

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longed use of mercury and potassium iodide with little or no change in the fluid findings or clinical symptoms. After a course of subdural injections both symptoms and serological findings greatly improved.

Chart I—Spinal Fluid Findings in Early Secondary Syphilis.

Case.	Date I	Date II.		Serum Wass.	Cells.	Glob.	Wass.	Lange.	Remarks.
M. B.	1/16	3/15	16	Sluggish pupils.	++++	6	±	Negative	Luetic curve	Very marked maculo-pap. rash.
J. B.	10/15	15		Dizziness; exag. reflexes	++++	27	Negative	Negative	Luetic curve	
D. B.	10/15	1	16	Dilated fixed pupil	++++	7	+	Negative	Luetic curve	Grouped papulo-squam. rash.
M. B.	11/15	11	15 15	None	++++	2	+	Negative	Negative	
P. M.	10	15 2	16	None	++++	6	Negative	Negative	Negative	
J. F.	9/10/15	1/15	16	Pupils sluggish	++++	11	Negative	Negative	Negative	Papulo-pustular rash.
S. G.	12/	15 1	16	Iritis	++++	1	Negative	Negative	Negative	
E. G.	12/	15 4	6/16	Right disc hazy	++++	6	Negative	Negative	Negative	
M. M.	12/	15 1	16	Impaired hearing	++++	12	Negative	Negative	Negative	
G. M.	1	16 2/	16	Irreg. fixed pupils	++++	31	+	Negative	Luetic curve	Generalized papular rash
C. N.	1	16 3	16	None	++++	4	Negative	Negative	Negative	3 chancres.
J. P.	3/	16 4	10 16	None	++++	5	Negative	Negative	Negative	
H. R.	12 3	15 1	16	Iritis	++++	2	Negative	Negative	Negative	
T. R.	?	9	15 15	Headache; exag. knee jerks; fixed pupils; convulsions	++++	34	++	4+ 0.2	Paretic curve	Mucous patches; H rash, 9-15 15.
J. B.	12/	15 1	29 16	Reflexes exag.; choroiditis; papillo-edema left disc	++++	260	+++	4+ 0.4	Luetic curve	
J. D.	12/	15 2	16	Fundi congested; right disc hazy	++++	0	Negative	Negative	Luetic curve	
J. W.	12/	15 1	16	Pains temporal region	++++	0	Negative	Negative	Negative	
M. R.	1	16 3	15 16	Headaches; reflexes sluggish	++++	3	Negative	Negative	Negative	
E. M.	6	15 8	15	None	++	1	±	Negative	Negative	
A. L.	10	15 1	16	Beginning papillitis; exag. reflexes	++++	2	Negative	Negative	Negative	
A. R.	9/	15 ?		Tinnitus; dizziness; right disc obliterated, left cloudy	++++	9	++++	4+ 0.8	Luetic curve	Symmetrical, ulcerating lesions arms two mos. duration. Malignant precocious syphilis.

In outlining the course to be pursued I have found the best procedure to be the following:

In patients with a negative blood and a positive fluid a provocative injection of salvarsan should be administered and the Wassermann reaction taken at stated intervals. If it remains negative subarachnoid treatments may be begun at once. When both blood and fluid are positive two or more injections of mercury should precede the intravenous administration of salvarsan and after two or three doses of the latter the intraspinal injections instituted, supplemented by the intravenous. In paresis my usual practice is to begin the intraspinal injections after the first intravenous treatment. The intervals between doses, and this applies to both routes of introduction, are regulated by the reaction produced in the patient. Where subdural injections are well borne they may be given in series of four to six one to two weeks apart with a rest period of four to six weeks and then another course. Frequently tabetics are met with in whom intraspinal medication cannot be repeated oftener than once a month.

Since the introduction of the intraspinal method in 1912 by Swift and Ellis we have treated in my private work and at the Vanderbilt Clinic 110 cases of tabes, 13 of taboparesis, 12 of optic atrophy, 25 of paresis and 20 cases of other types of cerebrospinal syphilis. At first the original method of Swift and Ellis, namely, the use of auto-salvarsanized serum was adhered to; for the past two years the modification of Ogilvie with the direct addition of salvarsan to the blood serum. In the earlier work it soon became apparent that salvarsan in quantities of one, two or three milligrams often acted as an irritant and caused traumatic irritation of the lower cord which manifested itself in bladder paralysis, numbness of the gluteal region and extremities with an increase in the ataxic state. Some patients bore these large amounts of the drug without apparent injury and even marked improvement in their symptoms, but we felt that the risk was too great to justify their continuance. The method, however, seemed a logical one and if a therapeutic quantity of the drug could be used which would accomplish the desired result short of an irritating effect it was well worth a thorough trial. The reasons for employing this technic instead of the auto-salvarsanized serum recommended by Swift and Ellis were, first, that a definite quantity of salvarsan can be introduced and the dose more easily controlled; second, the addition of a definite amount of the drug with a smaller quantity of serum, and third, the possibility of preparing several doses with the blood serum removed from a single patient. The last is of decided advantage in treating a large number of hospital patients. Then, too, the intraspinal injections often have to be repeated more frequently than the intravenous injection and in cases with a negative serum there is no indication for the latter. Experience has shown that the blood serum removed indifferently from patients acts equally as well as the autogenous serum. The most important step in the technique, besides absolute asepsis, is the use of a salvarsan solution which is nearly neutral. The blood is removed from an arm vein and is centrifugalized, the serum pipetted off and then centrifugalized again to insure complete removal of any red cells. To 8 to 10 c.c. of this serum 1 20 to 1 2 milligram of salvarsan according to indications is added. This mixture is incubated at 37 C. for 40 minutes and inactivated at 56 C. for one half hour.

As to dosage, patients with general paresis tolerate larger doses than those suffering from tabes or other forms of cerebrospinal syphilis. For tabetics the initial dose should be 1 20 to 1 10 milligram, depending on the bladder involvement and the amount of pain present. The quantity is gradually increased; in some patients never exceeding the dosage of 1 10 milligram; in others 1 5 or 1 3 milligram may be injected without producing much discomfort. The intervals depend upon the reaction and vary from ten days to a month. In paretics the primary dose may be $\frac{1}{4}$ milligram running up to $\frac{1}{2}$ milligram and repeated at intervals of a week to ten days to two or three weeks. In patients in whom the cord is not involved weekly injections of $\frac{1}{4}$ milligram have not produced any irritative symptoms. There is apparently no limit to the number of in-

jections that can be given. An activation of the lesions after the first injection is not a contraindication to the use of the drug but calls for care.

The reactions incident to the treatment of nervous syphilis fall under two headings: (*a*) Those dependent upon the intravenous injection and (*b*) those occurring after intraspinal medication. The majority of patients, providing small initial doses are given, preceded by two or three injections of mercury, are able to take the intravenous treatment without bad effects. Patients are met with from time to time, however, who from the first do not support it well even in small doses. They become actively ill an hour or two after treatment, with chill and vomiting and complain of malaise for the next day or two. A woman with paresis and a man with tabes under observation had this type of reaction each time they were treated. A reaction of an anaphylactoid nature characterized by flushing of the face, rapid breathing, with cardiac or thoracic oppression is also seen in a certain number of patients. More rarely severe reactions are encountered with alarming symptoms as chill, fever, headache, and mental excitability succeeded by coma. Several years ago I noted such a reaction in a patient with cerebrospinal syphilis. In two or three days he entirely recovered and subsequent treatment was well tolerated. Another patient who had a hemiplegia several years before and who at the time under discussion was being treated for choroiditis and atrophy of the retina, became unconscious three days after an intravenous injection of 0.35 gm. of salvarsan. He regained consciousness after several hours but was disoriented, mentally confused, and unable to speak. The next day he was normal. As part of the intravenous treatment an intensification of the lancinating pains, girdle sensation, or bladder symptoms is not uncommonly met with in tabes if a large dose is administered. With the exceptions noted reactions can usually be obviated by keeping well within the dosis tolerata for that particular patient, if necessary making the intervals a little shorter in order to get the desired effect.

days, and is relieved only by the recumbent position. Usually it can be avoided by rest in bed for forty-eight hours after treatment, but occasionally patients suffer in spite of this precaution. Rarely vomiting as an isolated symptom comes on two or three hours after treatment and lasts until the next day.

Of the second group by far most of the discomforts occur in tabetics and usually manifest themselves as exacerbations of their lancinating pains, gastric or rectal crises. They appear within a few hours, last for a day or so, and are often severe enough to require the administration of opiates. These paroxysms are then followed by longer intervals of freedom from pain. It is well to bear this type of reaction in mind and to give very small doses for the first few treatments as its severity is often proportional to the size of the dose. Since we have been using 1/10 to 1/8 or even as low as 1/20 milligram patients have complained of less inconvenience. Alcoholics and morphine habitués tolerate both intravenous and intraspinal treatment very poorly as a rule. Among the severer types of reaction bulbar symptoms sometimes make their appearance, that is, shock with marked laryngeal crises, irregular respiration and partial loss of consciousness. In a paretic this train of symptoms developed each time after the first three injections, becoming less intense and then ceasing altogether. He is now treated with amounts of 1/5 to 1/4 milligram without any discomfort. It is interesting to note that his first intravenous treatment was followed by mental confusion. In another case, a woman with general paresis, aphasia and mental confusion lasting several hours developed two days after the fourth intraspinal treatment of 1/10 milligram. There was no paralysis. In yet another case a fatal hemorrhage ensued within twenty-four hours after the introduction of ¼ milligram. The patient was a man, aged 47, markedly alcoholic.

From the foregoing it will be seen that while in the larger percentage of cases there is little risk attending either intravenous or intraspinal treatment in disease of the nervous system it is not altogether a harmless procedure and it cannot be emphasized either too strongly or too frequently that every precaution be carefully carried out in regard to preparation, size of dose and sufficient rest in bed after treatment. Whether in the subdural injections the untoward effects mentioned are due to the irri-

Chart II—Serological Findings in Treatment of Syphilis of Nervous System.

Case.	Diagnosis.	Before Treatment.				Amount of Treatment.			After Treatment.			
			Cerebrospinal Fluid.							Cerebrospinal Fluid.		
		Blood Wass.	Cells.	Glob.	Wass.	Salv. I. V.	Salv. I. S.	Hg. Injts.	Blood Wass.	Cells.	Glob.	Wass.
W. G.	Tabes	4+	34	2+	4+ 0.2	19	1	17	+	3	+	Neg.
T. C.	Tabes	Neg.	9	4+	2+ 1.0	11	6	12	Neg.	3	Neg.	Neg.
I. G.	Tabes	4+	160	4+	4+ 0.4	6	5	12	Neg.	0	+	Neg.
S. G.	Tabes	4+	73	4+	4+ 0.4	5	6	8	Neg.	0	Neg.	Neg.
L. F.	Tabes	4+	128	4+	4+ 0.2	10	7	12	4+	0	+	Neg.
J. H.	Tabes	4+	150	4+	4+ 0.4	11	9	20	4+	0	±	Neg.
W. R.	Tabes	Neg.	81	4+	4+ 0.4	2	7		Neg.	0	±	Neg.
E. M.	Tabes	Neg.	12	2+	+ 1.0	12		22	Neg.	6	Neg.	Neg.
G. R.	Tabes	4+	70	4+	4+ 0.4	12	11	12	Neg.	0	Neg.	Neg.
L. C.	Optic atrophy	Neg.	60	4+	4+ 0.2	5	6		Neg.	0	+	Neg.
S. G.	Optic atrophy	Neg.	35	4+	4+ 0.6	3	4		2+	4	2+	Neg.
H. R.	Cerebrospinal syphilis	4+	46	4+	4+ 0.6	12		40	Neg.	0	Neg.	Neg.
H. H.	Cerebrospinal syphilis	4+	235	4+	4+ 0.6	13	1	20	4+	8	2+	Neg.
E. R.	Cerebrospinal syphilis	4+	90	4+	4+0.1	7	7	8	4+	0	+	Neg.
M. G.	Cerebrospinal syphilis	4+	96	4+	4+ 0.4	4	11		4+	0	Neg.	Neg.
L. T.	Cerebrospinal syphilis	4+	51	3+	4+ 0.2	9	10	26	2+	3	+	Neg.

The reactions following subdural injections form two groups: (1) Those incidental to puncture, and (2) those due to the medicated serum itself. In the first class belongs chiefly the headache which sometimes develops twenty-four to forty-eight hours after the treatment, coming on shortly after the patient gets up. It is very annoying, lasts several

tating action of the arsenic or to a change in pressure acting on the diseased vascular walls cannot be positively asserted.

The results of the treatment may be grouped according to their effect on the biological findings and the clinical status of the patient. Cure, amelioration, or failure is dependent upon the extent and type of the morbid process, *i.e.* whether an active meningeal inflammation is present or degeneration of the essential nerve structures. While the same physical signs may be produced by both processes their prognosis is quite different. Where the symptoms are due to an active inflammation with strongly positive fluid the outlook is very encouraging. Where, however, the underlying process is one of degeneration with atrophy and sclerosis with negative or weakly positive fluid findings the prognosis is not so hopeful.

Of the laboratory findings the pleocytosis is most susceptible to therapy and usually disappears after a few injections; in many cases with intravenous treatment alone. The Wassermann reaction and the globulin content are more refractory, the latter persisting even after the Wassermann reaction has become negative. The influence of treatment on the Wassermann reaction in the fluid depends upon the type of the affection met with. In cerebrospinal syphilis it is more quickly affected by the combined treatment than in tabes or paresis. In some cases 13 injections intravenously and 1 injection intraspinally brought about a reversal. In others 16 intravenously and 15 intraspinally were required. Treatment should be continued for a time in spite of a negative reaction as I have seen it become positive again after several months where it had been intermitted with the first negative findings. In tabes with the reaction positive with 0.2 c.c. or less of fluid it is usually very slow to disappear but gradually grows weaker under prolonged treatment. Its persistence is suggestive of taboparesis. This can be confirmed by the colloidal gold test. In taboparesis and paresis the reaction is most resistent; in some cases fixed. In the greater number of cases I have under observation it has only been influenced in the higher dilutions remaining ++++ with 0.4 or 0.6 c.c., even where 30 to 40 or more intraspinal injections have been given. In a few cases the reaction has become completely negative to 2.0 c.c., the globulin has been reduced to a trace and the colloidal gold test has been changed from a paretic to a luetic curve. These in my experience are exceptions. In one case where the serological findings have become practically negative the patient has steadily deteriorated clinically. The gold sol reaction usually runs parallel with the other findings and changes from a luetic curve to normal in cerebrospinal syphilis and tabes, and from a paretic curve to a luetic curve, rarely normal, in general paresis and taboparesis.

The clinical achievements may be summarized as follows: In active progressive tabes the lancinating pains are ameliorated or disappear entirely. The gastric and rectal crises are usually controlled or regress and the ataxia is markedly decreased and in some cases has disappeared. Disturbances of sensation partially or completely clear up. Spincter control and sexual power have improved or returned to normal. The patients feel better, put on weight and are able to resume their occupation. I have noted no return of absent reflexes. The following cases are illustrations of the therapeutic results obtained:

Case I.—Tabes; man (40). Syphilis eight years ago. For one year severe pains in legs, girdle sensation, and marked ataxia; absent reflexes, Argyll-Robertson pupils. Blood ++++; cerebrospinal fluid (3/11/13): Cells 70, globulin ++++, Wassermann ++++ to 0.4. Treatment, 12 intravenous; 10 intraspinal injections. Patient could not take mercury and was unrelieved by intravenous treatment. Under subdural therapy leg and girdle pains disappeared. He is able to walk without assistance, has gained considerably in weight, and for two years has been back at his work. Serological findings have remained negative.

Case II.—Tabes; man (32). Syphilis fourteen years ago. Tabetic symptoms four years. Loss of coordination; most pronounced ataxia; lancinating pains, rectal and vesical control impaired. Blood ++++. Fluid (2/10/12): Cells 34, globulin ++, Wassermann ++++ to 0.2 c.c. Treatment, 15 salvarsan injections intravenously; inunctions and injections of a soluble mercurial salt. Result: Freedom from pain; spincter control regained; sexual power improved; most marked change in ataxia, which is now scarcely perceptible, and patient is able to walk several miles a day.

Case III.—Tabes and optic atrophy; woman aged thirty-two. Syphilis probably fifteen years ago. For four years severe headaches; manual incoordination and slowly progressing numbness. For two years girdle sensation and ataxia. Reflexes absent; marked Romberg; gait very ataxic, patient almost unable to walk. Eight months before treatment vision of left eye became impaired and then failed entirely. Right eye showed irregular pupil, sluggish to light and accommodation; fundus slightly pale, vision 40/20. Blood Wassermann ++++, spinal fluid cells 67, globulin ±, Wassermann ++++ to 0.4. Treatment, 19 salvarsans intravenously; 16 mercuries; her last salvarsan injection was given 7/24/14 and the last mercury 1/5/15. The latter drug she did not tolerate well. In March, 1915, she gave birth to a child. She was seen again on April 27, 1916; a most remarkable improvement in her gait had taken place; only a very slight ataxia remained. The condition of her right eye has remained stationary. Her general health is very much better and she has gained 12 pounds in weight.

Case IV.—Tabes; man aged forty-one. Syphilis

Chart III—Serological Findings in Paresis Before and After Treatment.

Case.	Date.	Before Treatment. Cerebrospinal Fluid				Blood Wass.	Treatment.			Date.	After Treatment. Cerebrospinal Fluid.				Blood Wass.
		Cells.	Glob.	Wass.	Lange.		Blood I. V.	Salv. I. S.	Hg. Injts.		Cells.	Glob.	Wass.	Lange.	
H. H.	12-12-13	26	+	4+ 0.6	5555554100	++++	30	34	7	1-12-16	2	++++	4+ 0.4	5555555430	±
E. R.	8-23-11	180	++++	4+ 0.05	5544443200	++++	31	41	38	2-16-16	6	++	4+ 0.2	5555542000	+++
E. N.	11-11-14	16	++++	4+ 0.2	5555543100	++++	14	23	....	4- 5-16	13	+	4+ 0.4	5555430000	++++
H. M.	5-11-14	30	++++	4+ 0.05	5555543100	++++	12	20	....	6- 1-15	8	++++	4+ 0.4	5555543000	++++
G. J.	3-29-15	75	++++	4+ 0.4	5555543200	++++	10	15	29	4-21-16	12	++	4+ 0.4	5555553000	Neg.
W. A.	2-20-15	290	++++	4+ 0.05	5555542100	++++	23	25	22	4-26-16	7	++++	4+ 0.4	2223332000	++++
W. R.	6-28-15	100	++++	4+ 0.05	5555542000	++++	7	5	10	4-29-16	2	++	4+ 0.4	5555432000	++++
L. F.	11-27-15	75	++++	4+ 0.1	5555555543	++++	5	18	....	4-19-16	10	++++	4+ 0.1	5555555400	++++
H. W.	5-19-15	3	++++	4+ 0.1	5544442100	++++	11	20	11	12-22-15	0	±	2+ 1.0	1134330000	Neg.
F. P.	10- 5-15	60	++++	4+ 0.2	5555555200	++++	10	16	2	3-29-16	6	++++	4+ 0.2	5555554300	++++
B. A.	12-18-15	45	+++	4+ 0.1	5555542000	++++	6	9	16	4-19-16	7	++	4+ 0.4	5555430000	++++
W. L.	3-24-16	110	++	4+ 0.1	5555554400	++++	4	3	6	4-12-16	24	++++	4+ 0.1	5555554400	++++
M. H.	3- 9-16	35	+++	4+ 0.6	5555543000	++++	4	4	3	4-19-16	10	+++	4+ 0.4	5555543000	++++
F. H.	1-22-16	40	+++	4+ 0.2	5555555520	++++	4	4	....	4-29-16	11	++++	4+ 0.1	5555555300	++++
T. R.	2-11-16	34	++	4+ 0.2	5555542200	++++	13	..	50	4-26-16	3	++	4+ 0.6	5555530000	++++

nineteen years ago. For two years has had rectal crises. Knee jerks normal; station good; bladder slow; sexual power weak; pupils unequal and sluggish to light. Blood Wassermann ++++. Spinal fluid: 150 cells, globulin ++, Wassermann ++++ to 0.4; Lange: luetic curve. He has had 11 intravenous and 9 intraspinal injections of salvarsan in dosage of 1/10 to 1/5 milligram and two courses of mercurial injections. Excepting a trace of globulin his serological findings are negative; his blood remains ++++. The crises which were intensified by the first few intraspinal injections have cleared up entirely.

Case V.—Incipient tabes; man, aged forty-three. Syphilis twenty years ago. Was first seen January, 1911, at which time he exhibited the symptoms of incipient tabes. Two years before he had had double vision. His serum was ++++. His fluid examination on November 21, 1912, showed 14 cells, positive globulin, negative Wassermann. Serum, negative. Treatment, 10 intravenous injections of salvarsan and several courses of mercurial treatment. Clinically the pains which had been a pronounced symptom have entirely disappeared. The patient was again punctured April 27, 1916, and showed a normal spinal fluid and a negative blood.

The results in optic atrophy depend upon whether the nerve substance is primarily affected or whether there is an extension from the meninges. In primary optic atrophy the essential tissue it attacked either by gummata or Huebner's arteritis (Nonne). It is, however, more often affected secondarily and the vast majority of cases show positive findings in the fluid with symptoms of tabes. In the former treatment at first appears to be effective in arresting the process but some cases slowly progress in spite of the apparent improvement. In the secondary form energetic treatment is especially indicated and gives a more encouraging prognosis.

Case VI.—Optic atrophy; woman, aged forty-eight. Syphilis six years. One year after infection double vision and strabismus. When seen in October, 1912, vision of right eye 20/50; left, fingers at 4 inches. Cerebrospinal fluid: Cells 24, globulin +, Wassermann ++++ with 1.0 c.c. She has had 23 intravenous injections of salvarsan, 1 intraspinal, several courses of mercurial injections, inunctions, and mixed treatment. Under treatment her headaches ceased; vision in right eye was 20/20, and in left, fingers at 2½ feet. August 21, 1914, the report on her eyes was as follows: Vision of the right 20/20, of the left, fingers at 5 feet. The condition has remained stationary and at the present writing the fields of vision are normal in the right eye and somewhat improved in the left. The paleness of the left disc is apparently about as before.

Case VII.—Optic atrophy; man, aged thirty-five. Syphilis denied. June, 1911, blurring of left eye; pupils irregular, sluggish to light and accommodation; both discs pale, left markedly so. Vision of left 50/20, right 40/20. Spinal fluid October 6, 1912: Cells 15, globulin ±. Wassermann —; serum ++++. Treatment, 17 salvarsan injections intravenously, several courses of mercury and mixed treatment. February 16, 1915, ophthalmologist's report read as follows: Accommodation has increased in both eyes; vision has improved; the irides react to the stimulus of light but they are a little sluggish. Optic disc improved somewhat in color and fields of vision improved.

Case VIII.—Optic atrophy; man, aged fifty. Syphilis denied. Gonorrhoea twenty-five years ago. In June, 1914, complained of pains in legs and double vision. Disturbance in walking; slight headache. Impairment of vision of right eye, 20/70 —. Blood ++++. Spinal fluid: 0 cells, globulin +, Wassermann ++++ to 0.8; Lange: luetic curve. Treatment, 3 intravenous, 12 intraspinal injections of salvarsan besides mercury. The patient feels better in every respect, his mind is clearer, he has no pain, and no fatigue after exercise. The vision in this right eye is now 20/30. Spinal fluid: 12/1/15 cells 2, globulin +, Wassermann ++ with 1.0 c.c.

Summarizing the cases of paresis, all showed the typical biological findings; namely, a positive serum; an increase of cells varying from 18 to 290, strongly positive globulin content and a positive Wassermann in dilutions of 0.2 or less. The colloidal gold test gave a typical paretic curve, that is, complete decolorization in the first four to eight tubes. The number of intraspinal injections administered varied from 6 to 41 alternating with intravenous injections of salvarsan.

In the following abstracts are cited the average type of case met with and from these can be gauged the hope to be held out for amelioration of the condition:

Case IX.—Paresis; man, aged 38. Syphilis in 1902. No symptoms until 1912, when he complained of headaches. No treatment. In April, 1914, mental symptoms with marked excitability and grandiose ideas developed and he was placed in an institution. On February 20, 1915, he came under my care. His serum was ++++; spinal fluid: cells 290, globulin ++++, Wassermann ++++ to 0.05; gold reaction paretic curve. Since that time he has had 23 intravenous and 25 intraspinal injections of salvarsan, inunctions and intramuscular injections of mercury. In June, 1915, a marked improvement in his mental condition had taken place, he was able to leave the sanatorium, and the treatment was then carried out on the ambulatory plan. In August, 1915, he seemed normal mentally and went back to work. His fluid became normal as to cells, globulin remained strongly positive, and Wassermann positive to 0.4; the Lange showed a luetic instead of the paretic curve. His remission lasted until July, 1916, when he became careless about his work in the office, destroyed letters, and exhibited kleptomaniac tendencies.

Case X.—Paresis; man, aged fifty. No history. Mental symptoms began the early part of 1912. May 8, 1914, serum ++++; spinal fluid: cells 48, globulin ++, Wassermann ++++ to 0.2; gold test positive. He has had 15 intravenous and 24 intraspinal injections of salvarsan. Clinically, he has not returned to his former mental condition but is able to remain with his family, takes part in their social affairs, goes to the theater, etc. In other words, for the past two years he has led a comfortable vegetative existence and excepting an increased irritability now and then has had no mental outbreaks. His fluid is normal only as to cells.

Case XI.—Paresis; man, aged forty-five. Primary lesion in 1905 for which he had three years' treatment. In 1904 he developed continuous headaches, was unable to attend to business, became very nervous, disconnected and rambling in his talk. May 13, 1914, blood ++++, spinal fluid cells 30, globulin ++++, Wassermann ++++ to 0.05; goldsol, paretic curve. He received 12 intravenous injections and 20 intraspinal injections from ¼ to 1 milligram. The first few injections were followed by short periods of improvement during which his mental condition cleared up somewhat but never returned to normal. The latter treatments produced no change whatever and in April, 1915, he developed attacks of weakness, became progressively feebler until the latter part of June, when he died. Serologically there was only a reduction in the cell count.

Case XII.—Paresis; physician, aged thirty-eight. Chancre 1904. No treatment. In July, 1914, change in personality. Wassermann at that time ++++; grandiose ideas, filthy habits, forgetful. Spinal fluid: August 23, 1914, cells 180, globulin ++++, Wassermann ++++ to 0.05, colloidal gold reaction positive. Had 30 intravenous injections of salvarsan, several courses of mercurial injections, and 41 intraspinal injections from ¼ to ½ milligram. His mental improvement was quite marked after the second intraspinal injection and progressive improvement was noted until the latter part of March, 1915, when he had a severe headache; became talkative and excitable, with grandiose ideas and delusions, some disturbance of speech, memory very poor. Under continued treatment this phase passed over. He went about his ordinary affairs, attended lectures and clinics, and had a remarkable insight into his condition. Excepting a tendency to become easily excited and quarrelsome, with two attacks of transient aphasia, his remission lasted nearly a year. On February 22 of this year he had an attack of aphasia which did not clear up, and two days later a hemiplegia. He died on the 26th. A post-mortem was not obtained.

In estimating the results obtained in the treat-

ment of paresis the benefit to be looked for, it seems to me, depends on the duration and the anatomical involvement. In the type with the preponderant changes in the meningo-vascular structures with a high cell count, a rather sudden onset and marked mental disturbance, good results can be obtained and the process perhaps kept stationary. Where the parenchymatous tissue is chiefly involved with atrophy or sclerosis, attended by a low lymphocytosis, and an insidious onset, the degenerative changes have probably advanced too far and at most only temporary improvement can be expected with almost certain relapse. No one can tell when paresis begins and by the time it is clinically manifest the damage is irretrievable. Cases that respond to treatment and those where therapy yields but indifferent or no results give the same gold reaction with decolorization in the paretic zone. We have, therefore, in this test not a means of distinguishing possible different types but a method of separating true paresis from forms of meningo-vasculitis which simulate it.

While a promise of cure cannot be held out in cases which are clinically developed, the treatment is of value in inducing remissions, making the patients socially possible and amenable to home care and in a few cases restoring them partially, at least, to economic efficiency. If the diagnosis of paresis can be established through the colloidal gold reaction when the affection is in its incipiency we may be justified, perhaps, in speaking of a cure.

Conclusions.—In order to develop a successful plan of treatment in syphilis of the central nervous system it is necessary to have a clear idea of how infection takes place. In the secondary period of the disease about 25 per cent. show marked changes, while a lesser number reveal slight abnormalities in the spinal fluid. We conclude, therefore, that a certain percentage of such cases are cured spontaneously or during the general treatment of the disease. It is impossible to estimate the number of syphilitics who later develop manifestations on the part of the nervous system but it is probably larger than the statistics show. A careful examination of affected individuals would probably reveal a larger number with abortive or rudimentary tabes or paresis or involvement of the fluid without objective signs.

All patients at the end of the first year of their infection should be punctured whether or not they have manifestations or positive signs of the disease. If the fluid remains negative to all of the tests they can be assured with a reasonable amount of certainty that they are not menaced by the possibility of a later development. Furthermore a positive colloidal gold test with a persistent positive Wassermann in the high dilutions points to an impending paresis whether or not the patient shows mental impairment. In other words, years before the stigmata of degeneration appear the pathological process is at work in the central nervous system. When the clinical symptoms of paresis develop like memory, speech, hand writing defects, etc., the disease has already existed for years. This statement also applies to tabes. The results obtained in the treatment of tabes would seem to confirm the hypothesis that this affection is primarily an inflammatory process involving the meninges rather than a degenerative process, for if the latter assumption were correct we could not hope to derive benefit from the treatment.

\ West Seventy-seventh Street.

PRESENT METHODS OF EXCRETA DISPOSAL IN RURAL SCHOOLS.

A SERIOUS MENACE TO HEALTH.

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Every American child is entitled to the best that we can give him in everything—good food, good clothing, a good home, good training and teaching, good sanitary school houses and environs—to fit him to grow up into a healthy citizen well equipped to fight the battle of life. When we fail to provide these we fail in our public duty—we fail to give the child a square deal—the square start in life. We give him a handicap, we start him in life with the worst possible handicap he could have—a poorly developed and poorly nourished body, with lessened resisting power to the inroads of disease, and sooner or later he falls an easy prey. It is, therefore, of the very highest importance that those who have to do with the rising generation of children should have uppermost in mind that the greatest asset of a State is its healthy citizens, and that unless we do provide proper surroundings and safeguard the children with all these precautions, we cannot expect the children to grow up into healthy adults.

Formerly we were taught that the country is more healthful than the city, but recently the sanitarians have called attention to the fact that the death rate in the cities is falling more rapidly than in the rural districts. The cause of this is simply a matter of sanitation. While sanitary provisions have been made for the cities, the rural sections have been neglected. When the country was first settled, the population was scattered, the virgin soil was not polluted, and the water was pure, and many of the communicable diseases, which now claim thousands, were practically unknown.

How frequently have we heard the country district schools spoken of as the bulwark of the nation, and yet how little has apparently been done for the public schools of the rural communities? In the cities and larger towns the schools are, as a rule, fairly well administered, and the buildings are fairly well constructed and equipped in accordance with hygienic measures, but how about the sadly neglected rural schools? When we come to the question of hygiene in the rural schools, this is one of the supreme questions of the hour, I take it.

It is highly important for us to understand that these schools are provided for that part of our population which is peculiarly susceptible to the influences of bad hygienic surroundings. It is a sad fact that the schoolhouses in many of our rural communities are far from sanitary. The majority of the rural school children spend from 25 hours to 30 hours weekly in the schoolroom for a period of several months each year for 8 to 10 years. Such being the case, the need of hygienic schools, environs, and a good personal hygiene must be admitted.

The filth and foul air of the toilet rooms of many schools in decent town communities are at times unspeakable, but if we venture into the remote rural districts we are wont to observe rather frequently the total absence of this important sanitary accommodation of the schools, and the scholars responding to the daily calls of nature must make use of whatever privacy is afforded by objects or irregularities of the ground surface in the vicinity of

the buildings, with necessarily resulting soil pollution, and the great liability of dissemination of disease germs contained in the excreta thus deposited on the ground. In this manner pathogenic germs may and do easily gain access to the source of supply of the drinking water for the school, and illness, many times of a serious nature, results from the use thereof.

The dangers of the drinking water are thus twofold: from the impure water and from the common drinking cup, still so obviously in use in the rural schools. Numerous instances are on record where typhoid fever has been spread in schools in this way.

The unscreened and unprotected privy constitutes a grave and serious menace to the health of any community. Sooner or later it is bound to become the depository of typhoid and at that moment it becomes a hazard to every resident in the vicinity, for that very environment has created an insect host and otherwise capable of disseminating the scourge to every point of the compass.

The water supply of the rural school generally comes from a shallow well or surface spring. Drinking water coming from such a well is liable to be more dangerous than that from a spring, as it is frequently located very near the school building, and is more liable to receive surface drainage from the vicinity of the school, the outhouses, if any, and consequently it is more likely that it will be polluted and its use will be a greater risk to health.

Hookworm is another plague of the rural schools of the Southern States. In the South many of the country school children go barefooted, and the young hookworm or larva gains entrance to the body, usually through the skin of the unprotected feet, and after a circuitous route through the body finally reaches the alimentary canal, and attaches itself to the wall of the bowel, and feeds and grows to mature size. It is not the loss of blood, as is popularly supposed, that causes the severe anemia, paleness, and other symptoms in the victim of hookworm infection, but the toxin introduced into the system by the hookworm. These sufferers are pale, and appear bloodless. Many deaths result from it in the warm, semitropical, and tropical countries all around the world. This disease is disseminated by means of human excreta, containing the eggs, reaching the ground.

In some rural schools in the United States, the surveys made by the Public Health Service have shown that from 82 to 98 per cent. of the children were suffering from hookworm. In other schools the infection of children with hookworm has been shown to be as low as 10 to 12 per cent.

Hookworm is not the only intestinal parasite found in school children, the eggs of which, reaching the ground soil in the excreta, are disseminated by wind, dust, hands, feet, flies, hogs, dogs, fowls, and birds, and gaining access to water and food, after having undergone development to the larval stage, again enter the body and produce diseases. Chief among these are the *Amœba histolytica* or *tetragena*, the cause of dysentery; *Balantidium coli* and *Trichomonas*, causing diarrhea; *Oxyuris vermicularis*, *Ascaris lumbricoides*, *Trichuris trichiura*, and *Hymenolepis nana* or dwarf tapeworm, which produce intestinal troubles. The direct effect of these infections on the child, aside from other bad effects, is reflected in physical dwarfing and mental retardation. Especially have these conditions been observed in school children, as shown by studies made in those ill with the ineffection by the Public Health Service.

The Rockefeller Sanitary Commission, in the course of its surveys, found the rural schools a marked factor in producing diseases. In the case of 46,748 school children examined, who were harboring intestinal parasites, 22,782, or 48 per cent., had hookworm infection; 7,991, or 20 per cent., had ascarides; 2,915, or 15 per cent., had *Trichocephalus dispar;* 1,246, or 18 per cent., had dwarf tapeworm; 134, or 0.2 per cent., had *Strongyloides*, and 48, or 0.09 per cent., had *Oxyuris*.

Of most interest is the fact that many of the cases of ascaris infection presented marked symptoms of mental retardation and anemia.

The Public Health Service, in an extensive survey of sanitary conditions, in from 1,200 to 1,300 rural schools, conducted in 13 States, with the examination of some 175,000 school children, during the past three years, has shown that in the territory covered there is a general lack of sanitary supervision in the construction and maintenance of rural school buildings and outhouses, and of medical supervision of the pupils. In the course of these investigations we failed to find the installation of a scant dozen of sanitary privies for the use of rural school children.

Recent investigations conducted by the writer showed in 66 rural schools in Indiana that only 6 outhouses out of 132 were in good sanitary condition, while 42 were in fair condition, and 84 were in bad sanitary condition. A more recent survey of the schools of Manatee County, Florida, also conducted by the writer, showed a somewhat better sanitary condition of the privies in the urban schools as also in the 11 rural schools visited. Here, out of the total number of outhouses examined, 6 were found to be in good sanitary condition, 2 in fair sanitary condition, and 14 in bad sanitary condition. The results as shown by these two surveys with respect to the insanitary condition of the outhouses will serve as the standard of index of the insanitary condition of outhouses at all of the rural schools inspected by the service during the aforementioned period. A description of one of these outhouses will practically apply to all, as also the insanitary conditions found to exist about them. The majority of these wooden buildings are simply set upon the surface of the ground, with no attempt at closing them up beneath or at the back to prevent the free access of domestic animals and flies, and they were noted in all stages of deterioration—from newly constructed to dilapidation. The majority of these outhouses were found to be in a horrid condition. In many the conditions were unspeakably dirty and insanitary, being filled with excreta almost to the seat. In a considerable number of the outhouses objectionable odors were so strong as to make it practically impossible to remain within. Almost 50 per cent. of the outhouses were found to be without screens in front of the doors, and at many schools the outhouses for the boys and girls were placed near each other on the premises. At some schools they were placed near each other on the premises. At some schools they were built double for the use of the two sexes, and some of these double outhouses were noted to have no screens in front of the doors. In a few outhouses a urine trough had been provided for boys, while in others the seats and floors were urine soaked, and the odor of urine was all-pervading. In some instances an attempt to suppress the strong arising

odors by the use of lime was noticed. In a very few instances was it observed that any attempt at cleaning up and removal of the excreta had been made at the beginning of the school year, or in fact at any time.

The question may, therefore, be asked what is the real method of excreta disposal at rural schools, which, in the main, are provided with outhouses, as have been described. The answer is a very simple one—no method, but a trusting to luck and nature's elements. The excreta are allowed to accumulate in the most of instances until the space below the privy seat is filled to overflowing and conditions become intolerable. Then the outhouse is removed to another spot near by, a few shovelfuls of earth or none at all, usually the latter, are sprinkled over the accumulated excreta of years, and the same process is gone through with again until the privies are again filled and require further removal.

What is happening in the meantime? Aside from the dissemination of disease-producing bacteria and parasites by flies, animals, fowls, and other means there is an infiltration of liquid excreta, rain, and urine washings from the excreta on to the surface and into the soil constantly going on, with the result that in the course of time the surface as well as the subsurface water becomes polluted, and there is percolation of any pathogenic organisms that may be present in the excreta, through the subsoil into the water of the shallow wells or springs, frequently located, as our surveys have shown, dangerously near the outhouses. How great is the danger of pollution of the drinking water of rural schools in this manner is strikingly shown in some instances observed during these surveys. At one school the source of water supply, a shallow dug well, some seven or eight feet deep, was noted as being but sixty feet away from the nearest outhouse, and the natural drainage of the outhouse was directly toward the well. There was grave danger of the pollution of the drinking water from the outhouse, which was in a highly insanitary condition. At another school, the well, a shallow driven one, eighteen feet deep, was found to be located less than 100 feet from the two outhouses, with natural drainage toward the former. These houses were found to be in bad sanitary condition with years of accumulated excreta on the ground beneath them. The outlet from the outhouses was an open, shallow ditch, and infiltration of sewage into the soil along the whole course of the ditch was constantly going on, with constant danger of percolation of disease-producing organisms through the subsoil into the water of the well.

Glaring instances of indecency, as also grave danger, were noted during these surveys, through the privies having been located in close proximity to the school buildings. In one such instance it was observed that the privy, a highly insanitary one, by actual measurements, was but eight feet distant from an open window of the schoolroom, thus allowing the malodors from the privy to permeate the air of the room, and in addition offering an excellent opportunity for flies, which having fed on the possible germ-laden excreta but a few feet away, to transfer the infection to the food of the school children. Numerous other instances of a similar nature and equally as hazardous were noted.

The above are but instances of what was constantly being encountered during these surveys, showing the wide extent of dangerous negligence that exists to-day in rural schools in the United States.

The remedy for this menace to the health of the children of the public rural schools is not hard to find, but is difficult to apply, by reason of the fact that competent medical inspection of schools is still in its infancy in this country. True, it is that in our larger cities, and in some of the smaller ones, as also in a few rural communities, there is a regular medical inspection of the schools, but in the vast majority of the latter such a thing as medical inspection is still unknown.

In many sections of the United States the sanitary conditions surrounding many rural schools are scarcely other than medieval. Because of the absence of a privy, or almost equally as bad, a privy where the excreta are deposited on the ground soil, pollution of those places will spread disease to the pupils, and the infection may be carried to uninfected homes. An immediate and radical reform in the sanitary surroundings of these schools is urgently needed. If sanitary privies were used and intelligently supervised at the rural and urban schools there would be an immediate and marked reduction of hookworm disease, typhoid fever, and many other diseases produced by intestinal parasites.

In a word, a great step forward will have been accomplished when sanitary conditions surrounding the schools are improved to a point where the country school will not form—what it is to-day—the great disease-spreading center for rural and semi-rural communities.

Such as I have described are the insanitary conditions too often found in our everywhere neglected rural schools—among the school children of the people of our own land and of our own blood, of Anglo-Saxon lineage and intelligence.

It is no mere dream to describe here, though briefly, "The Country School of To-morrow." The little red or white one-room one-teacher school, about which we heard so much, located here and there, to the extent of a dozen or even more, in a single township, will be replaced by one consolidated school, placed as near the center as possible, and for the more distant pupils a daily to-and-from conveyance in groups will be provided. For the school ample grounds, of many acres, well laid out and beautified, with recreation grounds, will be needed. The building will be modern in every respect, and will represent the latest appliances in school sanitation and equipment, fireproof, roomy, of attractive architectural design, an excellent building, kept in excellent sanitary condition throughout, provided with well heated, properly lighted and ventilated class and recitation rooms, laboratories, agricultural and domestic science departments, manual training, music, with gymnasiums, showers, sanitary toilet rooms, with crematory or water sewage excreta-disposal facilities, and a large and attractive assembly room; and the school, in addition to being the educational center of the township, will be also the social improvement center of the community. These forces will then be working in harmony for the better education and greater uplift of the community, affording better health and greater happiness, and all for the creation of better citizenship, for a better State, and a better country.

Cause of Death in Intestinal Obstruction.—Snow concludes that neither starvation nor bacterial activity is responsible for death in intestinal obstruction, but that a toxic substance exuded from the duodenal mucosa is the cause of the lethal symptoms. Subcutaneous saline infusion prolongs life by replacing the fluids lost by vomiting and diarrhea.—*N. Y. State Journal.*

THE ECONOMIC VALUE OF SPEECH CORRECTION.*

By IRA S. WILE, M.D.,

NEW YORK.

As man is essentially a social animal his speech is probably his most important social characteristic and activity. As the main instrument of intercommunication, its full development is essential for the fullest evolution of human relations. While writing is valuable for self-expression, speech alone serves to promote spontaneous self-expression through thought utterance.

The political economist might object to the title "the economic value of speech correction" on the grounds that speech is not wealth, but merely one of the means of acquiring wealth. Technically speaking, value is a power which an article confers upon its possessor of commanding in exchange for itself the labor or the product of labor of others. The degree of efficiency of labor depends upon many causes, including the physical organization and the mental equipment of the laborer. However, regardless of the capital invested in speech improvement, the social economist will hardly deny that health, intelligence, and the power of communicating ideas are essential and better than wealth and are paramount phenomena in promoting the activity of man in acquiring and making just use of his wealth. Correct speech is not necessarily an essential in the acquisition or utilization of money, but adds a tremendous force for living well and wisely.

From the standpoint of the school, speech correction is indicative of the centering of thought on the education of children rather than upon the importance of the subjects taught. It is a new manifestation of the idea that educators must consider the subjects whose minds are to be developed as of equal importance to the subject matter to be taught. Obviously, the most vital phase of speech improvement lies in the organization of elementary school instruction and methodology, so that bad speech habits may be checked during the school life of children. The prevention of speech defects, in so far as slipshod teaching is responsible for them, is a large field which has scarcely received adequate cultivation.

Recognizing the social economic value of speech, it is patent that the attainment of fluent unimpaired habits of speaking represents a distinct gain to the community. The value, therefore, of speech correction would be represented by the saving to the community of expenditures now involved as a result of existent or future speech defects. It is exceedingly difficult to establish with even approximate mathematical precision the economic cost of speech defects. In this country, data are not available to determine the total number of persons suffering from speech defects. The economic importance of speech defects depends upon the functional ability of individuals, and at various ages the importance of speech defects varies. It is obvious that the importance of a speech defect in a child of 5 is less than in a man of 20.

Speech defects cannot be considered as isolated phenomena. There are no reliable estimates of the number of individuals suffering from speech defects without the complication of an organic or functional derangement such as further decreases the economic value of an individual. Speech defects among the deaf and the feeble-minded, for instance, constitute only a portion of the potential weakness of the individual and their speech defects therefore can be considered simply as a part of the general disability lessening the economic worth of the afflicted.

All speech defects represent abnormalities. In a wide sense abnormal children are "those afflicted with anything whatever that unfavorably affects their lives in relation to the social medium in which they live." Consequently speech defects represent abnormalities which *per se* limit the possibilities of children and adults to realize to the utmost their potential power for uniting in the activities of the world.

In the London County Council report of 1909, there is presented an investigation of 19,303 children showing 1.95 per cent. to have speech defects and 1.3 per cent. to be stammerers. Rouma reported in the children of Belgian cities 11.5 per cent. with speech defects and 1.4 per cent. stammerers. Conradi, in 1904, studied 87,444 children in American cities and found 2.46 per cent. among them with speech defects and 0.87 per cent. to be stutterers. On this basis, there would be in our American schools over 500,000 with speech defects and at least 200,000 stutterers. Some defects such as lisping are known to decrease as school life progresses, while stuttering increases while children are in the classroom. This represents the field of activity whose economic value we are to consider. In general, the ratio of boys to girls possessing speech defects is as three to one. The total number involved is in excess of the number of blind and deaf in our population and fully equal to the number of mentally defective children and insane.

Speech defectives and particularly stutterers are likely to be backward and even retarded in their school work, although there are many who maintain excellent position as measured by ordinary standards of school progress. A large proportion of stuttering, probably 50 per cent., could be prevented by adequate provision for improvement in methods of school instruction. A large proportion of the stutterers are curable. The limitation of the stutterer is marked, not so much in his powers of acquisition and appreciation as in his ability to give verbal expression to his thoughts. His mentality may be intact but his opportunities for giving evidence of his mental power are hampered by virtue of his explosive expression which deprives him of an attentive audience. Frequently he may be regarded as stupid or dull when he is suffering from sensitiveness, self-consciousness, embarrassment, or anxiety because of his affliction. Attempts at speech improvement likewise are of service in detecting early organic disorders of cerebration and may at times lead to the prevention of irrational extravagances.

Speech improvement in schools is productive of the saving which may be secured through preventing what Fletcher of Clark University referred to as "the leakage of energy" on the part of both teacher and class, which ensues during the attempted recitation of a stutterer. Systematic speech improvement classes save the time of the teacher and the class. They promote more rapid progress and secure more concentrated attention upon the subject matter being taught by preventing the diversion of attention to the peculiarities of the individual child reciting. To this extent, they

*Read before National Educational Association, New York City, July 6, 1916.

are productive of a monetary saving in the cost of teaching, though mathematically this would be difficult to estimate.

It is patent that the average sufferer from a speech defect is deprived of his fullest opportunities of education and self-expression. This is manifest, particularly, in those unfortunates who are actually willing to be deemed dull and backward rather than suffer through reciting; and under ordinary circumstances the very act of recitation increases and tends to protract the disability.

The various types of speech defects which are dependent upon malformations, such as harelip, cleft palate, hypertrophied tonsils and adenoids, and dental deformities reveal an economic loss which must include the cost of operations, nursing care, and hospital treatment. While speech improvement classes will not tend to reduce these expenditures, they will save valuable time by securing prompt attention to them. Unfortunately, permanent defects may result even after medical and surgical aid have been afforded, but under these circumstances the potentialities of the sufferers are less circumscribed than before and their activities in occupations may be encouraged to a greater extent than was previously possible.

The majority of speech defects are combined with defects of vision, hearing, and muscular coordination, or cerebral mal-developments. Of the twenty million children in this country it has been estimated that five per cent. have impaired hearing and twenty-five per cent. have impaired sight. It has been adjudged that some impediment in speech exists in three per cent. of the school children. There is no differentiation, however, in so far as I have been able to ascertain, as to the nature of these various impediments.

The character of speech defects and their importance varies according to the degree of deafness. Mutism results if deafness occurs before speech is developed. This subject however is beyond our present interest.

Studies in speech correction may indicate in numerous instances that stuttering has been increased by the attempt to make sinistrals dextrals; and the speech defect thus resulting may actually serve to impair the industrial progress of the child for the sake of securing uniformity in classroom methods. Experience in our own schools has demonstrated that stuttering and lisping children may be restored to normal speech and participate with naturalness and greater effectiveness in the work of their classes.

In Germany, investigation has shown that of the 15,000 children in special schools for defectives, 6 per cent have associated speech defects. It is thus obvious that the economic importance of speech defects is bound up in considerations of the importance of such causative conditions as feeble-mindedness, deafness, and neuropathic manifestations.

Assuming that estimations by Van Sickle, Witmer, and Ayres are correct in that 4 per cent. of our public school children are feeble-minded, it would mean that there are 800,000 feeble-minded children in the United States, although it must be appreciated that of this number 100,000 are genuinely mentally deficient and should be treated in institutions instead of public schools. If, then, investigation should show that the German percentage, 6 per cent., would apply to all our defectives, there would be in the United States forty-eight thousand defective children with speech defects. Ninety-four cities in the United States have special classes for defectives, 46 make special provision for the deaf and semi-deaf, and 3 have classes for stammerers, stutterers, lispers, and the dumb.

The economic cost of speech defects is registered in the limitations of occupations that are available for individuals who have speech deficiencies. The more pronounced the defect, the more limited the field of activity. Few employers desire deaf-mutes and their industrial situation is most difficult. Law and medicine, or even the ministry, are opened occasionally to those talented individuals who have risen above their speech limitations and have been able to submerge their sensitiveness and self-consciousness. Their self-expression depends upon what they have to say rather than the way they say it.

Where feeble-mindedness is the basic condition, the occupation is naturally limited by the scale of intelligence to which the individual child can rise. In the New York Institute for the Deaf and Dumb, instruction is given in the shoe shop and tailor shop, while carpentry, printing, gardening, and similar occupations are made available. State institutions for the deaf and dumb require 5 to 7 years of training at a per capita cost of three hundred and twenty-five dollars per year. It has been estimated that one in every twenty-four hundred of the population in the United States is a deaf-mute. This would indicate that there are about 37,500 deaf-mutes in the United States. This would mean that the mere cost of education in the State institutions for all of these deaf-mutes cost approximately twelve million dollars per annum. How few are taught to speak! We cannot actually cure blindness, nor mutism, nor idiocy.

Recognizing the industrial limitations of those suffering from speech defects and appreciating the obstacles to professional life, their undesirability as teachers, their handicaps as physicians, their limitations as pleading lawyers, and their impossibility as preachers, it is but natural that we should seek to preserve or secure their potential utility by restoring them to normal speech function. To what extent can this possible economic loss be prevented? In the experience of the elder Gutzman in 46 German cities, 72.7 per cent, of stutterers were cured, 23.6 per cent. were improved, and in only 3.7 per cent was there complete failure. Dr. H. Gutzman found 89 per cent. cured, 9 per cent improved, and in 2 per cent. failure. Coen, in Vienna, cured 60 per cent, improved 30 per cent., and had only 10 per cent. of failures. Chervin claims that success is almost certain if the general conditions are favorable and fulfilled. Under such circumstances, failure to promote speech improvement is an indication of indifference to or ignorance of the possibilities of reclaiming to full usefulness victims of this speech derangement.

Another economic gain is to be secured through speech correction in the prevention of industrial accidents. The relation of speech defects to the cost of industrial accidents has been hinted at in those reports which attribute a part of the accidents to the inability of employees to speak the prevailing language of the factory, mine or shop There are numerous positions where quick utterance is required and in which stuttering might and does jeopardize the lives of fellow workmen in times of emergency.

The importance of discouragement, anxiety, family distress, embarrassment, diffidence, and shyness upon the development of high moral character cannot be estimated. Wherefore, among delinquents speech deficiencies are noted with greater frequency than among the normal population. This may be due possibly to the fact that there is a greater amount of feeble-mindedness among delinquents and the speech defect is coincidental. If speech correction can prevent any children from moral degeneration, its economic usefulness is enhanced.

The relation of speech defects to normal delinquency has not been determined, although it is possible to appreciate that speech defects, if interpreted as closely related to mental abnormality, probably play some part in the problems of delinquency. It is apparent that self-expression through speech is a most important factor to constitute the mental defective a social asset. It is doubtful if the cost of securing this result can be segregated. It would be unfair to guess at an allowance out of the computed costs of educating the feeble-minded.

In the ordinary public school system, the educational cost for correcting speech defects has not been estimated. A special teacher is necessary, an ungraded class is important. The development of normal speech must be facilitated through personal analysis of the underlying causes of the speech deficiency. It is vitally important, both for the benefit of the individual child with a speech defect and for the rest of the children in the class, that special classes for stutterers, stammerers, and lispers should be maintained with a view to developing normal speech for them.

Finally, in estimating the economic importance of speech defects, I can but repeat what I have already stated. The actual cost of speech defects to society cannot be estimated at the present time in dollars and cents. The limitations of self-expression is a loss to the individual and to the community. Speech defects which interfere with the fullest expansion of consciousness along the lines of culture and industry are anti-social. They decrease the social worth of the individual and rob the community of the full fruits of human mentality. They retard and pervert economic power.

In conclusion, I can but suggest that the work of speech improvement now scarcely begun must make tremendous gains during the next few years. The monetary expense is negligible in view of the possible gains to society. School systems should recognize that it is part of their function to develop to the full the latent possibilities of school children. This is impossible while we are neglecting a single type of those handicapped in learning. In the education of mental defectives, society can scarcely be repaid for the cost of education because so much of it is now spent upon those who will never be able to make adequate economic returns. In the case of speech defectives, particularly in the case of stutterers and lispers, this state is reversed. The improvement of speech defectives enhances both their economic and social value. Well may we paraphrase the statement of Dr. Caroline Yale to the instructors of the deaf, "The plea now should be not for more speech but for better speech." The plea should now be for more speech, for better speech, and for the prevention of speech defects.

230 West Ninety-seventh Street.

TREATMENT OF INOPERABLE CARCINOMA BY BIPOLAR IONIZATION.*

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While the unipolar method of ionic destruction remains a most valuable agency for the immediate eradication of small epitheliomas of the skin and mucous membranes, 93 per cent. of this classification having been reported as cured by this method in a somewhat recent communication to the Philadelphia County Medical Society,† grave cases of carcinoma and sarcoma have of late been placed by the writer under an improved bipolar technique, permitting of more thorough and more controllable destruction, and with a material lessening of the time during which the patient is under anesthesia.

In the bipolar technique the active needles are inserted just beyoud the peripheries of the growth while the indifferent, negative, electrode is inserted in its center, instead of being a pad on a distant body surface, thus confining the current and its chemical and thermic activities to the growth itself and its edges. As no material amount of current traverses the general body structures in this arrangement we are free to push the method to the point of producing a boiling temperature in the larger growths, thus adding the valuable agency of heat to the devitalizing chemical action of the dispersed ions of zinc from the erosion of the zinc electrodes attached to the positive pole. Both positive and negative electrodes are made of zinc, but the positive only for the electrochemical purpose of being dissolved into ions and dispersed throughout the growth. The negative electrodes are made also from sheet zinc for mechanical reasons, since thin plates of this metal may be readily cut by shears into self-retaining corkscrew, fish-hook, or crab's claw shapes for attachment to the center of the growth.

Heat alone is the destructive agency in both the diathermy and the Percy methods of treatment of cancer recently introduced. In the author's method, as outlined above, heat is merely an addition to the electrochemical destructive process, and is invoked only in large growths when heavy currents are needed. In small growths the ionization alone is sufficient, applied in the unipolar method; and so simple is this variation of the method that any physician who has the ordinary direct or galvanic current in his office has no excuse for permitting small epitheliomas of the skin surface to grow large from neglect, as he can destroy them in a few minutes by easily devised electrodes.‡

The following unpublished cases, in which the major bipolar ionization was employed, illustrate the varied technic demanded at times:

(303) Mrs. ——, aged 67, was referred by Drs. Rimer and Clover, of Clarion, Pa., September 23, 1913. Enjoying excellent general health, a lump had appeared on the scalp behind the right ear about eighteen months before, which had been removed by excision in December, 1912, the pathologist examining the specimen, pronouncing it carcinoma. Three months later recurrence was noted. On admission to the Sanitarium a growth the size of a horsechestnut emerged from the scalp

*Read before the American Electrotherapeutic Association, September 13, 1916.

†Ionization Treatment of Cancer; End Results of Twenty Years' Work.—*American Journ. Surgery*, September, 1914.

‡For further details of method, see "Ionic Surgery in the Treatment of Cancer," by G. Betton Massey, New York, A. L. Chatterton Co., 1910.

slightly posterior to the scar of former operation. It was firmly adherent to the underlying structures, apparently including the periosteum, and was beginning to break down. In the upper portion of the neck there was an enlarged gland, the size of a marble, situated at the posterior edge of the occipital insertion of the sterno-mastoid.

September 26, 1913. Under chloroform a bipolar ionization was done, a number of fine zinc needles being inserted beneath the growth and connected with the anode, and with the cathode attached to its center, a current of 500 milliamperes was gradually turned on. Infiltration with the ions occurred rapidly and complete devitalization was apparently complete in four minutes, when the current was turned off. Two minutes of maximum current of the same strength sufficed for the gland, with the needles similarly applied.

The sloughs separated duly under diluted zinc oxide ointment; but three months later, January 22, 1914, two more nodules were found, nearly as large as the original recurrence, just beyond the edge of the scar. A second major bipolar application was made at this time similar to the first, except that a current of 700 to 1000 milliamperes was used for a total of seven minutes.

The high malignancy and wide spread of the cell colonies was shown in this case by a third major bipolar ionization under ether being needed two weeks later, when 500 milliamperes were used for thirty minutes. The final resulting slough revealed a small portion of the outer table of the skull denuded. The healing of the wound appeared to be assisted by phototherapy, and the patient was discharged finally from the sanitarium to the care of home physicians three weeks after the last ionization. At this time there was a sinus leading to the periosteal denudation. A scale of bone separated spontaneously later under the ointment, permitting final healing of the wound from the bottom.

A letter dated April 20, 1916, states that the patient continues free from evidence of the disease.

(311) A farmer, aged 39, was referred by Dr. C. L. Clover, of Knox, Pa., August 14, 1914. The patient had had increasing nasal obstruction for years. Six months ago the right nostril became entirely obstructed and discharge and odor appeared, both of which were steadily increasing. One month ago the hearing also became impaired. He has had no severe pain. On admission the voice was nasal and choked, the hearing was impaired in the right ear, and there was a pronounced cancerous odor. Visual inspection of the anterior nares showed the posterior portion of the right nasal cavity obstructed by a smooth neoplasm. Visual inspection by the mouth showed little; but the vault of the pharynx, when cocainized, was readily explored by the forefinger and middle finger inserted behind the soft palate, palm upward. This procedure revealed a large growth the size of a lemon split in half attached to the vault by a slightly constricted base, the attachment extending further on the right than the left and involving the right Eustachian opening. The free surface was cauliflower-like, eroded, and bled freely on touch. No enlarged glands were found at this time. A specimen removed at operation was pronounced carcinoma.

August 15, 1914. Major bipolar ionization was employed under ether with the following technique: Three long, slender zinc electrodes, readily curved, with their soft rubber coverings, to a shape that would permit their inch-long bare tips being passed up behind the soft palate and into the base of the growth, parallel with the vault, were attached to the positive pole. A single negative, suitably insulated to near the tip, was then inserted into the growth through the right nostril, and a current of 500 to 1,000 milliamperes was gradually turned on and maintained for twenty-eight minutes. Considerable heat developed. The separation of slough and healing of wound were uneventful, and followed by improved breathing and voice.

Five months later, January 9, 1915, the patient had a clear voice and the site of the growth when explored with the finger showed a healthy cicatrix. A large, movable growth was discovered in the neck below the ear at this time, being apparently composed of a group of infected cervical glands beneath the edge of the sternomastoid muscle. A major bipolar application was made at this date with needles passed through the skin and beneath the growth, the negative being attached to the skin above it. A current of 1,000 to 1,100 milliamperes was employed for fourteen minutes. The slough came away in due time without hemorrhage, and appeared to include the whole of the affected group of glands. In May the scar was excellent, and appeared free from disease.

In August, nevertheless, a little over a year after the first application, a consultation with Dr. Clover revealed an even larger group of infected glands deeply seated in the neck, and it was decided that the external carotid should be ligated before another attempt at ionic destruction. A cutting operation was objected to by the patient, however, and the ionization was begun by the use of 1,000 milliamperes bipolar, under ether, for two minutes, it being the intention that this should be followed by minor applications after the separation of the slough. Severe secondary hemorrhage supervened on the fifth day, followed by death from repeated hemorrhages on the seventh day.

(331) A hardware clerk, aged 51, was referred by Dr. Omar Morgner of St. Charles, Mo., October 13, 1915. His general health had been good in spite of convivial habits until one year ago, when a carcinoma of the right side of the base of the tongue and floor of the mouth was diagnosed. Competent surgeons in St. Louis declined to operate. On admission, the left half of the tongue was found to be indurated beyond the middle line from tip to base, with a deep erosion on the lateral surface that was continuous with an equally extensive erosion on the right side of the floor of the mouth. The posterior edge of the growth extended to the fauces. He could swallow liquid food only. Pain in the tongue and in the left temple was constant. Two submaxillary glands were enlarged and protuberant.

Oct. 14, 1915. Under general anesthesia Dr. Warmuth ligated the external carotid artery, the operation being followed immediately by a bipolar application with active electrodes passed through the tongue just beyond the indurated portion, the completeness of the fixation being guided by a rubber-gloved finger in the pharynx; other electrodes were passed beneath the lower portion of the growth, and still others just beyond the buccal edge. These electrodes were insulated except the portions actually inserted in the tissues. Retracting the lips with a miniature lamp covered with a slender test tube and with a hard rubber retractor, a negative electrode was placed in the center of the growth and a current of 1000 milliamperes was turned on and maintained for thirty minutes. A boiling temperature accompanied the usual chemical effects. Destruction of the glands was postponed until the ligation wound had healed. The patient was fed through a stomach tube during convalescence. A week later the glands were destroyed by a bipolar application of 200 milliamperes under local anesthesia.

In December and January additional minor applications were made to remnants of disease in the floor of the mouth. The patient's condition being greatly improved, save for persistence of the neuralgic pain in the temple, he was sent home, but returned later showing increasing growth at the upper portion of the buccal edge and increasing pain. This growth caused a bulging of the cheek in the parotid region.

April 26, 1916. Major bipolar application of 500 to 1000 milliamperes for 30 minutes to the buccal growth in the parotid region, all electrodes being passed into the growth through the oral opening, with the lips retracted as before. The immediate result was a flattening of the distended cheek and parotid region and disappearance of the neuralgic pain that had hitherto been unaffected by the treatment. During the separation of the slough there was a severe hemorrhage, apparently from a reestablished collateral circulation, which was controlled by pledgets of cotton wet with Monsell's solution. Further active treatment was abandoned June 9, 1916, as there was distinct evidence of disease below the scar of the ligation wound in the neck, and the patient was sent home in a temporarily improved condition.

(332) J. F. L., aged 72, real-estate dealer. About Dec. 1, 1915, a small, whitish growth was found on the under side of his tongue by his physician, Dr. D. W. Levy of Philadelphia, who called in Dr. Franklin Brady, chief surgeon to the Roosevelt Hospital. At Dr. Brady's suggestion the patient was referred for ionization as he hesitated to excise one half the tongue on account of the patient's age, and of the further fact that the patient was then under treatment for a growth within the bladder which had caused several severe vesical hemorrhages.

January 3, 1916. There is a proliferating epithelioma on the under surface of the right side of the tongue,

near its middle, about 2 centimeters in diameter. No enlarged glands could be found. A minor bipolar application, that is one under local anesthesia, was carried out as follows: With the tongue held in extension by the operator's left hand encased in a sterile lisle thread glove to ensure a good but painless grip, the area beyond the growth was carefully infiltrated with a 2 per cent. solution of quinine and urea hydrochloride. At the end of seven minutes small zinc needles, sixteen in number, were inserted concentrically beneath the growth and a bipolar application of 200 to 350 milliamperes was made for eleven minutes, without material pain.

May 24. Scar in tongue perfect. No sign of disease. Patient has had another vesical hemorrhage and is in bed.

June 3. Patient died of uremia due to bladder trouble.

1823 WALLACE STREET.

THREE CASES OF ACUTE ANTERIOR POLIOMYELITIS TREATED SUCCESSFULLY BY TRANSFUSION OF CITRATED NORMAL BLOOD OF ADULTS.

BY G. A. RUECK, M.D.,

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I NEVER had had any patients suffering with acute anterior poliomyelitis and I knew the first and later symptoms of this disease only from books. Naturally I had seen patients after they had been crippled for life and when they were trying to diminish the effect of the abated disease by orthopedic treatment. Nevertheless, I was fortunate enough to be able to make an early diagnosis of the cases to which I was called when the epidemic of acute anterior poliomyelitis started this summer in New York City. But after the diagnosis was made it was rather discouraging to think that there was no curative treatment known and that even physicians who were considered to be authorities in the scant study of the virus could only make suggestions in regard to the treatment of this disease. Every suggested remedy had to be tried first and, strange to say, normal blood and its serum was declared not to be curative.

The serum of patients having recovered from an attack of acute anterior poliomyelitis and injected into the spinal canal, as suggested by Dr. Simon Flexner, seemed to me a rational remedy and has since given some good results, to judge from the reports in the lay and medical press in cases where it has been used in the Willard Parker Hospital and in hospitals which imitate its treatment. But not being connected with a hospital where anterior poliomyelitis cases are gathered together from the entire city although they are by no means all treated with blood serum, I should have had the greatest difficulty in procuring the blood and I should have needed first-class laboratory facilities in order to prepare the serum. These facilities I did not have. Besides the preparation of the serum would have taken too much time. But help had to be brought early and quickly before the large motor cells in the spinal cord and brain of my patients were completely destroyed, as nerve cells never can be replaced, and as we never can know in advance whether a patient will be killed or crippled by this disease or whether he will entirely recover. Complete recovery is a matter of chance and we should take no chances in such a serious disease. Then I wanted to help quickly before the Board of Health could take the children to an isolation hospital where they are kept comfortably in bed but where in the beginning nothing was done to cure them. I decided to treat my patients by transfusion of blood taken from healthy adults and prepared according to my method (reported in the MEDICAL RECORD, February 27, 1915 and April 15, 1916), with 2 per cent. sodium citrate solution. The reasons for this treatment which I used before the Board of Health began with the serum treatment, were the following:

1. Most healthy adults and children are immune to acute anterior poliomyelitis.

2. The blood of most people must contain antibodies or it must at least be able to produce antibodies rapidly when the virus tries to invade the body.

3. If most normal adults and children would not have any protective elements in their blood they all would contract the disease in case of an epidemic.

4. The transfused blood reaches brain and spinal cord quickly by way of the blood current.

5. The transfused blood is a ready food for the tissues (the nerve cells included) and the sick organism does not have to use up its energy to elaborate this blood from the ordinary nourishment passing through the alimentary canal and it can use this energy to fight the disease.

6. The method of transfusion of blood of adults seemed to me superior to the method of injection of serum of convalescents into the spinal canal of sick children, as there must be different strains of the virus just as in epidemic cerebrospinal meningitis. And as Dr. Flexner's polyvalent serum of cerebrospinal meningitis is not curative in all cases of the disease for which it is made, so the serum of people having suffered with acute anterior poliomyelitis which contains antibodies for only one strain of the virus cannot be curative in all cases. Besides we get in whole blood the action of the injected phagocytic cells.

7. People having been sick with acute anterior poliomyelitis are defective in some way or other. Naturally their whole blood or serum, the protective element against one strain of anterior poliomyelitis not counted, is inferior to that of normal adults.

8. Whole blood of adults is a protective agent and acts at the same time like a vaccine in most, if not in all, infectious diseases of children.

My cases were the following:

CASE I.—Kenneth S., Jamaica, 5 years old, of Swedish descent, weighing about 45 lb., was taken ill July 2, 1916. He had headache, chills, and vomiting. After the action of a cathartic he seemed to be well the following three days. In the evening of July 5 he had a high fever. July 6 his temperature was in the morning 104° and in the evening 105.4°. He was treated for "poisoning of the stomach" and received within two days seventeen enemata of two quarts each. The temperature during this time was about 104°. On July 8 he had muscular twitchings of the entire body, especially of hands and feet. July 9 he was delirious, drowsy, very restless during the night, and had a high fever. I saw the boy the first time July 10 at 2 P.M. His pulse was then 96, regular, of low tension and small volume; the temperature per rectum was 101° and the respiration 40 to 45. His eyes reacted to light and accommodation. The tonsils were not inflamed and the nostrils not obstructed. The tongue was heavily coated, the posterior half of its dorsum being brownish. The lips were dry and cracked. Heart and lungs were negative. He was drowsy, had a stiff and painful neck, and a painful back. The right side of the face and the right arm were slightly paralyzed. He could move the right fingers and the forearm, but could raise the upper arm only to the height of the shoulder. The left arm was normal. Left leg: reflexes present, ability to raise the leg is decreased—can stand on left leg. Right leg painful; he can bend but not extend the toes. All re-

flexes except the plantar are absent. Can raise the thigh to an angle of 45° to the body, cannot stand on right leg. Sphincters normal. Skin reflexes present. Skin clammy, of a bluish hue, no eruptions.

The cerebrospinal fluid, sent to the Board of Health and reported on a few days later, showed a few white cells, a slight reaction for globulin and a very slight reaction of Fehling's solution. July 11 at 1 A.M. he received a slow transfusion of 350 c.c. of maternal blood in 2 per cent sodium citrate solution (4 parts of blood and 1 part of solution) into the resected left median basilic vein. The amount of blood transfused was equal to 1211 c.c. in an adult of 150 lb. body weight. After the transfusion the boy had a slight cough, belching of gas, and an evacuation of the bowels. The feces were thin, brown, and offensive. He was talkative, conscious, and felt much better. At 8 A.M. he asked for food and received a cereal, milk, a soft-boiled egg, and bread.

July 12. Sleeps much and has little appetite. The neck is slightly stiff. The face is normal and the tongue clear. He can raise the right upper arm to the level of the vertex of the head and move it in all directions. The right leg is paralyzed; he can move the toes only. He can move the left toes and foot. The left plantar reflex is present, the knee jerk absent. He can bend the left thigh with difficulty, but not extend it. He was transferred to Willard Parker Hospital. On September 7, I examined the boy in this hospital. He looked bright and had red cheeks. Neck, face, arms, and trunk were normal. The left leg was normal, but the knee jerk was absent. He could stand on the left leg. The right thigh could be moved in all normal directions. The right knee jerk was absent and the right leg from the knee down was paralyzed. He could not stand on the right leg.

In general the outcome is satisfactory, considering the grave infection and the comparatively late date at which the blood transfusion was performed.

CASE II.—Ruth S., a sister of Kenneth S., fifteen months old, still nursed by the mother, became sick July 11 and died July 13. A blood transfusion which I offered to do six hours after the onset of the disease and which would have saved the child was refused by the father. Thirty-six hours after the onset of the disease I found her in a stuporous condition. The right arm was paralyzed. The other extremities were very painful and the neck stiff and painful. The temperature was 104°.

The older brother and the two older sisters of Kenneth S., remained well in spite of the great exposure to the disease.

CASE III.—Willard J., Jamaica, twelve months old, weight 21 pounds, breast fed, of Swedish descent, had for the last two days a high fever, was very peevish, restless at night, and seemed to have pain in arms and legs when touched, but took food. I saw the patient first July 12, at 10 A.M. He had motor paralysis of the extensors of the left thigh and leg. Sensation was present. He could not stand on the left leg. The neck was stiff and painful. He had adenoids and phimosis. The temperature per rectum was 100, the pulse 120 and the respiration 30.

July 12 at 1 P.M., he received 250 c.c. of citrated maternal blood into the resected left median basilic vein. When 200 c.c. were given the bowels moved and he passed gas and urine. The amount of blood injected in this case was equal to 1,786 c.c. of citrated blood in a man of 150 pounds of body weight. After the transfusion was completed he had a slight chill and took the breast. Extension of the left leg was possible. He could put the leg to the floor.

July 14. Extension of the left leg is not quite possible. There is no fever. The boy is playful. There is twitching of the muscles in sleep.

July 16. The boy can walk about twelve steps. Then he gets tired and has to sit down. He can extend the leg. The neck is normal. Appetite, bowels, urination and temperature are normal.

July 19. The boy was taken to the Jamaica New Hospital for Infectious Diseases because the family, not following instructions, had communicated with the child's uncle and his family, whose child was taken ill, too. The boy remained in the hospital eight weeks. He can walk and feels fine. The outcome in this case is a complete cure.

CASE IV.—A boy, patient of Dr. S., 3½ years old, breast fed, became sick July 5, 1916. He had anorexia, fever, was restless, peevish and crying most of the time. He had no appetite for five days, and was treated for malaria. July 6 to 8 he was playing on the street. July 9 he vomited and was feverish. July 9, 10, 11, and 12 the boy had fever, was restless during the night and crying when awake. The legs, especially the left leg, were painful when touched. He was in bed all the week.

July 15 the mother noticed that the boy could not stand on the floor, and that the left leg was flexed. Examination shows that the boy is well nourished, looks bright, has a good appetite, weighs about 40 pounds. He has adenoids and enlarged tonsils, is a mouth breather, and has phimosis. The legs, especially the left, are painful when touched or moved. The left leg is flexed. He cannot put the left foot on the floor and cannot walk. The tendon reflexes of both knees are absent. There is spasticity of the flexors of the left leg, the extensors of the left leg being paralyzed. He cries when sitting on the table and complains of pain in the back and legs, but feels comfortable when the legs are hanging down. The temperature is 99°, the pulse 120, the respiration 30.

July 18. The boy received a transfusion of 300 c.c. of maternal blood in sodium citrate solution into the left median basilic vein. The transfusion lasted one hour and was equal to 1,125 c.c. in an adult of 150 pounds of body weight. July 26. The boy can extend the left leg and walk on it. The blood transfusion was followed by an excellent result in this case.

Conclusion.—The firm belief in the curative action of normal adult blood in acute anterior poliomyelitis which caused me to perform a transfusion on the above three cases in the very beginning of this year's epidemic has been crowned with success.

I am only sorry that circumstances did not allow me to treat a greater number of cases. But the good results with normal human blood serum which are obtained now in the Willard Parker Hospital, two months after my blood transfusions, confirm my statements concerning the curative action of normal adult blood. I consider normal human whole adult blood superior to sera. It is a remedy to cure acute anterior poliomyelitis when used early and to prevent it (I believe) when used before the onset of the disease. Naturally it will be difficult to transfuse all children with blood in order to prevent a new outbreak of an epidemic of acute anterior poliomyelitis and of other infectious diseases of children, but whole human adult blood is the remedy.

633 EAST TWO HUNDRED AND FORTY-FIRST STREET.

THE DISCHARGING EAR.

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CHRONIC suppuration of the middle ear is frequently one of the most intractable disorders that we are asked to treat. Thanks to modern methods of dealing with acute ear infections and to the general removal of diseased tonsils, adenoids, and other disturbing nasal affections, running ears are not encountered nearly as often as formerly. There is no excuse for allowing an ear infection to lapse into the stage of chronicity, where its control becomes difficult or impossible. The German Emperor is reported to have a leaking ear which has caused and is causing much annoyance. It started in infancy, at a time when such complaints received but scant attention. To-day the poorest person is able to receive better care for an ear affection than the German ruler received fifty years ago.

Practically all middle ear infections start in the nasal chambers, after an acute febrile disorder, notably the grippe, tonsillitis, scarlatina, or measles.

Surf bathing and the highly popular but pernicious nasal douche are also accountable for many infections.

When a middle ear infection follows a febrile disorder, it usually occurs in the second week, when the febrile attack begins to abate. This is the period of reaction, during which the engorged vessels become relaxed and inflammatory exudate is thrown out. At this stage the systemic vitality is low and resistance to disease is poor. Ear infection after the grippe is especially to be feared, on account of the virulence of the infecting medium and the danger of mastoiditis and cerebral involvement.

The nose and the throat at all times harbor innumerable disease germs. Ordinarily these are kept out of the ear by certain safeguards, which protect the integrity of the middle ear and keep it sterile. It is difficult to infect the healthy middle ear. Experimentally, infectious material can be passed through the Eustachian tube and into the healthy middle ear without inducing disease. The foreign substance is promptly expelled into the nose. When, however, the Eustachian tube becomes involved in the general disorder, its protective influence is in abeyance and the middle ear is vulnerable to attack. Sneezing, coughing, and blowing the nose violently are the acts by which infectious substances are usually forced into the ear.

The middle ear of infants is extremely assailable on account of its nearness to the nose, only a short wide tube separating them. The slightest physical derangement in a baby is apt to react upon the middle ear. The mere cutting of a tooth, an attack of tonsillitis, or a slight intestinal disturbance may be the cause of a serious middle-ear infection. Whenever an infant is ill from any cause in which the distress is acute and the fever is high, it is well to think of the ear. Quite often a physician is puzzled regarding a baby's ailment until the ear suddenly starts to flow and discloses the seat of disease.

Of the disorders of child life, scarlatina is the most destructive to the ear. Under the influence of this virulent streptococcic infection, the drumhead and the ossicles are soon eradicated, unless the infection is speedily combated. Twenty per cent. of the deaf mutes and a large proportion of the people who are compelled to go through life with a disabled ear owe their misfortune to scarlatina. Measles and diphtheria are also answerable for many discharging ears, but they are much less injurious to the hearing than is scarlatina.

A discharging ear usually begins this way. When the middle ear becomes infected it becomes filled with serum or exudate. Frequently the secretion escapes into the nose and no harm results. Nearly every one has experienced the deafness and fulness in the head during a heavy cold. It comes from the fluid within the middle ear. If perchance the fluid is unable to escape into the nose it soon fills the various compartments of the middle ear, including the mastoid cells. In seeking an exit the exudate presses against the drumhead and gives rise to the distressing pain known as earache. It is said that convulsions in babies are more often caused by earache than by anything else. The convulsions are the result of meningeal irritation. Fortunately the suffering of infants is seldom prolonged. Their frail drumhead soon yields to the pressure and breaks. The moment the tension is relaxed, pain and fever cease as if by magic. Occasionally, owing to the presence of scar tissue from former infections, the drumhead is resistant and the exudate is forced to seek another place of exit, which is usually through the mastoid cells. It must be borne in mind that in infants the shell of bone that separates the middle ear from the brain cavity is extremely thin and sometimes it is absent, its place being taken by a fibrous membrane. It is thought that the infecting agent of most cerebral affections in babies enters the skull at this point.

Generally an ear discharges for about a week before it stops. If, however, reinfection occurs, or if the process of repair is interfered with, the discharge may last indefinitely. An ear that continues to discharge longer than a month can be considered a running ear. As a rule, the hearing becomes impaired in proportion to the duration of the flow. The anvil and the mallet are the ossicles that first yield to the corroding influence of the suppuration. The stirrup, the tiniest and most essential of the ossicles, happily resists destruction the longest. Its loss is followed by profound deafness.

The amount and the consistency of aural discharges vary greatly. Owing to the glandular activity of youth, the younger the person the more profuse is the flow, as a rule. Most ear discharges teem with disease organisms. As many as ten kinds of germs have been found in the ear of a single person. The commoner pus cocci are generally found in large numbers in nearly all ear discharges. Even in tuberculous infection of the middle ear, so common in children, the tubercle bacilli are found only at the onset of the discharge, for presently the more prolific and ever-present pus cocci predominate and the tubercle bacilli lose their identity. Furunculosis and eczema of the ear canal often result from the contamination of the aural suppuration. Certain kinds of fungi thrive on the debris of a running ear and impart to it a musty, nauseating odor, which becomes noticeable to the sufferer whenever the wind blows into the ear, or when the discharge drops into the throat. Frequently it gives to the breath an offensive odor. In many instances an aural flow drains wholly into the throat, whence it is swallowed and absorbed. A sallow complexion, malaise, headache, nausea, and diarrhea are some of the consequences of autointoxication from swallowing the pus.

Many individuals have an intermittent aural flow that starts up only when the health is below par, as in the presence of a head cold. It is indicative of latent disease in the middle ear. Whenever a discharge is slight, say a drop a day, it clings to the roof of the canal and spreads out like a fan. A leak such as this is often overlooked, the accumulation being mistaken for hard wax. Generally a slight discharge is more to be feared than a copious one, because it is more readily intercepted. A discharge that is thin and malodorous comes from disintegrated bone and is destructive to the hearing. The presence of polyps or of granulations in the middle ear is also indicative of diseased bone. Blood in the discharge comes from the granulations. Pain in a running ear denotes defective drainage.

In dealing with discharging ears, watch should be kept for cholesteatomatous formations. These may be dangerous. In this condition the moisture in the ear causes the cast-off epithelium to collect about a core or nucleus, like the layers of an onion. Insidiously the augmenting mass destroys everything it comes in contact with. It is capable of perforating the skull as neatly as a drill, although it may take years to do so. Frequently the cholesteatomatous

mass breaks up into a brownish foul-smelling fluid and escapes from the ear.

A leaking ear is such a commonplace complaint that generally it is not given the attention it merits. It is regarded as an annoyance rather than as a disability which is likely to become serious at any moment. Many of the laity believe that it is perilous to stop a running ear. The belief is based on the knowledge that the sudden cessation of an active aural flow is fraught with danger. Recently a case of this kind came to my attention. The ear of a man was filled with an astringent powder to check a slight discharge. The powder, uniting with the discharge, was converted into a hard caked mass which prevented the escape of the pus. Alarming septic symptoms arose which had to be relieved at once.

Quite often the parents of a child with a running ear are advised to leave the ailment to Nature and that eventually it will be outgrown. Such advice is erroneous and even dangerous. Most of the crippled ears that give so much trouble in after years are the aftermath of neglect in infancy. Childhood is the time to apply those preventive measures that are the most brilliant achievements of scientific medicine. There are numberless people with aural defects who place the blame upon their parents. The organ of audition is the most delicate piece of mechanism in the body, not excepting the eye, and like any piece of fine machinery it easily gets out of adjustment, especially in infants. A blow on the head, a fall down stairs, or disease in both ears is liable to cause irreparable damage to the ears in a short space of time. Much of the ear disease of babes that robs them of their hearing is avoidable. All newborn babes are mute, so far as talk is concerned. They learn how to speak by hearing others and imitating them, but if their hearing is gone they remain mute. Even young children who have partially mastered the art of speech and have become deaf soon forget how to talk, and lapse into silence.

Children who are hard of hearing are slow in learning to talk. Many a child, thought to be stupid is really not so, but is hard of hearing. Much of a child's education is acquired through the sense of hearing. When audition becomes an effort, a child soon loses interest in its studies and turns its attention to something less exacting. Naturally it soon falls behind in its work. It is imperative that children's ears be watched and tested with the same care that is given to the eyes. Frequently a child with a leaking ear seems to hear well despite its defect. Inquiry usually shows that the hearing is done with the other ear. Whenever one ear is forced to do the work of both ears it is apt to suffer.

Insurance companies, through their losses, have learned to rate persons with a discharging ear as bad risks. Not only is the health affected, the life is endangered as well, both from disease and from accident. The deafness and the dizziness that attend many discharging ears may place the life in peril if they occur at a time when good hearing and steadiness are required. Persons with a diseased ear should exercise care in swimming. When water gets into the middle ear of certain individuals it causes a dizziness and faintness. Getting water into a diseased middle ear has cost the life of many good swimmers who were thought to have succumbed to cramps.

Running ears are treated with far more encouraging results than formerly, and with simpler methods. The sooner treatment is begun the better. A few words about the prevention of discharging ears may not be amiss. A beginning ear infection can frequently be aborted by means of the ice bag, a mild cathartic, fluid food, and rest. If the pain is severe, one dose of an opiate is permissible. More than this might mask the symptoms. The hourly irrigation of the ear with a warm solution of boracic acid is also allowable. Ear drops and applications in general are apt to be more harmful than beneficial. The ear should be kept clean. An earache should not be permitted to last longer than twelve hours. It is the symptom of an active and perhaps a serious infection, and prompt relief is demanded. It is decidedly unwise to wait for the drumhead to rupture or even to bulge. It is far better to open the drumhead prematurely than to allow the infection to spread. If, on opening the drumhead, no fluid is found, the incised drumhead soon mends and no harm is done. It is needless to state that all work upon the ear should be done under the rules of surgical asepsis.

Many lives have been sacrificed through delay in dealing with a middle-ear infection. Within a short time I saw three persons with meningitis from neglected ears. There are other disadvantages in waiting for the spontaneous rupture of the drumhead to take place. The opening is apt to be faulty. Either it fails to provide adequate drainage or else the drumhead is needlessly lacerated. Such an aperture heals with difficulty, and if repair does take place, the hearing eventually becomes affected, by reason of the intratympanic adhesions.

Never should the drumhead be incised without the aid of a general anesthetic, preferably a whiff of chloroform. This is used both to obviate the intense pain of the procedure and to keep the patient from moving and deflecting the scalpel. The incision should be a free one, not merely a stab. Beginning in the lower posterior quadrant, the incision should sweep upwards and backwards, behind the ossicles and near the rim of the drumhead, ending outwards into the swollen periosteum of the canal. The final sweep has been termed the internal Wilde incision. It depletes and drains the edematous tissue and helps to avert mastoiditis. In the left ear the incision resembles the letter *S;* in the right the letter *Z*.

When an infected middle ear is opened, serum is released, seldom pus. In a few hours the discharge becomes copious and purulent. The more active the flow the better the result. Generally, relief follows the operation. If, however, the symptoms do not abate, it is evident that the infectious material within the mastoid cells is unable to escape into the middle ear proper, and that more drastic measures are required.

Ordinarily the after treatment of an incised drumhead is simply to keep the ear dry and clean. Irrigations should be used sparingly, if at all. Used too freely they keep the drumhead in a soggy state and hinder repair. A saturated solution of boracic acid with the addition of some alcohol makes a good cleansing lotion. A poisonous solutin, such as the bichloride of mercury should never be employed in infants, lest it escape into the throat. The cotton wipe is the best implement for cleaning the ears. The patient can assist the cleansing process by inflating the ear after Valsalva's method.

Regarding the treatment of a running ear, the prescribing of ear drops without first ascertaining

the precise nature of the lesion in the ear, is as unscientific as it is generally unavailing. The use of peroxide of hydrogen is especially objectionable. If it gets into the middle ear it may not be able to escape.

It is useless to attempt to check a discharging ear by local measures so long as reinfection from the nose is apt to occur. It is first necessary to cure the nasal disorder. The removal of diseased tonsils and adenoids in children will do more toward preventing an ear infection and stopping a running ear than anything else will. It is my plan, when removing tonsils and adenoids of a child with a running ear, to supplement the procedure by removing the granulations from the middle ear and freshening the edges of the drumhead. Most running ears are controlled by doing so.

Frequently there is an obstacle in the middle ear which favors the continuance of the aural discharge. To overcome this, it may be necessary to enlarge the opening into the middle ear for better drainage; to sever adhesions in the middle ear, or perhaps remove aural polyps or granulations. Frequently an aperture in the drumhead can be made to close by slitting or by freshening the edges of the perforation or perhaps by placing a piece of paper over the opening. If the middle ear can be kept dry the discharge generally ceases. In the hands of the physician the suction pump and the wick usually accomplish this end.

The local remedies used to control an aural discharge have for their object the stimulation of the sluggish mucosa to healthy action. Quite often a discharge of long standing can be brought under control in a short time by the daily use of an alcoholic solution of boracic acid dropped into the ear. A persisting discharge may require something stronger, perhaps a twenty per cent solution of iodin or else a ten per cent solution of chromic acid. Stimulation by the use of heat after Beers' method of inducing hyperaemia is most useful in certain stubborn cases.

Much of the difficulty encountered in the treatment of these diseases is owing to the fact that the affected parts are out of sight. The tiny attic syringe is helpful in many of these cases.

A decade ago it was hoped that the radical mastoid operation of Stacke would enable us to cure all discharging ears, but these expectations have not been realized. In this operation the various compartments of the middle ear are thrown into one kidney-shaped cavity. Besides, the Eustachian orifice is closed and the ossicles are removed, together with all diseased and cellular bone in the middle ear. Unquestionably the procedure is an invaluable one in selected cases, but generally its performance should be deferred until simpler measures have been tried. At the present time the operation finds less favor than it formerly did. The operation has many objectionable features which are usually withheld from prospective patients. The best statistics of the operation show a cure of but 50 per cent. One-tenth of the persons operated upon finally die of meningitis. Others develop facial paralysis and nearly all eventually lose their hearing. The assertion that the radical operation does not affect the hearing can safely be challenged. Any procedure in which the ossicles are removed and the middle ear is covered with scar tissue is bound to seriously disturb the hearing. In many instances it takes a year or more for this to occur.

A better operation for most cases is the mastoid operation of Schwartze, which provides for the removal of the mastoid cells and establishes a free connection between the mastoid antrum and the tympanic chamber. The ossicles are not disturbed and the better drainage and stimulation generally cause the discharge to cease.

164 West Seventy-third Street.

CLIMATE: ITS USE AND ABUSE IN THE TREATMENT OF TUBERCULOSIS.

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Does the tuberculous patient need a change of climate? What factors should be paramount in the climatic selection? Where shall this haven of health be? And—how shall he derive the greatest benefits from it?

These questions give but a glimpse into the haze surrounding the all-important subject of climate. And yet, difficult as is the proper solution of these questions, the lack of discrimination evidenced in deciding them, really is astonishing. Not infrequently the patient takes it upon himself to decide upon the change of climate; or he may follow the admonition of some fellow-sufferer, some misguided friend or neighbor, perhaps the milkman or coalman or any one—in fact, except the proper advisor—his physician.

From time immemorial to the present day—the era of serum-therapy—climate always has ranked high in the treatment of tuberculosis. During this time, it is true, many a drug has earned short-lived fame as a positive cure for consumption. It is equally true that since 1882, when Koch put his index on the tubercle bacillus, many a serum has met a similar fate. But climate has held its own.

And while we feel that the time is not far distant when we shall have a specific for tuberculosis, we must necessarily continue to place our faith in such factors as have stood the test of time. Chief among these are: Climate, rest, diet, general hygiene.

But have all these been accepted without qualification? Hardly. All of us are familiar, for example, with the changes affecting the rest-cure idea. It is not so long ago that the general practitioner urged the tuberculous victim to "Go West and rough it." Then came a sudden swerve in attitude when absolute rest and quietude were deemed essential. And now we are confronted with the experience of Bernstein of England and his followers in Europe and America, who—by subjecting the patient to carefully graduated labor and so inducing autoinoculation—have effected cures even in febrile and advanced cases.

A not dissimilar condition existed, and, for that matter, exists still, in the question of diet. For a time we believed that the intake by the patient of an extraordinary quantity of food assisted materially in combating the disease. This led eventually to the idea of "forced-feeding." To-day, however, we take pains to select a diet applicable to the particular condition of the patient; we make it a point not to abuse the digestive organs; we are careful not to unduly burden the eliminative organs that already are overtaxed by the tuberculous toxins.

So we see how time has wrought changes even in this accepted creed of treating tuberculosis. But climate, considered as an integral factor, alone has held its place in the sun. Why?

It is quite beyond the scope of this article to

detail the reasons that should prompt a climatic selection in any given case or to differentiate between low and high altitudes, cold and warm regions, and their relative advantages in the treatment of tuberculosis. Nor is it feasible here to discuss the various physiological factors involved—such as humidity, precipitation, rarefication, the degree of solar intensity, quickened circulation and respiration, the increase in red blood corpuscles—and their effect on health. Rather will we concern ourselves with the psychological effects of climate, and particularly with the influence it exerts on the nervous system.

For, in tuberculosis, as in any other prolonged disease, the mind as well as the body suffers. But in tuberculosis, particularly, the nervous system suffers doubly. It shares in the morbid effects resulting from the functional disturbance incident to the disease and, in addition, is taxed by the work it must necessarily perform in connection with the recuperative process. The rigid mode of life required of the tuberculous patient subjects the nerves to a form of restraint to which they have been unused and at which they naturally revolt. The patient is told that he *must* rest so many hours a day; he *must* have his temperature taken so many times a day; he *must* take only so much exercise, if any; he *must* awake and retire at a certain hour; he *must* do this and *must* not do that. All these mandates that constitute the decalogue of tuberculous regimen cannot help but grate upon the already vitiated nervous system of the patient.

But in our zeal to help the vital organs regain their strength we are unmindful of this additional levy placed upon the nervous system.

Clearly we need a remedy for this—we need something that will bridge the gap—that in itself will generate the necessary nerve force. *Climate does this!*

The change of climate itself is a glimmer of hope exerting a salutary effect upon the mind of the patient. It helps him, in great measure, to regain his poise. It means a fresh start—a rekindling of that combative spirit that should dominate each patient and that never must be allowed to droop. He is confronted with new faces, new scenes, new backgrounds for the commonplaces of everyday life. He is gratified to find many who, like himself, had come there looking to the high heavens for hope and health, and had found them. He acquires more energy, more buoyancy. His black despair gives way to roseate hope. As a result, he ceases to be so introspective—he is less likely to keep thinking about his own condition—and, instead, begins planning for the new life that will come with complete restoration to health. In fine, the patient is elated to find that Nature is, indeed, a helpful ally in his fight against the enemy that is threatening his very existence.

The mental effect—or, if you will, the psychotherapy—of climate unquestionably merits greater consideration than ordinarily is bestowed on it. This is instanced by the fact that often a patient's condition will show improvement directly after his arrival and obviously before the physiological effect will have had time to manifest itself. On the other hand, should a patient develop an antipathy to a certain prescribed climate, he will seldom make good progress there and will do better elsewhere—even if the physical elements seem less auspicious.

In prescribing a climate for a consumptive, the mental element, therefore, deserves serious deliberation. Worry, fretting, anxiety, or other depressing condition militates against improvement in health. Much of the success of the attending physician will depend on his grasp of the mental characteristics of the patient. This phase of treatment, certainly, is no less important than the regulation of rest, exercise, food, and general mode of life.

In the very nature of things, the first question confronting the medical advisor will be, Is the change of climate absolutely essential? In considering this phase of the matter, the physician will do well to remember that countless cases of tuberculosis have been "arrested" *without* any change of climate.

Having satisfied himself on this score, the medical advisor may then proceed with the following practical catechism based on extended clinical experience:

Assuming that the change is essential, will the probable results outweigh the sacrifices involved—the breaking of home ties, the loss of business, the countless inconveniences and the not inconsiderable expenditure? Again, what vital resources does the patient harbor in himself? Is he fitted for travel? Will competent medical guidance be available? Will the food and sanitary arrangements be thoroughly satisfactory? Will the proposed environment harmonize with his mental make-up? Some like a quiet place, others prefer an animated place. Some are irritated by necessary association with strangers, others prefer company. One may not be happy unless his wife is at his side, another may not know what peace of mind is unless she is away.

Often a case will present itself where it seems advisable for a patient to locate permanently in a different climate. Here we are confronted with the additional question, Will he be able to earn his livelihood there?

In short, a thorough knowledge of the patient's habits and characteristics, together with an intimate insight into his peculiarities, is essential; for, in the final analysis, we are treating not *consumption* but the *consumptive*.

But, perhaps, the most dominant point to remember in connection with prescribing a climate for a consumptive is that *there is no one best climate for all cases* and that some patients will fare well in any fairly good climate providing they adhere to a suitable mode of life.

With these salient thoughts in mind, little difficulty indeed will be experienced in determining upon the proper climatic selection.

716 Haas Building.

A DEVICE FOR DRAWING SMALL AMOUNTS OF BLOOD.

By Havens Brewster Bayles, M.D.,

Brooklyn, N. Y.

I WISH to offer to the readers of the MEDICAL RECORD who have occasion to draw small quantities (6 c.c.-30 c.c.) of blood (Wassermann) the description of a small, compact outfit, an improvement on that furnished by the New York Health Department. It is the usual experience, when the blood is drawn either by the physician unaided or with the assistance of patient or nurse, that more or less of it is spilled on the patient, doctor or floor, after the needle enters the vein and before the receptacle is procured and placed in proper position.

As seen by the accompanying diagram, a rubber stopper is inserted in place of the ordinary cork. This stopper is fitted with a short, hollow

needle, protected by a flange which is inserted through a small opening in the stopper and which acts as a vent. Another opening is made at the outer margin of the stopper, opposite the vent, for the insertion of the needle furnished by the department, and is so placed to put it in line with the vein; the beveled point must face the operator when the needle is inserted.

The technique is simple: Remove the cork from tube, insert rubber stopper, push needle through the rubber stopper as indicated by mark on stopper

as shown in diagram. We thus have a needle fitted into a tube, the latter serving as a handle, and the outfit is used much the same as one would use an awl. After the desired quantity of blood is withdrawn the rubber stopper is removed and the original cork inserted. The outfit is then ready to return to the laboratory for examination.

The rubber stopper should be washed under a faucet, sterilized, and placed in alcohol, ready for future use.

125 Seventh Avenue, Corner Carroll Street.

Medicolegal Notes.

Having Possession of Opium.—Under the revenue act of 1914 requiring all persons who produce, import, manufacture, compound, deal in, dispense, sell, distribute, or give away opium to register and pay an annual tax an indictment charged the defendant with conspiring with one Martin to have a dram of opium in the possession and under the control of Martin; and as the overt act charged that the defendant issued to Martin a prescription therefor, in bad faith, knowing it was not given for medical purposes, but for supplying one addicted to the use of opium. It was held that the indictment was insufficient. The unlawful thing charged consisted in having the drug in the possession and under the control of Martin, but the word "person" in the statute refers only to those required to register and pay the tax, and it was not alleged that Martin had the drug in his possession for any of the purposes for which he would have to register and pay the tax.—United States vs. Jim Fuey Moy, 225 Fed. 1003.

Burden of Showing Sale of Cocaine Not Unlawful on Defendant. — Section 808 of the Chicago Code of 1911 provides that "no druggist or other person shall sell or give away any morphine, cocaine, alpha or beta cocaine, chloral hydrate, or any salt or compound or derivative of any of these substances, or any substance, preparation, or compound containing any of these substances, or any of their salts or compounds or derivatives except upon the written prescription of a duly registered physician. It is held that the burden of proving in proceedings under the act that the sale was within the exception of the statute (because made on a physicians's prescription) is upon the defendant.—City of Chicago vs. Montgomery, 191 Ill. App. 558.

Keeping Opium for Personal Use—Burden of Proof—Registration and Taxation.—The federal district court, W. D. Tennessee, W. D., holds that under the Harrison Anti-Narcotic Act, the mere keeping of a small quantity of opium for personal use does not constitute an offence within the meaning of the act. Where a narcotic is found in a person's possession, he is presumptively guilty of violating the act, and then the burden of proof is upon the defendant to show affirmatively that he is not one of the class mentioned in Section 1 as required to register, or, if so, that he had registered and paid the special tax.

In a prosecution under the act, the uncontradicted evidence showed that the defendant obtained the opium found in her possession from a Chinaman, and that she had it for her personal use and consumption, and that she never sold, gave away, or dealt in it in any form. This evidence was held to overcome the presumption of guilt arising from the possession of opium under Section 8 of the act, providing that possession or control of opium shall be presumptive evidence of a violation of the act.—United States vs. Wilson, 225 Fed. 82.

Harrison Anti-Narcotic Law—Elements of Offence.—Section 1 of the federal act, Dec. 17, 1914, provides that every person who produces, deals in, etc., opium or coca leaves, or any compound or preparation thereof, shall register with the collector of internal revenue and pay a special tax. Section 8 provides that it shall be unlawful for any person who has not registered and paid such tax to have in his possession any of such drugs, and that possession thereof shall be presumptive evidence of a violation of both Sections 1 and 8. The federal district court, D. Montana, holds that, as taxes can be imposed and statutory offences created only by direct, clear, and apt language, the act does not impose the duty of registration and the payment of taxes upon mere consumers of the drugs, and only makes unlawful possession of the drugs by persons required to register and pay the tax, who have not done so. Indictments under the act, for not having registered and paid the special tax, but not alleging that the defendants were in any of the classes thereby required to register and pay the tax, were held to be fatally defective in substance and too uncertain to be sustained.—United States vs. Woods, 224 Fed. 278.

Harrison Anti-Narcotic Law—Application to Physicians.—The federal district court, W. D. Tennessee, W. D., holds that the Harrison Anti-Narcotic Law does not limit the amount of drugs a physician may prescribe, and an indictment charging a physician with prescribing drugs in quantities more than was necessary for the immediate needs of his patient, and not in good faith, is subject to demurrer. There is no duty imposed upon a physician by the act other than to keep a record of all such drugs dispensed by him, and the name and address of the patient, except those to whom he may personally administer, and that he must preserve the records for a period of two years.—United States vs. Friedman, 224 Fed. 276.

Regulation of Sale of Opium — Validity of Federal Statute.—The federal district court, W. D. Washington, N. D., holds that Congress may prohibit the importation of opium and regulate its relation to interstate commerce, as is done by Act of Dec. 17, 1914, providing for registration with collectors of internal revenue of dealers in opium, imposing a tax on dealers, and making it unlawful for any person who has not registered and paid the tax to have in his possession any opium or derivative thereof, and providing that such possession shall be presumptive evidence of a violation of the act.—United States vs. Brown, 224 Fed. 135.

Expert Testimony Based on Evidence.—The authorities differ as to the wisdom of permitting experts to express their opinions based on the evidence in a case instead of submitting hypothetical questions to them, but in Maryland it is permissible. In a prosecution for abortion, where there were several medical witnesses in the case who had treated the deceased, there being no conflict between them, the admission in evidence of the opinion of an expert who heard all but one of such witnesses testify was held proper.—Damm vs. State, Maryland Court of Appeals, 97 Atl. 645.

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LOANS TO PHYSICIANS.

ONE of the Sherlock Holmes stories tells of a young practitioner who wished to specialize in a rather obscure branch of medicine. He was fortunate enough to meet with a rich, eccentric old gentleman who set him up in practice as a speculation; so much of his income went to his backer, who realized in time an excellent return on his money, while the young practitioner was thus assisted over what are usually the darkest days of a professional career. A case of that sort is exceptional, perhaps unique. Most of us live somehow through the first years of practice, maintaining clean linen and an automobile on an income varying from $5 to $50 a month in cash, $200 on the books, and untold thousands in experience. Of course, there are those favorites of fortune whom we envied in college days, the rich man's son on the one hand who will step into an office furnished from top to bottom in the best style, and on the other hand the physician's son, whom I think we envied even more—that lucky individual who was able to start out under the sheltering wing of the wise G. P.—who found his practice ready-made and expanded to fill it. The moralists may rave as they will about the blessings of poverty and toil and the curse of unearned case; few of us who sat in our simply furnished offices reading Osler or worse and waiting for the ring at the bell which turned out to be the installment man, did not envy the colleagues whose first years were devoid of worries.

A medical education is coming more and more to represent a large outlay of money besides the time involved. As medical colleges have practically abolished the night school it means that for four, five, or six years the student must live without working and in addition pay tuition fees, which grow higher all the time, buy books, instruments, etc. It was formerly the case that an enterprising young man with a good constitution could work his way through medical college; it often kept him on the edge of a breakdown, but it was done. Now, if a student can obtain a job of some kind during his vacation and find chances here and there during his school year to pick up a few dollars he considers himself lucky. Such a student, however, finds himself upon graduation face to face with a serious problem. He may, and often does, go in a hospital for a year or two, but this is only postponing the problem for most hospitals pay nothing or very little, certainly not enough from which to save anything. He is confronted with the task of fitting out an office, buying a machine perhaps, and undertaking to pay living expenses for several years before his practice shall become large enough to support him. The practicing physician, too, must present a good appearance, somewhat as the minister must. His clothing must be neat and not too threadbare, his linen clean, his machine, even though a rented flivver, must be kept in good order, although he himself should never be seen working on it, and a doctor must always be well fed and not appear to do any other work than his professional duties. Some optimistic souls accept this problem gaily, furnish apartments on the installment plan, buy a car on the same principle, run up a tailor's bill, and put themselves in the hands of Providence. Sometimes their faith is justified, patients flock in, and a year or so later they begin buying bonds and mortgages. Too often, though, the first two years are full of such nightmares as dodging the collector, placating various creditors, and at the same time showing a smiling, unruffled front to patients.

Now for a solution. We are inclined to think that it may lie in the direction of loans to physicians on their notes. The question of unsecured loans has always been a vexed one. Salaried employees are often driven to the loan sharks in large cities on account of the impossibilities of securing loans from banks. In some places cooperative companies have been formed which specialize in such loans and these have, as a rule, been fairly successful, but they necessarily deal in small sums, $25 to $100, as a rule. It would seem that a company might be formed to make loans to young physicians which would combine the advantages of being good investments and filling a real need. Dealers in medical books, drugs, and instruments are always ready to sell to the young doctors on the deferred payment plan; tradesmen, as a rule, trust them gladly; but all this does not solve the problem. It merely means a number of small debts for the doctor which all demand payment at the same time, and if one of them is neglected for a few months it amounts up alarmingly.

The details of the scheme hinted at above would require elaboration, but the main idea would be as follows: The company should consist partly of doctors and partly of business men. Some members, if possible, should be both. When a physician applied for a loan strict investigation should be made into his antecedents, his school record, etc. The locality in which he wished to practice would also have a bearing on the question. Then the company could rent and furnish his office, provide him with a car, and allow him so much a month. A report should be furnished by him every six months of his actual expenses and income. The extent to which the former exceeded the latter should be made the basis for the allowance for the next six months. This procedure should be repeated every half year, and as soon as the income exceeded the expenses arrangements could be made for paying back the principal. Besides the intangible security of character, the physician's note might be endorsed by two other physicians, a chattel mortgage taken on his furni-

ture and automobile, and an endowment policy payable to the company for, say, four or five times the amount of the loan, be kept up by the physician. When the loan was repaid this policy could be assigned to the physician, who would then have a start on a savings account. This scheme is undoubtedly impractical, being devised by a physician, but at least something of the sort, differing possibly in some of its details, might be arranged for the doctor who hesitates to take the plunge into the doubtful waters of general practice.

PELLAGRA AND SENSITIZATION TO MAIZE AND SUGAR-CANE PRODUCTS.

PERHAPS the most popular and best established theory at the present time regarding the nature of pellagra is that it is a deficiency disease, one due not to a lack of food in itself, but rather to a lack of substances in the food which are essential to a good state of nutrition.

At the third triennial meeting of the National Association for the Study of Pellagra at Columbia, S. C., Oct. 21 and 22, 1915, Dr. Roy Blosser read a paper dealing with the phenomena of sensitization to maize and sugar-cane products, in which he advanced the new theory that pellagra was due to this sensitization occurring in certain individuals. His claims as to the pellagra producing properties of the non-refined or partially refined sugar products were based on (1) a careful study of the dietetic habits of more than two hundred pellagrins; (2) the results obtained in such cases by the exclusion of certain articles of food; and (3) the effect of the experimental administration of these products to dogs. Blosser's experiments have differed from other attempts to produce pellagra experimentally in that meat and other foods were given with the sugar-cane ration, thereby eliminating any question as to the results being due to a lack of vitamines or to an unbalanced or unnatural diet. The result of his experiments appeared to show that a sugar-cane ration brings out unmistakable symptoms of pellagra.

PLATES AND BONE GRAFTS IN FRACTURES.

IN the hands of the introducer, Sir Arbuthnot Lane, the steel plate has had much success in the operative treatment of simple fractures, and it may be said that when Lane's technique has been closely followed, others have had excellent results from this mode of treatment. However, since autogenous bone grafting has come more or less into vogue various strictures have been passed upon the use of the steel plates. Among the many objections brought against their employment are that they act as foreign bodies; that they have a destructive influence on bone formation which may prevent the fractured ends from uniting; that a rarefying osteitis, or osteoporosis, or necrosis usually develops around the metal screws or nails, causing them to loosen and drop out; that metal favors infection, absorption, and disintegration of the tissues, and that the plates do not answer the purpose for which they are employed because they bend or break.

In the *Practitioner,* March, 1916, Lane ably defends his manner of treating fractures and in the *Canada Lancet,* July, 1916, E. R. Secord speaks very highly of steel plates as compared with the autogenous bone graft in the operative treatment of simple fractures. He points out that the first grand objection to the use of the bone graft is the amount of manipulation necessary to obtain the graft, and to prepare a suitable bed for its reception. The next great objection to the graft arises from the difficulty of fixing it in place with any degree of security. Consequently, the time required for a bone grafting operation is considerable. While a reasonably expert operator can "plate" a broken femur in half an hour, it will take him probably two hours to put in a bone graft. Secord states that at the Brantford General Hospital during the past few years they have operated on a considerable number of fractures by both plate and bone graft methods. They have never had to remove a plate, and have never seen any irritation result from its presence. All their cases have been radiographed subsequently, and no evidence has been seen of rarefying osteitis, or of loose, bent, or broken plates. He concludes that the use of the Lane plate appears to be safe, simple, and expeditious, but that a most rigid technique must be followed both during and after the operation, and that the great majority of failures after its use are due to faulty methods at the time, or to a failure to understand what may be expected of an internal fixation in any form. That the bone graft can be made to perform the same function is granted, that its use has certain advantages is admitted, but it is held that the difficulty of application and retention more than counterbalances these advantages.

SEASICKNESS.

SEASICKNESS has existed as long undoubtedly as men have traveled by sea and during this time, despite the countless remedies suggested for the distressing condition, no cure has as yet been discovered. In the *Médical Press* of July 12, 1916, is a paper by John F. McMillan in which he explains the sensations of seasickness as follows: Vertigo is a reflex condition due to some divergence from the normal of the semicircular canals, whereby through the auditory nerve abnormal impulses are carried to the medulla, and thence to the heart by the pneumogastric through its cardiac branches; and so far as the derangement that is common to the good sailor when he is confined below amidst oil smells, galley odors, etc., constitutes that form of the malady associated with vertigo, the main system, that is to say, the sympathetic, is unaffected. But do the waves pass beyond, to the gastric branches of the vagus, then are the original abnormal impulses from the semicircular canals communicated through its gastric branches to the center of the sympathetic system, the solar plexus, and then a second impulse is carried back to the stomach and causes the latter organ to evacuate its contents; and, although the whole may constitute one reflex movement, it is possibly a double one, the second being complete when food, actually placed within the stomach, during the first reflex is rejected; and then occurs the never-to-be-forgotten feeling of a

blow in the stomach. The spinal cord has been said to be concerned in the reflex or reflexes, and there has been mention made of muscular incoordination; but it is an easily solved question that beyond the movement caused by the lurch of the vessel, there is no muscular affection other than the inactivity due to vertigo and the gastric distress.

McMillan recommends nitrite of amyl to be inhaled with caution as required as efficacious with regard to the syncope associated with vertigo while as regards the solar plexus he thinks that the most useful remedy is an effervescent mixture, such as a Seidlitz powder, with the addition of a couple of drops of dilute hydrocyanic and 15 minims of spirit of chloroform.

The Alleged Increase of Cancer.

With regard to the increase of cancer, the views of those who have studied the subject closely are somewhat curiously at variance. While, perhaps, nearly all authorities are agreed that cancer has increased, many stoutly deny that this increase has assumed the alarming proportions ascribed by some writers and statisticians. At any time statistics are to some extent confusing and unless collected with great care and uniformity are apt to mislead. Moreover, in those countries in which there is not a uniform system of collecting and collating statistics, such figures cannot be taken as accurate and must be regarded with a certain degree of suspicion. Again, there are many things which enter into the question of cancer statistics, which render dogmatic statements unwise and even foolish. There is no space to discuss all of these here, but it may be said that some of the widely advertised statements that cancer is largely on the increase must not be taken without reservation. A part of this increase is apparent and a part real. Recently, Mr. Frederick L. Hoffman has brought out a book[1] with the rather ambitious title of "the mortality from cancer throughout the world," in which he states that the actual frequency of malignant disease throughout the civilized world has been ascertained to be much more of a menace to the welfare of mankind than has been generally assumed to be the case, and that, in contrast to a marked decline in the general death rate, cancer remains one of the few diseases actually and persistently on the increase in practically all of the countries and large cities for which trustworthy data are obtainable. Hoffman has collected and set down a mass of statistics and evidence bearing upon his point of view, and the book is a monument to his untiring and painstaking energy. While his work is not conclusive, it at least serves to show that cancer is unduly prevalent and that steps should be taken everywhere to control its spread, that is so far as is possible.

Treatment of Fractured Jaws.

One of the features of the treatment of wounds in the present war has been the success of the treatment of jaw wounds. In the American hospital in Paris the results obtained by the cooperation of surgeons and dentists in rectifying the effects of wounds of the jaw have been remarkable. Some of these results were shown on the screen in this city by Bainbridge after his return from the seat of war. In the *British Journal of Surgery*, August, 1916, Major A. C. Valadier gives a few suggestions for the treatment of fractured jaws. He draws attention to the fact that wounds caused by bullet or shrapnel will generally be complicated; that is to say, a piece of metal may lodge in a most vital spot. The following points have then to be determined: (1) Whether or not it is right immediately to attempt the removal of the foreign body. (2) Whether the patient will stand the strain of an anesthetic. (3) Whether the region of the glottis may be so inflamed as to contraindicate the use of a general anesthetic. (4) Whether the patient's oral cavity is so lacerated that food cannot be introduced. Should he be surgically treated at once to overcome this condition; or should prosthetic interference for the reduction of his fractured jaw be applied before surgical interference? These questions can only be answered by the oral surgeon in charge. Valadier points out that it is absolutely necessary for the sucecss of the procedure that the oral surgeon should work in perfect unison with the surgeon who is doing the plastic part of the operation.

[1] The Mortality from Cancer Throughout the World, by Frederick L. Hoffman, LL.D., F.S.S., F.G.S.A. Newark: The Prudential Press, 1915.

News of the Week.

Epidemic of Poliomyelitis Near End.—The rapidly decreasing number of new cases of poliomyelitis in the city encourages the belief that the epidemic is nearly at an end. During the week ending September 23, only 160 new cases and 58 deaths were reported, as compared with 254 cases and 84 deaths during the previous week. The total number of cases in the city to September 23, was 8,885, and the deaths numbered 2,233. After consultation with the Health Commissioner and the President of the Board of Education, Mayor Mitchell decided to have the public schools of the city open on Sepember 25, having reached the decision that the opening of the schools would be, not only safe, but actually beneficial to the children. The Health Commissioner has stated that during the school months of last year there were reported 20,668 cases of measles, 5,797 cases of scarlet fever, and 13,725 cases of diphtheria, the number of cases of each increasing month by month from October to June. The conclusion was drawn that if too great attention were paid to the spread of disease the schools would never be opened. More than $40,000 dollars has already been sent in voluntary contributions to the Health Department as a fund for the aftercare of children who have suffered from poliomyelitis. Surgeon L. D. Frick of the United States Public Health Service, who has been inspecting interstate travel through New York, has been ordered to Boston to assist the Health Commissioner of Massachusetts in the fight against infantile paralysis in that State. The statement that no cases of poliomyelitis developed among the babies receiving pasteurized milk from the Straus milk stations has been questioned by the officials of the Health Department. According to the records of the Department, out of 200 children under two years of age admitted to the Willard Parker Hospital during the epidemic, six were reported to have been users of the Straus milk up to the time of their admission.

Medical Colleges Open.—The Medical Department of the University of Georgia, Augusta, opened on September 14, with twenty-six men in the first

year class, and a total registration of over fifty. Dr. William H. Doughty, Jr., dean of the College, made the opening address.

The University of Tennessee, College of Medicine, Memphis, opened its new term on September 21, having added to its faculty three new members, Dr. Frank Maltaner, in the department of bacteriology and public health; Dr. W. E. Evans, in the department of biology, and Dr. John A. McIntosh, Jr., in the department of pathology.

1915 a Healthy Year.—A preliminary report of the Director of the Bureau of the Census gives the death rate for 1915 as 13.5 per 1,000 of population in the registration area of the United States. This is the lowest rate on record. The rate is based on 909,155 deaths returned from 25 States, in one of which (North Carolina) only municipalities of 1,000 population and over in 1910 were included, the District of Columbia, and 41 cities in nonregistration States, the total population of this area in 1915 being estimated at 67,337,000, or 67.1 per cent. of the total estimated population of the United States. In 1914 the death rate per 1,000 of population was 13.6; and in 1913 it was 14.1; while for the five year periods from 1901 to 1905, and from 1906 to 1910, the average rates were 16.2 and 15.1 respectively. In New York State the death rate for 1915 was 14.6, as compared with 14.7 for 1914, and 15.0 for 1913. In New York City, with an estimated population on July 1, 1915, of 5,468,190, the death rate for the year was 13.9, as compared with 14.1 in 1914, 14.3 in 1913, and 19.0 as the average for the five year period from 1901 to 1905.

American Ambulance Service Extended.—The American Ambulance Field Service announced recently from Paris that there would shortly be formed a section of ambulances to serve with the French Army in the Balkans. The section will include thirty ambulances of the latest model, repair cars, a kitchen car, tents, and other accessories. As American volunteers have already served on the Yser, Aisne, and Somme, in Champagne, at Verdun, in Lorraine, and in the reconquered parts of Alsace, the establishment of a Salonica section extends the service to include almost all of the great campaigns of the French Army.

Gifts of Ambulances to Russia.—A motor ambulance, the gift of American and English women resident in Petrograd, was formally presented to the Russian Red Cross in that city on September 20, On September 24, fifteen motor ambulances of the field hospital presented by a group of Americans were formally accepted by the Empress of Russia. The presentation was made by Capt. Philip Lydig and Dr. Philip Newton. The new cars will be known as "The American Ambulance of Her Imperial Highness Grand Duchess Tatiana Nicolaieva." They will be sent to the front under command of Dr. Newton.

Austria to Admit Red Cross.—Austria-Hungary, it is announced from Washington, has decided to grant permission for the reestablishment of American Red Cross units in the dual monarchy. The units were withdrawn a few months ago because of lack of funds. It is probable that Germany will take similar action. The Allies have agreed to pass the units and their supplies through the blockade. It is estimated that each unit of four surgeons and eight nurses will cost $40,000 for six months, and the number sent will depend upon the amount of money available.

Memorial to Dr. Murphy.—Plans are under foot for the erection in Chicago of a memorial to the late Dr. John B. Murphy. It is probable that the memorial will take the form of an institution for surgical research, and it is hoped that at least half a million dollars can be raised for the purpose.

A Memorial Hospital.—In memory of his brother, Herbert Barber, Mr. James Barber of New York is erecting the main building of the Broad Street Hospital, at Broad and South streets, New York, and will furnish the equipment also. The institution will serve the district south of Fulton Street which has not heretofore had a general emergency hospital.

Gifts to Charities.—The Hospital for Deformities and Joint Diseases, New York, has received from Mr. Herbert Kaufman of Pittsburgh, through Dr. H. D. Frauenthal, a gift of one million dollars, to be used for the erection of a new building and as an endowment fund.

By the will of the late Theresa Scott of Philadelphia, the sum of $5,000 is bequeathed to St. Christopher's Hospital of that city for the endowment of a free bed.

In the distribution of the estate of the late Mr. Eugene I. Sauter of Philadelphia, awards are made as follows: St. Christopher's Hospital and Dispensary for Children, $2,500; Children's Seashore Home, Atlantic City, $2,500; Presbyterian Hospital, Philadelphia, $5,000; Rush Hospital for Consumptives, Philadelphia, $5,000.

The Flushing Hospital, New York, receives by the will of the late Mr. S. Vernon Mann of New York a sum sufficient for the endowment of a free bed.

Police and Fire Surgeons.—The New York Municipal Civil Service Commission will shortly hold an examination, applications for which must be filed before October 6, for the purpose of filling vacancies in the position of surgeon in the New York Police and Fire Departments, at a salary of $3,500 per annum for part time service. The duties of the twenty surgeons of the Police Department and of the ten surgeons of the Fire Department consist of examining all successful candidates for the services prior to their final acceptance, caring for all members during sickness and disability, and recommending for retirement those unfit for duty or beyond the age limit. In addition, the Fire Department surgeons maintain one active clinic where the members of the department receive treatment and medicine free of charge. Surgeons have the rank of battalion chief in the Fire Department and of Inspector in the Police Department and are eligible for retirement at half pay after twenty years of service. Applicants for the examination must be citizens of New York State and between the ages of twenty-six and forty years, and have had five years' experience. Further details may be obtained by application to the Municipal Civil Service Commission, New York.

Personals.—Dr. L. D. Bristol, for the past two years director of the State Public Health Laboratories at the University of North Dakota and professor of bacteriology and hygiene, has accepted the newly created Boston Dispensary Fellowship in Public Health in the Department of Preventive Medicine in the Medical School of Harvard University, Boston.

Mr. Barnett Cohen has resigned his position as laboratory assistant in the Health Department of Savannah, Ga., to become research assistant in public health in Yale University.

Medical Societies Combine Meeting.—The 152d semi-annual meeting of the Litchfield County Medical Association will be held in conjunction with the ninth semi-annual meeting of the Connecticut State Medical Society at the Charlotte Hungerford Hospital, Torrington, on Tuesday, October 3. Guests will be given an opportunity to inspect the new hospital between eleven and twelve o'clock, and addresses will be made by Dr. D. D. Reidy, president of the County association, and by Dr. Samuel M. Garlick, president of the State society. Dr. Joseph I. Linde of New Haven will give the results of observations on cases of infantile paralysis in New Haven, and Dr. Herbert K. Thoms of New Haven will speak on postpartum hemorrhage.

Medical Society of the State of Pennsylvania.—At the annual meeting of this society held in Scranton on September 19 and 20, the following officers were elected for the ensuing year: *President*, Dr. Samuel G. Dixon, Philadelphia; *1st Vice-President*, Dr. John B. Corser, Scranton; *2nd Vice-President*, Dr. Joseph W. Albright, Muncy; *3rd Vice-President*, Dr. George H. Boyer, Allentown; *4th Vice-President*, Dr. John O. Wagner, Beaver Springs; *Secretary*, Dr. Cyrus Lee Stevens, Athens; *Assistant Secretary*, Dr. Clarence P. Franklin, Philadelphia; *Treasurer*, Dr. George W. Wagoner, Johnstown. The next annual meeting will be held at Pittsburgh.

Southwestern Texas Medical Society.—The annual meeting was held at Laredo on September 13 and 14, the following officers being elected: *President*, Dr. Robert Lee Graham, Cotuila; *Vice-president*, Dr. Homer T. Wilson, San Antonio; *Secretary-Treasurer*, Dr. Louis J. Manhoff, Aransas Pass.

Obituary Notes.—Dr. Louis C. Ford of Milo, Me., a graduate of the Medical School of Maine, Portland, in 1877, and a member of the Maine Medical Association and the Piscataquis County Medical Society, died at his home on September 11.

Dr. James H. Shannon of Saco, Me., a graduate of the Jefferson Medical College of Philadelphia in 1884, and a member of the Maine Medical Association and the York County Medical Society, died suddenly at his some on September 13, aged 74 years. Dr. Shannon was a veteran of the Civil War.

Dr. William Henry Yeager died at Philadelphia on August 4 at the age of 44 years. He was graduated from Hahnemann Medical College of Philadelphia in the class of 1900, and was an associate professor of therapeutics and clinical medicine in his alma mater.

Dr. Leo Dinkelspiel of New Rochelle, N. Y., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1883, and a member of the American Medical Association and the New York State and County Medical Societies, died at his home on September 12.

Dr. Daniel Hennessy of Bangor, Me., a graduate of the Geneva Medical College, Geneva, N. Y., in 1866, and a member of the American Medical Association, the Maine Medical Association, and the Penobscot County Medical Society, died on September 10, aged 79 years.

Dr. Elisha Dyer Leffingwell of Oswego, N. Y., a graduate of the Bellevue Hospital Medical College, New York, in 1877, died at his home on September 12, aged 67 years.

Dr. Frances Merriam Myers of Mount Vernon, N. Y., a graduate of the Woman's Medical College of the New York Infirmary for Women and Children, New York, in 1892, and a member of the Medical Society of the State of New York, the Mount Vernon Medical Society and the Westchester County Medical Society, died at her home on September 14, aged 46 years.

Dr. Reuben Willis of Somerville, Mass., a graduate of the Medical School of Harvard University in 1867, and a member of the Massachusetts Medical Society and the Middlesex South District Medical Society, died at the Robert Brigham Hospital, Boston, on September 6, aged 74 years.

Dr. George C. Parker of Winthrop, Me., a graduate of Dartmouth Medical School, Hanover, N. H., in 1881, and a member of the Maine Medical Association and the Kennebec County Medical Society, died at his home on September 8, after a short illness, aged 65 years.

Dr. George H. Turner, Jr., until recently of Portland, Me., a graduate of the Medical School of Maine, Portland, in 1903, and a member of the American Medical Association, the Maine Medical Association, and the Cumberland County Medical Society, died suddenly from acute indigestion, on September 9, aged 38 years.

Dr. William P. Pariseau of Ware, Mass., a graduate of Laval University, Faculty of Medicine, Quebec, in 1904, died in Hampton Hospital, Springfield, on September 1, after a short illness, aged 37 years.

Dr. Philip P. Carlon of New York, a graduate of New York University Medical College in 1890, died in St. Mary's Home, West Hartford, Conn., on August 31, after a long illness, aged 54 years.

Dr. Martin Giesy of Aurora, Oregon, a graduate of Willamette University, Medical Department, Salem, in 1868, died recently at his home, aged 83 years.

Dr. John N. Preston of Pawtucket, R. I., a veteran of the Civil War, died at his home on September 8, after a long illness, aged 69 years.

Dr. Edward A. Schmitz of Wauwatosa, Wis., a graduate of the University of Illinois, College of Medicine, Chicago, in 1884, surgeon of Milwaukee County and city health commissioner of Wauwatosa, died at his home on August 30, aged 56 years.

Dr. Azaire M. J. Provost of Berlin, N. H., a graduate of the Dartmouth Medical School, Hanover, in 1898, and a member of the American Medical Association, the New Hampshire Medical Society, and the Coos County Medical Society, died at his home, from pneumonia, after a short illness, on September 10, aged 46 years.

Dr. William G. Brede of Minneapolis, Minn., a graduate of the University of Minnesota Medical School, Minneapolis, in 1906, and a member of the Minnesota State Medical Association and the Hennepin County Medical Society, died at his home from septic pneumonia, after a short illness, on September 5, aged 40 years.

Dr. Samuel Moore Reynolds of New York, a graduate of the Berkshire Medical College, Pittsfield, Mass., died suddenly at St. Luke's Hospital, New York, on September 7, aged 74 years.

Dr. Marcus Francis Brown of Billings, Mont., a graduate of the University of Illinois, College of Medicine, Chicago, in 1908, and a member of the Montana State Medical Association and the Yellowstone Valley Medical Society, died at his home, from acute dilatation of the heart, on August 28, aged 35 years.

Dr. Howard S. Justice of Hutchinson, Kan., a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, in 1865, and a member of the Kansas Medical Society and the Reno County

Medical Society, died at his home, after a long illness, on August 24, aged 80 years.

Dr. Edward Louis Duer, formerly of Philadelphia, a graduate of the University of Pennsylvania, Department of Medicine, in 1860, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, the Montgomery County Medical Society, the Philadelphia Obstetrical Society, and the Philadelphia Pathological Society, died at his home in Odessa, Del., on September 6, aged 80 years.

Dr. Henri Iskowitz of New York City, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1905, died at his home on September 8, aged 31 years.

Dr. Enoch T. Jones of Hampton, Ark., a graduate of the Memphis Hospital Medical College, Memphis, in 1901, died recently at his home, aged 49 years.

Dr. Aaron J. King of Atlanta, Ga., a graduate of the Southern Medical College, Atlanta, died in a private hospital on September 8, aged 68 years.

Dr. L. L. Crump of West Point, Miss., died on September 5 from injuries received from a fall from his horse.

Dr. Albert James Mackay of Peacham, Vt., a graduate of the University of Vermont, College of Medicine, Burlington, in 1897, and a member of the American Medical Association, the Vermont State Medical Society, and the Caledonia County Medical Society, died on September 11, following an operation for appendicitis, aged 50 years.

Dr. William Henderson Mayfield of St. Louis, Mo., a graduate of Washington University Medical School, St. Louis, in 1883, died in the Mayfield Memorial Hospital on September 17, after a short illness, aged 64 years.

Dr. William L. Rogers of Atlanta, Ga., a graduate of the University of Georgia, Medical Department, Augusta, in 1879, died at his home on September 15, aged 63 years.

Dr. John W. Estes of Georgetown, Ky., a graduate of the Cincinnati College of Medicine and Surgery, Cincinnati, Ohio, in 1890, died suddenly on September 12, aged 68 years.

Dr. Adam W. Hubschmitt of New York, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1900, and a member of the Alumni Association of the New York Hospital, died on September 20.

Dr. Patrick Francis Hogan of Brooklyn, N. Y., a graduate of the University of Michigan Medical School, Ann Arbor, in 1872, died at his home on September 16, aged 65 years.

Dr. Josiah Herbert Keenan of Elizabeth, N. J., a graduate of New York University Medical College in 1895, died suddenly at his home on September 18.

Dr. Floyd Lee Van Wert of New Castle, Pa., 32 years old, was killed in an automobile accident on September 18. He was graduated from the medical department of the University of Pennsylvania in the class of 1910.

Dr. Thomas B. O'Reilly died at Philadelphia on September 18 at the age of 47 years. He was graduated from the Medico-Chirurgical of Philadelphia in the class of 1893, and then served a term as interne in the Philadelphia General Hospital.

Dr. Alexander Williams Biddle of Philadelphia died at Isleboro, Me., on September 19, at the age of 65 years. He was graduated from Jefferson Medical College in the class of 1879.

Correspondence.

NITROUS OXIDE-OXYGEN ANESTHESIA.

To the Editor of the Medical Record:

Sir:—In correction of Dr. Baldwin's statement in your issue of July 29, regarding deaths under nitrous oxide-oxygen anesthesia in this hospital, we beg to make the following references from the records of the hospital: During his short interne service in the hospital, Dr. McCormick never gave a gas anesthetic alone, although our anesthetizer attempted to teach him its administration and was always present throughout the entire anesthesia. No patient died in the hospital directly or indirectly as a result of nitrous oxide-oxygen anesthetic or under other anesthetic during his stay. During the past five years several thousand gas anesthetics have been administered in this hospital, 99 per cent. of which were given by a woman physician who has specialized in the administration of anesthetics for seven years. Instead of "seven or eight deaths" during nitrous oxide-oxygen anesthesia, as stated in Dr. Baldwin's article, we have never, until a few months ago, had a death that could be in any way, directly or indirectly, attributed thereto. About five months prior to this date, one death occurred during nitrous oxide-oxygen anesthesia in a patient who submitted to an operation as a last resort and was physically incapacitated from taking ether. The records of this hospital are open to Dr. Baldwin or to any interested physician or surgeon who cares to investigate any medical or surgical condition or make scientific inquiry in reference to our work.

W. L. Babcock, M.D.,
Superintendent, The Grace Hospital.

Detroit, Mich., Sept. 20, 1916.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

LOCAL GOVERNMENT BOARD—PROPOSED SCHEME AS TO VENEREAL DISEASES—DISTRIBUTION OF SALVARSAN—QUALIFICATION OF PRACTITIONERS DISTRIBUTING—MORTALITY OF MEDICAL OFFICERS—OBITUARY.

London, September 1, 1916.

The Local Government Board has had the City Corporation and the County and Borough Councils addressed in regard to venereal diseases. A scheme embodied in a circular has been approved by the profession who will cordially cooperate with the government department. It is suggested that it would be a great advantage if committees of local authorities invited the medical men in their several localities to nominate representatives to attend all meetings at which schemes may be discussed and to assist with their special knowledge of the needs of their particular areas. One of these representatives should in the usual way also represent the medical staffs of the hospitals and another the general practitioners in each administrative area. Mr. Long is anxious that each scheme shall meet the local needs in the fullest possible way and thinks the plan likely to secure the cooperation of the profession.

Questions have been raised as to the safeguards which ought to be taken in the distribution of salvarsan or its substitutes. The Local Board intends to supply those drugs for the purpose of intravenous administration to patients free to practitioners who produce satisfactory evidence of training or experience in their use. It is not thought desirable

to lay down hard and fast lines, but it is considered that as a general rule the drugs might properly be distributed by the medical officer of health or his agent, who should be required to satisfy himself before issuing a supply that the applicant is a registered practitioner who possesses one of these qualifications: (*a*) holds a certificate of having satisfactorily fulfilled the duties of clinical assistant in a hospital department recognized by the L.G.B. in connection with the scheme of the local authority, (*b*) holds a certificate of attendance at a course of instruction in the diagnosis and treatment of these diseases in their communicable stages, including intravenous medication, this to be in a recognized medical school or post-graduate college; (*c*) is or has been within the last five years a member of the permanent staff of a hospital of not less than fifty beds; (*d*) has had, in addition to the preceding adequate experience in intravenous medication.

The mortality of German medical officers in the present war has been heavy. Up to the middle of January the deaths are reported to have been 56. There were, in addition, 216 wounded, 40 made prisoners, and 94 are missing, while 29 have died of disease or wounds, 5 from accidents, and 2 are sick. These figures have been published as out of a total number of 12,000 serving with the army, but not including those in military hospitals, besides a further 10,000 in reserve hospitals, sanatoria, prisoners' camps, and ambulances. As Germany has about 32,000 medical men, this would leave only about 8,000 available for civil practice.

The death has occurred of Lieut.-Col. George M. J. Giles of the Indian and Canadian Medical Services. He took part in the South African war of 1878-9 and received the medal with clasps. When the present war broke out he was living at Kingston, Ontario, and joined the Canadian Army Medical Service. Returning to England he became medical officer to Burcote Hospital, but retired in March last on account of ill-health. He was author of "Climate and Health in Hot Countries" and one of the editors of the *Journal of Tropical Medicine*.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

UNUSUAL INTOXICATING BEVERAGES USED IN ALASKA.

ST. MICHAEL, ALASKA, Aug. 24, 1916.

IT is probably not known how long the human race has been addicted to alcoholism, but the first paper on the subject was written in 1789 by John Coakley Lettsom, one of the original founders of the Medical Society of London. With the advancement of science many new intoxicating beverages have come into use. Many other liquids containing from a fraction of 1 per cent. to 50 per cent. or more of alcohol are used as intoxicating beverages, although they are not put on the market for that purpose.

The Territory of Alaska is not "dry," but the sparsely settled country with limited and slow transportation has invited many persons who long for the physiological effects of alcohol and cannot obtain it in the usual beverage form, to attempt to manufacture or to use some other liquid which contains alcohol. It is not uncommon in some places in Alaska where there are no saloons to see a man go into a trading post or general merchandise store and say that he wants something to drink and ask, "What have you that contains the largest per cent?" "How much has this?" "How much has that?" meaning the percentage of alcohol and pointing to some medicine, perfume, toilet water, flavoring extracts, etc., on the shelf. There are many persons in Alaska, both white and native, who resort to various means of securing alcoholic intoxicants. The most common of these unusual alcoholic drinks in places which are in touch with civilization are the flavoring extracts. I mean by places that are in touch with civilization, a place that has a store or a trading post. In towns that are large enough to have a saloon, the saloons are patronized. It appears not to make any difference whether the extract be lemon, ginger, vanilla, pineapple, or what. It is sometimes drunk straight and at times mixed with cider, grape juice, milk, "sourdough," root-beer, or hot water. Sugar may or may not be added. Most of these extracts contain about 80 per cent. alcohol and their consumption in Alaska as a beverage has become so great that it is now a violation of the law to sell them to a native or to any one for drinking purposes. It would be interesting, indeed, to know just how much of these extracts is consumed in Alaska annually for drinking purposes, but it must be a large quantity, as every one seems to know of them and talk about them as intoxicating drinks. Through this port alone the amount of extracts shipped appears all out of proportion for their use for flavoring purposes considering the population.

In places that are not in touch with civilization, especially native villages, "sourdough" is the favorite intoxicating drink. This is sometimes called "hootch" or "hootchinoo." The latter term is thought to have originated in Kamchatka, across Bering Sea, in Russia, from whence the art of making sourdough probably spread to Alaska. The term "hootch" is a slang expression and is at times used to designate any intoxicating liquor, while hootchinoo is more properly distilled sourdough. Sourdough is made by mixing a very thin dough of flour and water, adding yeast, and setting aside to ferment. This fermentation is facilitated by placing the vessel in warm water or in a warm place. As the fermentation takes place, the liquid turns an amber color and large flakes of starch float to the top, later to settle to the bottom leaving a clear colored liquid on top. Rice and barley are sometimes used instead of flour, and it has been said that the addition of molasses to the fermenting mass makes a stronger preparation. The entire mass has a sour smell, hence the name sourdough. Alcohol is formed during this fermentation and after it has reached the required percentage, the liquid is strained. Some persons drink the liquid just as it is strained off, and this is the usual way. Sometimes the liquid is distilled, giving it a better smell and taste and making it clearer and more concentrated. As this method requires some apparatus, time, and experience, it is the uncommon form. This liquid appears to be much more intoxicating than beer and the laws of Alaska prohibit its manufacture. The writer has seen persons so intoxicated from its use as to threaten the lives of others and require confinement. A "sourdough fiend" told the writer a few days ago that the addition of a teaspoonful of wood ashes to a pint of sourdough very materially increased its intoxicating qualities.

Although it requires some apparatus to make hootchinoo—the distilled sourdough—it is remarkable what simple apparatus may be used for this distilling purpose. A common homemade still is made by taking two coal oil cans and connecting

them with a pipe. The pipe enters one and passes through the other. The sourdough is boiled in the former and condensed by ice in the latter, the hootchinoo dropping out of the end of the pipe as a colorless alcoholic liquid. In the absence of a pipe, gun barrels have been used for this purpose, and it is believed that there are many houses in Alaska which have some such apparatus in them.

When the materials can be obtained the following is a favorite method of manufacturing hootch: about a pint of sourdough is mixed with about a gallon of cider or grape juice and the mixture is left open for several days in a warm place. This mixture become quite intoxicating. As these liquids are not consumed for their taste but for their effects only, a great deal of trouble results in Alaska from their use. There are special agents for the suppression of intoxicating liquors among the natives of Alaska and probably no other alcoholic drink gives these agents as much trouble as sourdough. It may be interesting to note that a white man who spends more than one year in Alaska is called a "sourdough." The "sourdoughs" say this is due to the fact that the white men make sourdough (yeast) hot cakes, while the natives say it is because of the early adaptation of the white man's taste to "the native drink."

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 14, 1916.

1. Portraits of Florence Nightingale. Maude E. Seymour Abbott.
2. The Present Status of Alveolar Osteomyelitis. Leon S. Medalia.
3. The Use of Emetine. Alfred C. Reed.
4. Peripheral Neuritis Following Emetin Treatment of Amebic Dysentery. A. R. Kilgore.
5. Dystonia Musculorum Deformans. Isadore H. Coriat.

3. The Use of Emetine.—Alfred C. Reed presents the salient features of the history, pharmacology, toxicology, and use of emetine, and, in summarizing, states that in so far as emetine has a beneficial action in tuberculosis, it would seem to be due to its expectorant properties, and if so, other preparations are preferable. In so far as emetine has a beneficial action in hemorrhage, it would seem to be due to the indirect result of decreasing the blood pressure, and if so, other drugs would be more effective, in that they would produce a similar result more safely and without the specific action of emetine on coagulation. Levy and Rountree make the suggestion which can hardly be taken seriously from the clinical point of view, that emetine enemata would serve a useful purpose in the treatment of constipation. Such enemata have an undoubted value when properly used for the sake of their amebicidal action, but their use as here suggested does not seem well advised. Emetine will hardly replace Leonard Rogers' hypertonic infusion in Asiatic cholera, and few of its other applications will bear the test of careful experimentation. Whether emetine alone will cure pyorrhea is an open question. It will, without doubt, cure the amebic infection, and to this end its use hypodermically and locally is indicated. But it cannot be said that emetine is a specific for pyorrhea, or that pyorrhea cannot be cured without it. This statement is also applicable to certain bony and oral abscesses and infections other than pyorrhea. Emetine has proved serviceable in the treatment of certain other diseases caused by animal parasites, especially protozoans, but its main action is on the ameba, for which it is a specific remedy, provided the specific agent is not walled off in an abscess.

4. Peripheral Neuritis Following Emetine Treatment of Amebic Dysentery.—A. R. Kilgore reviews the main by-effects of emetine hydrochloride and reports a number of cases which serve to call attention to the frequency of the occurrence of peripheral neuritis after emetine. He finds that peripheral neuritis after emetine is not uncommon. The symptoms most commonly met with in post-emetine neuritis are general muscular pain and weakness, usually most pronounced in the legs, sometimes going on to paresis. One case is here reported of hyperesthesia of the soles of the feet without other symptoms. The neuritic symptoms often develop after the emetine injections have been stopped, and may grow progressively worse for some time with no more administration of the drug. The total amount of emetine necessary to produce neuritis varies greatly. The total amounts received by the cases of Levy and Roundtree and of the writer varied from 21.3 grains in an adult to 4 in a child of four years. On the other hand many patients received larger amounts and had no symptoms. The prognosis is good. The symptoms clear up gradually, usually over several weeks, leaving no traces apparent. Experiments now in progress suggest that peripheral neuritis may be produced by emetine in healthy dogs.

5. Dystonia Musculorum Deformans—Oppenheim's New Disease of Children and Young Adults.—Isadore H. Coriat reports three cases of a disease described by Oppenheim in 1911 as occurring in young people of Russian or Galician Jewish parentage, which he termed dysbasia lordotica progressiva or dystonia musculorum deformans. He attempted to separate the disorder from the tics, athetoses, and the various muscular spasmodic states occurring in hysteria. At first the racial predilection of the condition suggested a comparison with amaurotic family idiocy, but more recent studies have shown that while the disease is preeminent among young Hebrews, yet it is not absolutely limited to them. The first two cases reported strongly resembled an hysterical dysbasia, but without any corresponding sensory disturbances; in the third case there was evidence of some organic affection of the nervous system, as shown by spasticity, gait, bulbar symptoms, and the variations in muscular tonicity, yet lacking the usual pathological reflexes of the spastic groups of diseases. In one case the condition followed a slight trauma, in another it appeared after a tonsillectomy, while in the third, it was engrafted on a highly neurotic and probably latent hysterical individual. The prominent features in all the cases were the peculiar gait, the changes in the muscular tonicity, and the rapid onset of the disease without any pathological reflexes or changes in sensation. All reported cases show that it begins in an extremity. The disorder presents certain difficulties in diagnosis because of its obscure relationship to hysteria, on the one hand, and to organic diseases of the nervous system on the other. For this reason it is difficult to place the condition in any definite nosological entity.

New York Medical Journal.

September 16, 1916.

1. Epilepsy. Charles A. L. Reed.
2. Reed's Bacillus of Epilepsy. A. J. Hinkelmann.
3. The Pathogenesis and Treatment of Epilepsy. Henry A. Cotton, E. P. Corson-White and W. W. Stevenson.
4. Toxic Manifestations of Epilepsy and Their Rational Treatment. Ralph H. Spangler.
5. Pelvic Infection. A. J. Walscheid.
6. Hemiplegia. William Martin.
7. Secondary Syphilitic Lesions of the Tongue. Constant Saison.
8. Medicine and Surgery in Modern Warfare. Benjamin Jablons.
9. Treatment of Bladder and Urethral Papillomata. Geza Greenberg.
10. An Invariable Blood Stain. B. G. R. Williams.

1. **Epilepsy.**—Charles A. L. Reed reviews the evidence that he has brought forward to show that there is present in the blood of epileptics an organism not present in other individuals, that this organism is forced from the alimentary canal into the circulation by the anatomical disturbance of mechanical stasis, and that this sequela has been shown to be present in 100 per cent. of his cases of epilepsy. If these things are true the immediately consecutive stages of the pathological process intervening between absorption and convulsion become matters of interest. The toxemia of epilepsy is shown by the constant tendency to a subnormal temperature and by the elimination of various toxic products in the urine. Chronic acidosis, profound, always obstinate, often almost irreversible, exists in 100 per cent. of epileptics. It is but natural that acidosis of this character should be followed by edema especially marked in organs and structures upon which the primary infection exercises a selective action. It would seem that the *Bacillus epilepticus* exercises its terminal effects by producing a terminal deinsulating edema of the conduction paths of the brain, as in purely convulsive disturbances; or of both the conduction paths and the cortex, as with convulsions with psychic explosions. It seems therefore that if diagnostic studies of epilepsy are really to be made, it will be necessary to broaden the usual methods of investigation. Actual examination of the cases must embrace, first, the blood with reference to the presence or absence of *B. epilepticus*, and for the further purpose of determining the blood values; next, the careful *x*-ray examination of the abdominal viscera with reference to determining more particularly the position of the stomach and intestines and the transit of ingesta through them; third, the repeated analysis of the urine and saliva with reference more particularly to the existence and degree of acidosis. In the light of the evidence in the hands of the profession it may now be said that any examination of epileptics that stops short of these features necessarily stops short of diagnostic accuracy.

2. **Reed's Bacillus of Epilepsy.**—A. J. Hinkelmann states that, on the basis of experiments made during the summer of 1915, and before he had any knowledge of the pathology of the organism, he found it a frequent inhabitant of the intestinal tract. The universal presence of the organism in the intestinal flora is no argument against its probable pathology, but simply adds to the importance of the gateway through which it enters the blood stream, in considering the treatment. Observations show that the organism is highly hemolytic and to this fact may be due a part of the pathological conditions present in epileptics. Cultures made on blood agar plates will show a hemolytic spot long before the colony itself becomes visible. In the opinion of the author the fact that the organism does enter the circulation and there multiplies into great numbers, and is so generally found in the blood of epileptics, makes the conclusions of Reed as to its specific nature at least very plausible.

3. **The Pathogenesis and Treatment of Epilepsy.**—Henry A. Cotton, E. P. Corson-White, and W. W. Stevenson present this preliminary report from the Laboratory of the New Jersey State Hospital from which they conclude that: 1. At least one type of epilepsy is probably a disease process dependent upon absorption of toxic or poisonous products from the intestinal canal. 2. This stasis may be produced by an overaction of the suprarenal gland. 3. Hyperactivity of the adrenal gland may be caused by, a, dysfunction of pituitary, b, dysfunction of pancreas, c, irritation of duodenum, d, severe fright or emotional disturbance. 4. Treatment by administration of pancreatin should be employed in preference to surgical procedures. 5. Surgical procedures should be employed in long standing cases where other treatment fails.

4. **Toxic Manifestations of Epilepsy and Their Rational Treatment.**—Ralph H. Spangler records his clinical observations and the results of various blood tests made in over 300 cases of epilepsy. He concludes that in many of the so-called idiopathic cases of epilepsy, the attacks are caused by a toxin carried in the blood. The accumulation of this toxin in an epileptic will cause an attack, associated with general leucocytosis, but not an eosinophilia. The blood of an epileptic injected into an animal causes a general leucocytosis with a marked eosinophilia. A patient afflicted with epilepsy in most instances does not produce, or has lost the power to produce, an eosinophilia; the toxin is not antagonized and an attack occurs, that is, in a patient afflicted with epilepsy the toxin is negatively chemotaxic for eosinophile cells. The clotting time of the blood is shortened before an epileptic seizure. The range of clotting time of the blood in 85 per cent. of the cases in a series of 100 patients was shorter during interparoxysmal period (1.5 to 4.5 minutes) than it is in normal subjects (three to eight minutes as given by most investigators). The alkalinity of the blood is lower in cases of epilepsy than in control, non-epileptic subjects, on the same diet. The hypodermic injection of crotalin in properly regulated doses has produced moderate degrees of eosinophilia, has lengthened the clotting time, and increased the alkalinity of the blood in certain epileptic patients, thus greatly modifying the character of the seizures and in some cases holding the attack in abeyance indefinitely.

10. **An Invariable Blood Stain.**—B. G. R. Williams recommends the following method of blood staining because the technique is simple, rapidly completed, gives results which are invariable and sufficient for diagnostic purposes, and it is practically impossible to overstain with it. The hematoxylin used is the Ehrlich formula: Mix:

Hematoxylin	2
Glacial acetic acid	10
Glycerin	100
Absolute alcohol	100
Distilled water	100
Potassium alum (an excess).	

The invariable stain is made by adding to this filtrate 0.1 gram of water soluble eosin. This stain is not self fixing; the author uses the alcohol flash method of fixation, though he says it is possible that other good methods may answer. The picture is that given by any hematoxylin and eosin methods. By this stain it is easy to diagnosticate the various anemias, leucemias, eosinophilias, etc. Differential counting is much more satisfactory than with Wright's because of the excellent nuclear staining.

Journal of the American Medical Association.

September 16, 1916.

1. The Prevalence of Chronic Mouth Infections and Their Management. Frederick B. Moorehead.
2. The Principles Involved in Focal Infection as Related to Systemic Disease. Frank Billings.
3. Dental Infections and Systemic Disease: Treatment and Results. Ernest E. Irons.
4. Methods and Results in Gastric Surgery. George W. Crile.
5. A Roentgenological Study of the Gastro-Intestinal Tract in Diabetes: A Report on Seventy-two Cases. James T. Case.
6. Direct and Indirect Hay-Fever: Preliminary Report of the Research Department of the American Hay-Fever Prevention Association on the Etiology of Hay-Fever. W. Scheppegrel.
7. Brachial Plexus Surgery. Arthur Ayer Law.
8. The Interest of the Community in Cancer. Louis I. Dublin.
9. Hemoglobinuric Fever Treated by Infusions of Quinin. William O. Ott.
10. Dont's to be Emphasized in the Management of Hypertensive Cardio-vascular Disease. Henry Farnum Stoll.

1. **The Prevalence of Chronic Mouth Infections and Their Management.**—Frederick B. Moorehead has examined the histories of 718 cases, including 498 cases of chronic arthritis, 70 cases of chronic infections not joint lesions, and 150 private office cases referred for mouth examination because of some systemic disease, with the object of determining the incidence of chronic mouth infections. In the first group 89 per cent. had alveolar abscess; in the second group 74 per cent., and in the third group 69 per cent. The overwhelming majority of chronic abscesses were associated with previously treated root canals, a fact which serves to emphasize the importance of root canal technique. The essayist concludes that both in diagnosis and in determining the extent of tissue lost, the Roentgen ray is of paramount value. The involvement of the peridental membrane is the crux in deciding between conservative and radical treatment. Faulty root-canal technique. the careless use of arsenic as a devitalizing agent, and irritating drugs in the treatment of root canals are strong predisposing factors of chronic alveolar abscess. In carefully selected cases, conservative measures should be employed both in the treatment of chronic abscess and chronic suppurative pericementitis. Where root canals have been disinfected and filled, portions of roots resected, etc., the process of repair should be checked up by roentgenograms made at frequent intervals. Regardless of whatever form of treatment may be employed, the removal of infection is imperative in all cases, whether the patient at the time may be well or ill.

2. **The Principles Involved in Focal Infection as Related to Systemic Disease.**—Frank Billings discusses the principles of infection under the following three headings: 1. The pathogenic microorganisms and the conditions which modify their virulence and pathogenicity. 2. The host, or infected individual, and the conditions which modify his susceptibility to infection. 3. The nature and result of the reactions between the infectious agents and the tissues of the host. He concludes that the laws which govern the perpetuation of the pathogenic microorganisms involve a life of parasitism harmless to the host or of varying degrees of pathogenicity. Apparently any specific type of bacteria which causes focal infection may attain the biochemic qualities which permit them to live in the host as harmless parasites or as injurious agents possessed of a special or general pathogenicity of varying virulence. The varying pathogenic qualities, special and general, may be acquired apparently in the host or in the passage from host to host (man or animal), or may be brought about in culture mediums. Confined infection (focal) seems to be a site in which infectious agents may attain specific pathogenicity, chiefly in the nature of tissue tropism (elective tissue affinity). This special quality is not recognized necessarily by cultural characteristics. The power to hemolyze or to produce green color in agar blood plates by some members of the streptococcus group does not necessarily indicate that specific pathogenicity or degree of virulence. The special or general pathogenicity of the infectious agents of focal infection, and the susceptibility of the host, measured by many factors, such as age, environment, social condition, occupation, habits, domiciliary and occupational environment, climate, physical well-being, etc., may determine the severity, acute or chronic, the extent, local or general, and the site, election of tissue, of the systemic infection. The writer believes that these conclusions are sustained by clinical observations and bacteriological research.

4. **Methods and Results in Gastric Surgery.**—George W. Crile. (See MEDICAL RECORD, June 17, 1916, page 1111.)

5. **A Roentgenological Study of the Gastrointestinal Tract in Diabetes: A Report on Seventy-two Cases.**—James T. Case, in this series of 72 diabetics, found gallstones in six cases, or 8 per cent., and in eight more cases there were very suspicious shadows, some of which were proved to be gallstones at subsequent operation. Evidence of gallbladder region adhesions existed in 26 of these cases and there was a correspondingly large percentage of cases of transverse stomachs. The findings in relation to the motor function of the stomach agree very well with the clinical studies of various investigators. Duodenal stasis was a rare finding in this series of cases, being observed only once. An increase in the dimensions of the duodenum, either in length or caliber, was not observed. There was a striking relation between the severity of the disease and the degree of ileac stasis. Ileocecal valve incompetency is a common finding in diabetics, but in this series there seemed to be no relationship between the degree of ileocecal valve incompetency and the severity of the disease. Adhesions of the terminal ileum, stasis in the cecum, and evidences of appendical diseases, were somewhat more frequent in the severe cases than in the mild cases in this series. The average emptying time of the colon was delayed in about the same proportion of cases as one would expect from a perusal of the clinical histories. A majority of the patients showed a low grade of colonic stasis. Extreme colonic stasis was found in only two cases, and both of these showed carcinoma of the distal colon.

6. **Direct and Indirect Hay-Fever: Preliminary Report of the American Hay-Fever Prevention Association on the Etiology of Hay-Fever.**—W. Scheppegrell states that their investigations show that there are two forms of pollen causing hay-fever; the first, spiculated in form and low in protein, causing direct hay-fever; the second, unspiculated in form and high in protein, causing hay-fever by absorption of the protein (indirect hay-fever). In direct hay-fever, the severity of the attack and its duration depend on the number of pollen grains in the atmosphere, and the length of the pollen spicules. The rag-weeds form the type and principal cause of this form of hay-fever. In indirect hay-fever, the severity of the attack and its duration depend upon the amount of protein contained in the pollen and on the number in the atmosphere. The grass pollens have the highest percentage of protein and form the type and principal cause of this form of hay-fever. Pollens without spicules and with an inappreciable amount of protein are innocuous in hay-fever.

7. **Brachial Plexus Surgery.**—Arthur Ayer Law. (See MEDICAL RECORD, July 1, 1916, page 35.)

8. **The Interest of the Community in Cancer.**—Louis I. Dublin. (See MEDICAL RECORD, September 16, 1916, page 525.)

10. **Don'ts to Be Emphasized in the Management of Hypertensive Cardiovascular Disease.**—Henry Farnum Stoll formulates the following list of "dont's": 1. Don't tell the patient with moderate hypertension, few symptoms and whose kidneys are functioning well to stop eating meat, or go on a milk diet. 2. Don't tell him to give up his business immediately; try to readjust his life so that unnecessary cardiovascular strain is reduced to a minimum. 3. Don't tell him his kidneys are "all right," just because his urine exhibits neither albumin nor casts. 4. Don't miss the significance of nocturnal polyuria and a persistently low gravity. 5. Don't give nitroglycerin tablets to your patient the moment you discover that he has hypertension. Perhaps he requires a high pressure to get the blood through his small inelastic vessels. 6. Don't be satisfied with the systolic pressure—the diastolic is often of more significance. 7.

Don't attribute the insomnia, nervousness and headaches in the middle aged woman to "the change"—take her blood pressure and examine her eye grounds. 8. Don't make a diagnosis of neurasthenia till after a blood pressure estimation and a Wassermann test. It may save subsequent embarrassment and even be of advantage to the patient. 9. Don't think you are doing your whole duty to your pregnant patient when you have examined her urine. She may have hypertension but no albumin today and eclampsia next week. 10. Don't consider hypertension solely a condition of middle life; it is occasionally present in childhood. 11. Don't forget the old man's enlarged prostrate. It may be the cause of the nephritic syndrome. 12. Don't hesitate to give digitalis when symptoms of cardiac failure are evident. It will not raise the blood pressure. 13. Don't wait until the patient is water logged and the heart dilated before suspecting a failing myocardium. 14. Don't deny your sleepless, gasping patient, whose course is nearly run, the relief that only morphine will give. 15. Don't make a prognosis solely on the blood pressure or phenolsulphonephthalein test. Each tells but part of the story. 16. Don't overlook the fact that cardiovascular disease is to a certain degree a familial condition sometimes present in several generations; nor neglect to explain the importance of a yearly blood pressure estimation of all members of the family. 17. Don't exclude syphilis, especially a parental infection, as the cause of hypertension solely because the Wassermann is negative. Study the family history; examine the brothers and sisters, and your patient's children for signs of hereditary syphilis. 18. Don't fancy that the management of hypertension consists in watching a column of mercury or that success is measured in millimeters.

British Medical Journal.

August 26, 1916.

1. A Prehistoric War Wound. Lionel F. West, with Note by Arthur Keith.
2. On the Salt Pack Treatment of Infected Gunshot Wounds. J. E. H. Roberts and R. S. S. Statham.
3. A Plea for Ignoring "Laudable Pus" in the Treatment of Septic Wounds. M. Donaldson, E. Alment and A. J. Wright.
4. Secondary Infection of Joints in Acute Medical Ailments. G. H. Edington.
5. Death under Nitrous Oxide Oxygen and Spinal Anesthesia. William E. Robinson.
6. Treatment of Wounds by Nascent Ozone. John Jeffrey.
7. A Case of Abdominal or Bilocular Hydrocele. F. O. Lasbrey.

2. On the Salt Pack Treatment of Infected Gunshot Wounds.—J. E. H. Roberts and R. S. S. Statham state that the method of dressing wounds with a firm pack of gauze and sodium chloride tablets, devised by Col. H. M. W. Gray, combined with a primary free excision of the wound and lacerated and infected tissues, has in their hands given results which have effected revolutionary changes in their methods of treatment. During the last twelve months it has gradually supplanted other methods of treatment until now it is employed in the majority of cases. They have found that wounds dressed in this way became clean at least as speedily as those treated by other methods and that the general condition of the patients improved owing to the undisturbed sleep, increase of appetite, and absence of mental apprehension of frequent painful dressings. In all cases side tracks and pockets are opened up so that they can be packed to the bottom. Where a fracture exists, fragments, unless they are small and completely detached, are not removed. These proceedings are not really so heroic as they at first sight appear, since most of the muscle excised has been infected and that not infected has lost its striation and contains hemorrhagic areas for a considerable distance around a gunshot wound. Such muscle will not regain its function and will ultimately be replaced by fibrous tissue. With the exception of iodine for the skin no antiseptic is applied to the wound. The salt pack is applied in the following manner: A piece of plain gauze, six to eight layers thick, is lightly wrung out of 5 per cent. salt solution and carefully laid in the wound so that it is in contact with the whole of the surface. No spaces should be left, as they rapidly fill up with pus. A few 40-grain tablets of salt are placed in the deepest recesses of the wound. The interior of the gauze-lined wound is then firmly packed with a roll or long strip of gauze moistened in the same way. The strip is carried alternately from one end of the wound to the other and numerous tablets of salt are laid between the successive layers. When the pack becomes flush with the surface a few more layers are applied and over that a thick wool dressing. Really firm pressure is used in applying both the pack and the bandage. In an ordinary fairly severe wound the pack is left undisturbed for five or six days, when the wound is redressed, usually under an anesthetic. The indications that the wound is not doing well and the pack should be changed are a continuously rising pulse rate, increasing edema of the limb, sudden onset of severe pain, persistent rise of temperature, a change for the worse in the patient's general condition, and oozing of pus from under the edge of the dressing. The salt pack has given very good results with flush amputations and in excised joints. It seems to be of great value at times when it may be impossible to renew dressings for several days.

3. A Plea for Ignoring "Laudable Pus" in the Treatment of Septic Wounds.—M. Donaldson, E. Alment, and A. J. Wright claim that their experience has taught them that the presence of pus in a well-drained septic wound is no impediment to healing, whilst the disturbance necessary for its frequent removal retards the process of repair. They state that cases have been left considerably more than a week without change of dressing, and during that time the temperature and pulse remained normal and the patient's appetite rapidly improved. Charts are presented to show that the temperature and pulse, although possibly very alarming in the first few days after the operation of drainage, soon settle down without any dressing being changed. After nine months of trial they have adopted the salt pack in the majority of septic wounds, except those of the head, thorax, and some septic arms and legs which are opened up and put straight into a saline bath.

4. Secondary Infections of Joints in Acute Medical Ailments.—G. H. Edington reports three cases of joint infections occurring as a complication in medical ailments. In the first case pneumococcic abscess of the knee and buttock occurred as a complication rather than a sequela of bronchopneumonia; in the second case a streptococcic coxitis followed a pneumococcic empyema, in which it was probable that the chest condition was a mixed infection; in the third case suppuration in the knee joint occurred during alleged cerebrospinal fever. The writer says it is usual to explain the implication of the joint as a metastasis occurring in a part whose natural power of resistance has been lowered, and in support of this explanation trauma is usually invoked. In none of these cases was there any history of injury to the joint. It would seem that the story of precedent injury, frequently trifling, of which so much is made in the light of subsequent events, often rests on a slender foundation. Even if it is assumed that secondary implication of a joint points to severity of the primary infection—large dose or particularly virulent strain—the question is still to be answered as to the choice of location of secondary infection. The influence on the primary disease of the occurrence of

joint infection is discussed and the treatment of an infected joint outlined. The importance of keeping infected joints at rest in a proper position; of aspiration, if distension by effusion occurs, and more especially of strict antisepsis if operation is undertaken, are emphasized. Observation shows that in some minds the presence of pus seems to indicate that antiseptic precaution may be avoided. It should not be forgotten that to secure an aseptic result in a case of abscess is a proof of surgical skill greater than that required for the successful termination of a case of abdominal section.

5. **Death Under Nitrous Oxide-Oxygen and Spinal Anesthesia.**—William E. Robinson reports this case which is quite similar to one recently reported by W. J. McCardie in the *British Medical Journal* of July 22. The patient was a fat, unhealthy subject, very anemic and nervous, with a history of many attacks of bronchitis. The pulse was small, rapid, and thready, and the case unsuitable for a general anesthetic. The patient was operated on for a uterine fibroid. Ten minutes after the injection of 0.6 c.c. of stovaine (10 cg. stovaine in 1 c.c. of normal saline) the administration of gas and oxygen was begun. Fifteen minutes after the injection of the stovaine the patient vomited and became partly conscious. After vomiting was over, the gas and oxygen was restarted and the patient was apparently doing well. A few minutes later she again vomited, but this time did not regain her breath. Her color was perfectly good; her pupils dilated, and there was no obstruction by vomit in the larynx. All efforts at resuscitation failed. It seems to the writer that the stovaine was not directly responsible for this fatality, for the time limit when its toxicity gives cause for anxiety had passed. The shock of pulling up the uterus could not have been responsible for this occurrence. The anesthesia was perfect and all sensory nerves must have been blocked. This left, therefore, the nitrous oxide gas as more directly the cause of death. It seems probable that, owing to the anemic condition of the patient, the oxygen was not able to enter into her tissues to any extent and the nitrous oxide gas therefore acted on her heart muscle, causing it to fail at the critical moment, when, owing to the act of vomiting, there was again increased intrathoracic pressure and so a dilated right side. The practical suggestion to be drawn from this experience is that one should be guarded in the choice of gas and oxygen added to a spinal anesthetic in the presence of marked anemia.

Le Bulletin Médical.

August 26, 1916.

Primary Operations on the Skull.—There has been a most promising union between the Societies of Surgery and Neurology under one president, Godari. To facilitate a debate various questions were asked, the first being in regard to primary intervention in cranial wounds. The questions were as follows: Should one always operate? What are the types of operation permissible? In simple fissure of the external table, ought one to examine the state of the inner table? Is the flap operation preferable to crucial incision? What are the indications, technic and results of primary extraction of intracerebral projectiles? These questions were answered by different members, one of whom, Rouvillois, may be quoted because of his categorical answers. He states in regard to operation that an exploration procedure should always be made as soon as possible, preceded if possible with an *x*-ray. How we should operate and how far should we go in this direction depends on the degree of injury. If the dura is not involved the trephine should always be used in theory; but as an opening has already been made in the skull, it is sufficient as a rule to trim its edges until it conforms to a trephine opening. If the dura and brain substance are involved the flap operation seems to give better remote results, as compared with crucial incision, but there is much to be said in favor of the latter which gives better visual control of the brain, and better conformation between the wound of the skull and that of the scalp. We have to think of immediate as well as remote results, and each operation doubtless has a separate field. In regard to inspection of the inner table in connection with simple external fissure this should be done always. In regard to projectile extraction, the presence of a bullet, etc., within the cerebral tissue is always a great menace, and hence immediate extraction should be made irrespective of depth. Secondary extraction is indicated in two conditions (1) when there is full infection, usually in the midst of a cerebral abscess, and (2) when the ball lies in a scar or is simply encapsulated in the brain.

La Presse Médicale.

August 24, 1916.

Signs of Apex Pleurisy.—Sergent considers this subject with especial reference to pulmonary tuberculosis and supra clavicular adenitis. All schematic categories are inconvenient and dangerous and each observer should report his own finds without making them conform to classifications intended to bestow on the victim a particular status upon which treatment is to be based. The clinician has or should have a thorough technique and knowledge of semeiology, and therefore should rank as a phthisiologist. Now the same symptoms may belong to quite different disease types. We have but one certain test of tuberculosis—the presence of bacilli in the sputum. We do not refer here to latent tubercle, which is all but universal, but to the active manifestations. Our knowledge of phthisiology is in the midst of a revolution, and much false teaching is being relegated to the scrap heap. The great question of the day is "to what extent may a patient without bacilli in the sputum suffer from latent tuberculosis?" All who make many autopsies are familiar with apical adhesions of the pleura. The degree of adhesion may vary within wide limits. The author does not refer alone to pleurisy which is secondary to some lesion of the parenchyma of the lung, but to cases in which the pleural lesions predominate, even to the extent of complete symphysis. There are a number of individuals not actively tuberculous who suffer from apical lesions, as shown by the stethoscope and *x*-ray, all other regions of the lungs being intact save perhaps for old calcified lymphnodes at the hilus. Let us examine the symptoms of these patients. There are certain pains—between the shoulders, in the inner aspects of the supra—and intraspinous fossae, supra—and infroclavicular fossae—which show not the slightest resemblance to neuralgia or myalgia, but represent pleurodynia. This is not constantly present and is aggravated by deep inspiration and coughing. It is absent in complete symphysis and is perhaps due to the cicatrization which produces adhesion. Symptoms are very numerous. There are various degrees of flatness on percussion; absence of fremitus, muscular atrophy in the subclavicular and subspinous regions. The auscultatory signs are very difficult to interpret and are responsible for many incorrect diagnoses. This also holds good for radiography, especially when the operator is not a skilled interpreter. With a sufficient autopsy experience and knowledge of pathologic anatomy, it should be possible to interpret correctly the finds of the stethoscope and *x*-rays. Two objective

signs possess considerable value, to wit, pupillary inequality associated with paralysis of the sympathetic of the affected side and supraclavicular adenitis, the latter the subject of many researches. The inflamed gland is elongated in shape, lies just behind and parallel with the clavicle and opposite the border of the sternomastoid muscle. The size and consistency, also the number of glands involved, may show great variation. This affection has nothing in common with ordinary cervical adenopathy. During the past 2 years the author has made a routine research for this symptom. Very often it means the existence of a pleurisy, less often of a pulmonary lesion. The gland often felt is the end of a chain which leads to the inflamed pleura. If the pleuritic process is acute the gland should be large and soft; if chronic, small and firm. Pleurisy of the apex is not a new disease, but one which has been forgotten. When well developed it has usually passed for a tuberculous lesion, and no less when only imperfectly developed. When adhesions alone remain it is called a stigma of old tuberculosis. But it is often a benign lesion, which diagnostic ignorance has termed an active focus. Hence the diagnostic significance of the supraclavicular lymphnode which, according to the case, may show the absence of an active pleurisy. In any case, however, such a subject is never tuberculous in the sense that one is who suffers from anemia, loss of weight, weakness, low blood-pressure, etc., etc.

Gazette Hebdomadaire des Sciences Médicales.

August 27, 1916.

Simulation.—Blum begins a study of this subject and the qualifications which the military medical expert must possess to reveal it. A circular to this effect was sent out in 1915 by the Undersecretary of State for the Sanitary Service. The medical men were warned as to weakness, negligence, indecision, laxness and incapacity. In private life the physician is governed by his conscience. In military life he is governed by his duty to the State. In private life probity in regard to the best interests of his clientele comes first, but in military life he is responsible to his superiors. The civil practitioner, placed at the bedside, gives a diagnosis warranted by the symptoms subject to revocation. The military practitioner has to think always of simulation. He may pronounce it simulation or leave the question open. He also must look out for the aberrant types of disease, while in civil practice he must search for normal types. The military man must be especially familiar with the influence on disease of trauma, which plays a minor role in civil practice. The civil practitioner reckons on an ordinary cure, while the military man thinks chiefly of functional recovery, which is often remote. For the expert tact will always beat great learning, and tact is unthinkable without quickness. The learned man overburdened with scientific data hesitates and wavers. The word "savant" has two meanings which fit the case, namely, "learned" and "clever." The clever man hits the nail on the head, goes straight to the mark, while the erudite doubts, fears, clips off branches, but lets the trunk grow.

Journal de Médecine de Paris.

August, 1916.

Dental Caries and Pulmonary Tuberculosis.—Rosenthal states that proper dental treatment is at times seen to do away with bacillary adenopathies (submaxillary) after failure of general management. This result has even followed the treatment of a single cavity, perhaps very small; or the extraction of an abandoned root, without any gingival reaction. The gland paquet is often very large. Mere toilet of the buccal cavity has also caused amelioration in these glandular cases. Sometimes the adenopathy has suggested syphilis, especially syphilitic scrofula so-called, which is believed to represent mixed infection. But while these glands do not yield in any plan of syphilitic treatment they have been seen to disappear spontaneously after treatment of the teeth. In school children it is almost a law that cervical and tracheobronchial adenopathy occur in children who have already caries (about 15 per cent.). Of the others it may be said "No caries, no adenopathy." It is a long known law in medicine that candidates for tuberculosis have not sufficient lime retention—that they are demineralized as to calcium—a condition which naturally favors dental caries. A tuberculous lung may be shown to have lost (or never to have had) one-third of its normal mineral content. The resistance of the teeth to caries is a good measure of the general resistance of the body to disease. "Recalcification" has long been one of the leading remedies for tuberculosis. Otherwise stated dental caries is a testament of the presence of tuberculosis and pre-tuberculosis. We do not invalidate this statement if we add that dental caries also paves the way for infection. It may even do this indirectly by interference with proper mastication. Without the latter one cannot be in perfect health. Bad prosthesis may also interfere with digestion. The sixth year molar is known to be the first to become careous; this is because it has been infected from the fifth tooth of the first dentition. Carfous molars are premolars of the first dentition, again are often the starting point of tuberculosis through resulting errors or nutrition. The modes by which carious teeth can contribute to tuberculosis constitute a surplus—they exist in such numbers that some modes are superfluous. For example, a simple lymphangitis from an infected gum may pave the way for tuberculous lymphnodes. The inflamed node takes on specific characters, becoming a bacillary granuloma, and this in turn may become secondarily infected with pyogenics. Thus mere scaling of the teeth often causes suppuration of tuberculous glands. Again dental caries may be the direct cause of pulmonary lesions by the lymphatic route. At present a remedy for this sequence of events must lie with the dentists.

Colloidal Silver and Puerperal Sepsis.—Willette sums up as follows: Colloidal therapy should be used intravenously in puerperal sepsis and may render great services. Aerobic infection (chiefly the streptococcus) is much more frequent and more amenable to colloidal therapy. Anaerobic and mixed infections require an oxidizing or mixed treatment. To attain success large dosage should be used—one should not fear possible ill consequences. Figures show that this treatment lowers the mortality, shortens the course of the disease and prevents a certain amount of complications. The rationale of the treatment is due chiefly to the entrance into the blood of matter in the colloidal state which behaves as an alterative, and brings about a crisis syndrome, with its temperature fall, leucocytosis, augmentation of urine.

Acids of Gastric Fermentation.—Pron has examined 194 specimens of washings from the diseased stomach in the fasting state and in the absence of food residues. In 167 cases or 86 per cent. he obtained evidence of acids of fermentation, divided up as follows: In ninety-three cases the lactic acid was found by Uffelmann's method, while in the balance the sole acids present were volatile. In order that these finds be pathological there must have been present before lavage a splashing stomach which at the same time contained no food residues, *i.e.* a strictly fasting stomach. When found after a trial breakfast the presence of fermentation acids has no necessary pathological significance.—*Comptes rendus de la Société de Biologie.*

Book Reviews.

NERVOUS CHILDREN. Prevention and Management. By BEVERLEY R. TUCKER, M.D., Professor of Neurology and Psychiatry, Medical College of Virginia, Richmond, Va.; Consulting Physician of the Juvenile Court, Richmond, Va.; Physician of the Tucker Sanatorium, Richmond, Va.; Neurologist to the City Hospital, Richmond, Va.; Consulting Neurologist to the State Epileptic Colony, Lynchburg, Va.; Neurologist to the Johnston-Willis Sanatorium, Richmond, Va.; Editor of the *Old Dominion Journal of Medicine and Surgery*, etc. Price, $1.25. Boston: Richard G. Badger; Toronto: The Copp Clark Co., Ltd. 1916.

THE average mother of to-day seeks eagerly for knowledge as to the best care of her child, and the need for books on all subjects of children is gradually being filled. Dr. Tucker's book on nervous children is an excellent addition to the group. The mother who seeks methods of controlling and teaching her child must read elsewhere, but for an understanding of the needs of the child and a suggestion of possible abnormalities she may well peruse Dr. Tucker's book carefully. The book is a good introduction to further reading, for it gives a simple presentation of embryological development and short explanations of elementary physiology and psychology.

The chapter on heredity and environment is excellent, and might well stimulate to further reading and study. The chapters on habit, and eugenics and sexual hygiene are also worthy of note. Enough is said at various points to waken a mother to the importance of the activity of the glands of internal secretion, and thus win her cooperation with the physician if treatment is necessary. Increased knowledge on the part of a parent is always helpful to the best medical work, and the understanding by parents that certain examinations are necessary will make such examinations more universal and thus be a great help to the sick child.

ELEMENTARY BACTERIOLOGY AND PROTOZOÖLOGY FOR THE USE OF NURSES. By HERBERT FOX, M.D., Director of the William Pepper Laboratory of Clinical Medicine in the University of Pennsylvania; Pathologist to the Zoölogical Society of Philadelphia, etc. Second edition, revised and enlarged. Illustrated with 68 engravings and five colored plates. Price, $1.75. Philadelphia and New York: Lea and Febiger, 1916.

THIS book is well adapted to the use of nurses and of such members of the laity as are desirous of obtaining a general idea of the nature of microörganisms and their relation to disease. The author has performed his work well, and has avoided the common error of trying to tell too much. The new edition contains more detailed information on general disinfection, the transmission of infection, especially in regard to those diseases spread by insects, and the peculiar phenomena of hypersusceptibility. The volume is a valuable addition to a useful series.

TREATISE ON FRACTURES. By JOHN B. ROBERTS, A.M., M.D., F.A.C.S., Professor of Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine; Sometime Chairman of Fracture Committee of American Surgical Association; Membre de la Société Internationale de Chirurgie; and JAMES A. KELLY, A.M., M.D., Attending Surgeon to St. Joseph's, St. Mary's and St. Timothy's Hospitals; Associate in Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine. Octavo of 677 pages with 909 illustrations: radiograms, drawings and photographs. Price, $6. Philadelphia and London: J. B. Lippincott Company, 1916.

"THE object of this book is to supply student and medical practitioner with a clear, concise, and systematic presentation of the subject of fractures." This is the first sentence of the preface and we may say at the outset that the authors have accomplished their task; and this was essential if the book were to be a success, since there are already so many standard works on this subject. There are many good points about this book, not the least of which is that the time a fractured arm, elbow, etc., should be kept in splints is usually definitely stated in terms of days and weeks—a matter of much help to the practitioner who handles comparatively few such cases and is not in a position to call in a surgeon. Most books furnish explicit directions regarding diagnosis and the application of a proper retentive dressing but fail to state, except in the most general terms when, if ever, the splints are to be removed. So far as the diagnosis and non-operative treatment both of fractures in general and of special fractures are concerned, the material is presented most systematically and is admirably arranged for teaching purposes.

On the other hand, the chapter on the operative treatment of fractures seems surprisingly weak—the full possibilities of the autogenous bone graft in these cases apparently have not been grasped by the authors. The illustrations are generally good but often unnecessarily multiplied, particularly as regards radiograms of special fractures; and the addition of the words "right" or "left," "anterior" or "posterior view" to the legends under illustrations will often clarify matters. Figure 353 on page 315 is a conspicuous example of this need, for it requires considerable study of the figure to avoid the impression that the musculospinal nerve is depicted as running from without inward on the anterior surface of the humerus. Irrespective of these and other criticisms that might be made, the book deserves and should enjoy general approval, especially for classroom work.

NEW CONCEPTS IN DIAGNOSIS AND TREATMENT. PHYSICO-CLINICAL MEDICINE. The Practical Application of the Electronic Theory in the Interpretation and Treatment of Disease. With an Appendix on New Scientific Facts. By ALBERT ABRAMS, A.M., LL.D., M.D., F.R.M.S. San Francisco: Philopolis Press, 1916.

THE author presents here a series of methods for the diagnosis and treatment of disease, methods radically different from those now in use and based largely on certain electrical reactions which he claims to have discovered. Time and further research alone will determine the true value of his work. The results which he claims to have obtained are nothing short of marvelous but it is impossible to accept them merely on the statements presented. They call for demonstration and substantiation in the hands of many careful and scientific workers and it is probable that it will be long before such confirmation is received. The author is evidently an enthusiast. As is natural in a work dealing with a new subject one encounters many neologisms but the number seems greater than necessary.

THOSE ABOUT TRENCH. By EDWIN HERBERT LEWIS. New York: The MacMillan Company, 1916.

AFTER a good deal of unnecessarily technical talk the author gets started on his story which is really one of great interest. The principal character is a Serb who passes himself off as a Persian and is first met in a polyglot community living with Doctor Trench in Chicago. The interesting part of the story takes place in the near East and has much to do with the incidents immediately preceding the outbreak of the present war. Actions and conversations are described with what seems to be authority so that the average reader will see little that is improbable in the tale. There is much philosophy that is apparently set up to be knocked down, but the author, after having set it in place, often loses interest in it and neglects or forgets to knock it down again. In spite of the confusion of the picture which is presented the story is a fascinating one and will easily fill up a little spare time.

TEXT-BOOK OF ANATOMY AND PHYSIOLOGY FOR TRAINING SCHOOLS AND OTHER EDUCATIONAL INSTITUTIONS. By ELIZABETH R. BUNDY, M.D., Member of the Medical Staff of the Woman's Hospital of Philadelphia; Gynecologist, New Jersey Training School, Vineland; Formerly Adjunct Professor of Anatomy, and Demonstrator of Anatomy in the Woman's Medical College of Pennsylvania; Formerly Superintendent of Connecticut Training School for Nurses, New Haven, etc. Fourth Edition, revised and enlarged. With a glossary and 243 illustrations, 46 of which are printed in colors. Price, $1.75. Philadelphia: P. Blakiston's Son and Co.

PREVIOUS editions of this work have been noticed in the MEDICAL RECORD, and we are pleased to observe that some of the suggestions made on these occasions have been adopted by the author. The fact of the book reaching a fourth edition is evidence that it fills a want in our educational literature. Dr. Bundy's book takes an intermediate place between the elementary works and those which aim at teaching nurses and others all that is known (or even surmised) on the anatomy and physiology of the human body. In view of the prominence of sexual hygiene at the present time, the chapter bearing on that topic might be enlarged with advantage. We notice that the author still clings to the idea that the ear has four bones.

Society Reports.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

THE PRESIDENT, DR. J. WESLEY BOVEE, WASHINGTON, D. C., IN THE CHAIR.

(*Concluded from page 570.*)

Variations in the Blood Supply of the Ovary and Their Possible Operative Importance.—Dr. JOHN A. SAMPSON of Albany, N. Y., stated that the study of the blood supply of the ovary was undertaken for its anatomical interest, and also for its bearing on conservative ovarian surgery when a tube was removed without removing the ovary of that side, or the uterus was removed leaving one or both ovaries. The intrinsic blood vessels of the ovary and resection of that organ were not considered. The material consisted of six fetal tubes and ovaries, and thirty adult ones in which the arteries had been injected with bismuth, and ten adult tubes and ovaries in which the veins had been injected. The specimens were studied by means of stereoscopic radiographs, and for the sake of comparison ink tracings were made of the blood vessels on prints, using the stereoscope as a guide in following the course of the individual vessels. The prints were then bleached, leaving the tracing. The terminal portion of the uterine artery presented variations in its branching and distribution of these branches. This artery directly or indirectly through its branches supplied a varying portion of the ovary in all, the entire tube in six, the greater portion of the tube in twenty-three, the round ligament and greater portion of the broad ligament in all but one. In twenty-four of the thirty specimens the uterine supplied the proximatl portion ovary divided into two main branches, a lateral tuboovarian or tubal branch, and a mesial ovarian, the latter anastomosing with the ovarian branch of the uterine. In six specimens the lateral tube branch was absent. The ovarian artery supplied a varying portion of the ovary in all, the distal portion of the tube in twenty-four and portions of the broad ligament in all, but the latter to a lesser degree than the uterine. The actual blood supply of the ovary was a divided one—uterine and ovarian. In twenty-six of the thirty specimens the uterine supplied the proximal portion of the ovary and the ovarian the distal. In four specimens (four of six in which the lateral ovarian branch to the tube was absent) the lateral tubal artery arose from the main tubal artery (uterine origin) and supplied the distal portion of the ovary, taking the place of the lateral tuboovarian branch from the ovarian artery. In these four specimens the distal portion of the ovary was supplied by the uterine, the middle by the ovarian, and the proximal by the uterine. The blood supply of the broad ligament being both uterine and ovarian, the usual blood supply of the tube being both uterine and ovarian, and as the arteries of the broad ligament communicate with each other and with those of the tube and round ligament, and as the tubal arteries communicate with each other, all these structures must be looked upon as containing a potential blood supply to the ovary. Thus the uterine and ovarian arteries communicate with each other not only through the well-known uteroovarian anastomosis, but also through the above-mentioned vessels. The actual venous outlet of the ovary was partly through the ovarian veins, partly through the uterine. Its potential venous outlet was evident in the various communications between the venous channels of the uteroovarian plexus, the free anastomosis of the veins of the broad ligament and tube, and the communication of the plexus with the epigastric vein of the round ligament. The removal of the tube always encroached upon the potential blood supply of the ovary, and when the distal pole of the ovary was supplied by the tubal artery (four of thirty specimens), the actual blood supply of that portion of the ovary might be cut off. These anatomical studies suggested that if it was necessary to remove a tube without removing the ovary, it should be done with the least possible disturbance of the broad ligament, and even then occasionally the blood supply of the distal pole of the ovary would be cut off; also in hysterectomy with conservation of the ovary, the accompanying tube should be saved, if possible.

The Clinical Course of Cancer in the Light of Cancer Research.—Dr. HARVEY R. GAYLORD, Director of the State Institute for the Study of Malignant Disease, Buffalo, said that cancer was not one disease, but a great group of diseases. The various types of sarcoma in chickens caused by filterable viruses had taught us that there were neoplasms with specific agents which determined the character of the tumor. Progress required that cancer of different organs must be treated as individual diseases and studied individually. The study of immunity to inoculated cancer threw new light upon the clinical course of the disease. Successful surgery, *x*-ray, and radium treatments were all dependent upon immunity. Early operation owed its success to the fact that immune reactions in spontaneous cancer were strongest in the early stages of the disease. The effect of chloroform and ether anesthesia and loss of blood, dependent upon surgical operation, was shown to exercise a destructive effect upon the immunity. The author pointed out the directions in which cancer research offered promise of better treatment.

Cancer of the Uterus and Its Treatment.—Dr. JOHN G. CLARK of Philadelphia classified cancer under three divisions as regards its treatment: (*a*) the radically operative; (*b*) the radical use of the cold cautery, and (*c*) the use of radium or mesothorium. Statistics as to surgical results were now upon an accurate basis and demonstrated a higher percentage of cures from the radical abdominal operation than achieved by the less radical vaginal and abdominal methods. In rebuttal there might be offered the much higher primary mortality and the greater number of disabling sequelæ from the former over the latter operation. The dangers of the radical operation were great even in the hands of the expert, and prohibitive when performed by the surgeon of limited experience. Many so-called radical operations were mere makeshifts, the patient being subjected to much greater hazards without any appreciable gain over simpler methods, by an attempt to execute an operation which failed lamentably short of an ideal standard. As yet the use of the cold cautery was in the proving ground and was a procedure which, to be successful, must be radical, and, therefore, was likely to be attended with a high primary mortality as well as serious sequelæ. It must, therefore, show a higher percentage of ultimate cures to make it a worthy competitor of the radical operation. In the author's experience of two years with radium, it had given encouraging promise, first, as a palliative remedy, and, secondly, as a tentatively curative one. It was in no sense a miraculous panacea, for a considerable number of cases were not helped, for the malignant process did not appear to be halted, but might actually be expedited. The sequelæ, however, following its judicious employment, were comparatively insignificant as compared with the foregoing methods, and, therefore, if the patient was not helped she was, at least, spared the added miseries of unfortunate accidents. Because the radium was not a dependable agent in all cases, and because as yet the type of cancer which would be helped could not be forecasted, surgical measures must still be invoked, but might be supplemented by radiozation. The dictum of the last few years, "In case of doubt, extirpate the uterus," was now modified, for in all such instances we now applied radium. Thus far in no instance had hysterectomy been performed when radium had acted beneficially, for it did not appear logical that an operation could accomplish anything further. As experience now pointed, it would appear that radioactive agents were to serve an excellent supplementary remedy to surgery, offering better results in the operative cases and a definite hope in the inoperable.

The Extended Operation for Carcinoma of the Uterus.—Dr. REUBEN PETERSON of Ann Arbor presented the following summary and conclusions: (1) Further experience with the radical abdominal operation for cancer of the uterus confirmed the belief that it was an exceedingly dangerous procedure and would always be attended by a high primary mortality. (2) Even if the percentage of operability of cases of cancer of the uterus markedly increased in this country and elsewhere, there would always be borderline cases attended by a high primary mortality. (3) This was true because it was not always possible, even with the greatest care in examination of the patient prior to operation, to estimate the extent of the disease. (4) Errors in judgment meant death from shock if the disease was too far advanced or failure to complete the radical re-

moval of the cancerous uterus. (5) However, in spite of a high primary mortality, it was the only procedure, with the possible exception of the extended vaginal operation, which held out any reasonable promise of a permanent cure. (6) Primary and end results of the radical operation for cancer of the uterus must be considered together in order to judge of the good accomplished in a given series of cases. (7) Unless the operations were radical, the end results would be poor, and if they were radical the primary mortality must be high. (8) If the end results were poor, the burden of proof was upon the radical abdominal operator to show why he did not choose a much safer palliative procedure. (9) Since 1912, experience with 14 ordinary panhysterectomies for cancer of the fundus showed worse primary and end results than in 11 cases previously reported where radical removal was performed. (10) This showing and the results following removal of fundus carcinoma by various methods in the Wertheim clinic, as reported by Weibel, led to the conclusion that, because carcinoma of the fundus was more easily cured than when the cervix was involved, we were not justified in thinking it could be treated any less radically than carcinoma of the cervix. (11) The primary mortality in 59 cases of cancer of the cervix and fundus treated by the radical abdominal operation was 23.4 per cent. (12) The extent of the involvement in cancer of the uterus could only be determined definitely after the abdomen had been opened. If the parametria were not too much involved and the condition of the patient's kidneys, heart, and blood vessels warrant a prolonged and depressing operation, it was justifiable to attempt the radical operation. (13) During the past four years 124 cases of cancer of the uterus had been seen in the university and private clinics. The disease was so far advanced in 36 cases that operation was refused or nothing was done. The cautery method was tried in 58 cases and proved valueless except as a palliative procedure. (14) In spite of attempts to educate the public regarding cancer, the cases of cancer of the uterus seen during the past four years were more advanced than had formerly been the case. (15) The end results in 51 patients operated upon five or more years ago were most gratifying. Combining fundus and cervix cases, 27 of the 51 patients were alive and well after five years, or 56.2 per cent. of all cases operated upon, while 69.2 per cent. of all those surviving the operations were alive after five years. (16) Of 40 cases of cancer of the cervix operated upon five years or more ago, 18 of those surviving the operations are alive and well to-day. Thus 47.3 per cent. of the total number remain cured after five years, while 62 per cent. of those surviving the operation remain cured. (17) These percentages were obtained by Wertheim's formula where patients dying of intercurrent disease, or those lost track of, were subtracted from the total number of operative cases or from the number surviving. (18) The length of time elapsed since the operations upon the 18 patients who were alive and well varied from five to thirteen years. There was every reason to think these patients were permanently cured, although one patient did have a recurrence and died between five and six years after the radical operation. (19) In spite of the high primary mortality, the end results in those surviving the operation encouraged us to continue with the procedure in suitable cases.

The Problem of Heat As a Method of Treatment in Inoperable Uterine Carcinoma. — Dr. JAMES F. PERCY of Galesburg, Ill., said there were three stages to be recognized in the development of the cautery in the treatment of carcinoma of the uterus: (1) where it was merely used to stop hemorrhage and limit offensive discharge; (2) in the galvanocautery excision of the cervix uteri, developed by the late Dr. John Byrne of Brooklyn, N. Y.; in this technique a high degree of heat was used sufficient to cut the tissues; (3) in the dissemination of a coagulating degree of heat through the widest possible area of the cancer mass, with no attempt at immediate excision of the parts. The technique of Byrne was not designed for the advanced inoperable cancer patient, the one in which the uterocervical junction was fixed, with extensive malignant and inflammatory infiltration of both broad ligaments and the parametrium. As classified to-day, Byrne operated only in the first stage of cervical cancer involvement. Dr. Percy stated that his technique brought the practitioner back to the days before Byrne, to the treatment of the otherwise hopeless case, and in addition he stated that his technique opened up new possibilities in the way of further improved results, in the type of case in which Byrne secured his best results. The author emphasized the point that the stage of operability with his present technique was easily 90 per cent., and he confidently expected that the stage of operability would be without limit in strictly pelvic cancer. He would not have the practitioner believe, however, that the ideal was mere operability. Back of it all was the hope and promise of results never before obtained by any method so far developed in that disease which had always stood as a synonym for incurableness—pelvic cancer. In conclusion, he reemphasized (1) that the Percy technique, so-called, was not a cautery operation. He removed nothing. The tissues following the application of the moderately low degrees of heat were literally coagulated and slowly dissolved. It usually took two weeks for a healthy granulating surface to appear beneath the gradually dissolving mass of inert cancer debris. (2) The operation of Byrne was a high galvanocautery incision of the cervix. There could be but little penetration of heat. Byrne recognized this when he advised that the surface left after the removal of the gross mass be seared over with the cautery knife, in order to get all the heat penetration possible. But Byrne never thought of applying heat to the degree of obtaining penetration sufficient to render movable the fixed tissues in the pelvic basin. If the fixed tissues, malignant and inflammatory, were not made freely movable, as they were normally, the heat penetration had not been sufficient, and, therefore, was ineffective. (3) To coagulate a large mass of uterine cancer required from thirty to sixty minutes, and if the broad ligaments still remained stiff or fixed, an additional ten minutes. (4) In the author's effort to emphasize the importance of avoiding the burning temperatures he feared that he had led many surgeons to the opposite extreme, and that they were trying to destroy the activity of an inoperable mass of cancer with a temperature so low that days, rather than hours, would be required to make the heat effective. Byrne fried the tissues; whereas the author broiled or pasteurized them. The Byrne technique was based on the use of heat as an acute process; while the author's was not acute, but chronic, both as to time and degree. Heat, more heat, and yet more heat; but heat, not fire; broiling, not frying; not roasting, but curdling; pasteurization, not desiccation; coagulation, not carbonization. In its practical application the whole technique could be summed up in the one statement: that one should not carbonize the tissues, for in the degree that this was done, in that degree was heat penetration inhibited; and heat penetration was the vitally essential thing.

High Heat Versus Low Heat in the Treatment of Cancer of the Uterus.—Dr. HERMAN J. BOLDT of New York City said that he had expressed himself fully on the relative value of high degree of heat compared with low degree, heat as a palliative therapeutic agent in the advanced stages of cancer of the uterus, in an article published in the *American Journal of Obstetrics* in the January (1916) issue, and judging from the communications he had received from physicians who had had experience with the treatment his position was amply justified. It was also corroborated by another autopsy, in addition to the one he had, by Dr. F. W. Bancroft of New York. He did not wish to detract from the usefulness of low heat, but it should be reserved principally for a second application, after rapid destruction had been accomplished with high heat, and the charred eschar that was caused by the high heat had been thrown off; and for those cases in which the cancer had so far advanced that the proper application of high heat would endanger the bladder or rectum. The danger from secondary hemorrhage was not less with low heat than with high heat. No evidence had been presented that showed the superiority of one method over the other. Heat, properly used, and applied in selected cases, sometimes gave remarkable good palliative effects; but it had been conclusively shown that cancer cells were not destroyed any appreciable distance from the surface of application, certainly not deeper with low heat than with high heat. This was proved by the examination of tissues procured at the autopsies mentioned. Dr. Charles Mayo, when discussing the paper alluded to, published in the *American Journal of Obstetrics*, asserted that the proof of the deep destruction of low heat was shown in cases that had been operated upon in the Mayo clinic, lay in the fact that at the time of cauterization the disease

had too far advanced for the patients to be operated upon radically, but later the uterus became mobile and was extirpated, and when these uteri were examined by the pathologist, he failed to find any evidence of malignant disease in them. This hypothesis was not acceptable to Dr. Boldt as valid proof, since the mobility might have become impeded by an inflammatory process which, as the result of the heat treatment, became dried out, as it were, and mobility of the uterus resulted; a result seen also when high heat was used. The inflammatory infiltration might subside, out the carcinomatous infiltration remained. To disprove this it was necessary for the operator, when the abdomen had been opened, to remove a part of the suspicious infiltrated area in the pelvis a reasonable distance away from the cervix, and have it examined by a competent pathologist. If that showed cancer nests, and the uterus became mobile subsequently, so that a radical operation might be done, and the specimen then removed by a radical operation failed to show cancer elements in the parametria, we were in the position to grant the deep destruction of cancer elements by the heat applied, but not until such proof had been shown. Attention was called to those instances in which recovery followed when a simple extirpation of the uterus had been done, despite some parametrial infiltration, and in which, after a period of a few months a reexamination failed to show any evidence of infiltration. He recalled two such cases.

Abdominal Myomectomy and Hysteromyomectomy by Morcellation.—Dr. CHARLES G. CHILD, JR., read a paper with this title in which he drew the following conclusions: The advantages of myomectomy or hysteromyomectomy by morcellation were many. The original morcellation by the vaginal route enjoyed great popularity because of the smoothness of the subsequent convalescence and freedom from postoperative complications, both immediate and remote. The abdominal removal of these tumors by morcellation now that we had to-day improved our abdominal technique gave just as smooth a convalescence and just as great a freedom from complications as was secured by the vaginal operators in the past. The advantages of the technique which he described were considered both from the point of view of the patient and of the surgeon. To the patient it afforded greater safety, a shorter and a smoother convalescence. This was by reason of the fact that as the surgeon worked practically extraperitoneally the intestines were kept out of the way without recourse to laparotomy pads; thus was the intraperitoneal traumatism minimized and postoperative shock, distension or peritonitis was seldom, if ever, seen. In hysteromyomectomy the danger of secondary hemorrhage from slipped ligatures on the broad ligaments was very materially decreased because of the ease and safety with which the relaxed broad ligaments could be ligated. The smaller incision and the stronger resulting scar, especially when the transverse incision was used, reduced to a minimum the danger of hernia. The high percentage of primary union resulting when the transverse incision was closed with non-infectible suture material, meant a much shorter hospital residence. A large granulating median line incision, where primary union had not been secured, meant a prolongation of the convalescence by many weeks, with a good prospect of a subsequent hospital stay when the ventral hernia, almost certain to occur in such a case, was operated upon. The advantages to the surgeon were that during the greater part of the operation the tumor was in contact with the abdominal wall, and the work was extraperitoneal. Thus was the surgeon able to see definitely each pathological condition as it arose and to take the necessary time to meet the indication, for by this technique the length of time which the patient was under the anesthetic was not nearly of the importance that it was when a large median incision had been made with all the consequent exposure of intestines, and use of laparotomy pads that went with the older technique. In hysteromyomectomy the ease with which the broad ligaments could be ligated, and the cervix removed when a complete hysterectomy was necessary was very marked. Although the transverse suprapubic incision might be so small as to handicap many an operator at the start, still as skill in anything was acquired only by repetition, so here with experience one became quickly proficient.

A Study of the Pathology in Its Relation to the Etiology With the End Results of Treatment of Sterility.—Dr. JOHN OSBORN POLAK of Brooklyn, New York, gave a personal review of 798 cases—histories of patients from his private practice, and analyzed the many etiological factors which had entered into the causation of sterility. He discussed the individual case based upon an etiological diagnosis, and finally summarized his end results. This study had shown (1) that a very large number of cases of sterility applying for relief had no chance whatever of becoming pregnant, as the pathology was such as to make conception impossible. (2) That the male was largely responsible for the poor results in treatment. (3) That there was a definite chemico-pathological factor in conception, at present unexplainable, which was a cause of preventing conception. (4) That operative procedures on the uterus, except amputation of the hypertrophied portion, had but a slight influence on the end results in the treatment of sterility; and (5) each case must be individualized and both contracting parties carefully studied before any treatment was inaugurated.

Rupture of the Scar Following Cesarean Section.—Dr. PALMER FINDLEY of Omaha gave a survey of the literature on this subject with a digest of case reports for the purpose of determining whether or not one cesarean section called for another in the event of a subsequent pregnancy, and then drew the following conclusions: (1) A perfectly healed cesarean wound might be relied upon to resist the forces of labor, but in view of the fact that the integrity of the wound was an unknown factor in all cases, he was constrained to exercise the utmost caution in the conduct of every case of pregnancy and labor following cesarean section. (2) Failure to secure perfect healing was accounted for by departure from the principles of suture proposed by Sanger and by septic infection of the uterine wound. If we were to obtain the uniformly good results in respect to wound healing that were secured in the decade following the introduction of the Sanger method of suture, we must not deviate from these principles. (3) The possible existence of latent gonorrheal infection might defeat the most painstaking efforts to secure perfect wound healing; hence it followed that the healing of a cesarean wound was always an uncertain factor. (4) When cesarean section had been followed by a fever course, the uterine wound should be regarded as insecure in the event of a subsequent pregnancy, and should call for a repeated cesarean section at the onset of labor. (5) Sterilization and hysterectomy should replace conservative cesarean section when infection was known to exist. The alternative invited faulty wound healing, if not more disastrous results. (6) Transverse fundal, extraperitoneal and cervical incisions had not lessened the liability of rupture in subsequent labors, but, on the contrary, had probably increased the hazard. (7) The possibility of rupture of the scar following cesarean section did not justify sterilization, but rather called for the exercise of masterly control in the event of a subsequent pregnancy. All such cases should be hospital cases and labor should be anticipated by timely repetition of cesarean section at the onset of labor if the uterine wound was known to be defective, or if some cause for obstruction to the delivery of the child through the natural passage existed. Version, high forceps, uterine tampons, hydrostatic bags and pituitrin should never be employed in the presence of a cesarean scar. (8) We might conclude that in view of the evidence that not more than 2 per cent. of ruptures occurred in subsequent labors, we were not justified in voicing the slogan, "Once a cesarean section, always a cesarean section"; neither were we to rely solely upon the integrity of the uterine scar in any case. Furthermore, he would conclude that the liability of rupture was a real danger and should stand as an argument against the increasing tendency to widen the scope of elective cesarean operations.

The Constitutional Factor in Gynecology and Obstetrics.—Dr. CHARLES P. NOBLE of Philadelphia spoke on this subject and presented these conclusions: (1) The theory of environmental, constitutional hypoplasia or arrested development from unfavorable environment, operating at any period from the preconceptional state of dual life in the ovary and testis, to that of the youthful period in ontogeny, which was presented to the profession as a medical hypothesis in 1908, and which the writer believed to be proven upon human clinical and pathological evidence, was now shown to be equally supported by the clinical and the pathological facts of antenatal pathology, and by the facts of comparative pathology, and to be demonstrated by the facts of experimental teratology. (2) The wis-

dom of the fathers of medicine, as expressed in their discriminating analysis of the facts of the hereditary nature of the diatheses or dyscrasias, together with the theory of environmental hypoplasia, constituted the law of devolution in its relation to medicine. (3) In order to obtain a comprehensive understanding of the practice of medicine, it was necessary to reject such of the teachings of Virchow and of his followers as were fallacious, and to combine the clinical wisdom of the fathers of medicine, from Hippocrates down, with the known facts of experimental medicine and their correct interpretation, and thus to arrive at the true point of view from which to study and to deal with the clinical problems which were the concern of practitioners of medicine and of each of its specialties. (4) The constitutional factor in gynecology and obstetrics, as was equally true of the other departments of medicine, was the chief element in the clinical problems which confronted the practitioner in dealing with disease and with atypical organs and tissues and their functions. (5) The recognition, comprehension, and employment of the foregoing principles would greatly enlarge the powers of the practitioner of medicine in diagnosis, prognosis, and in therapy, and which would enable him to avoid many common, if not habitual, errors, and positively to substitute general nutritional and developmental measures for the local measures currently employed, and thus effect the cure, instead of the amelioration, of his patient's condition when due to environmental arrest. Further, it would enable him to give scientifically based advice as to methods of living when the biological type of the patient was recognized; to promote the development of environmentally arrested patients, and to enable them to maintain their health by living within their particular potential or capacity to produce energy, instead of attempting to live as was physiological for typical individuals, but which would cause disease in the arrested or hereditary and environmental devolutes. (6) There remained unsolved two problems: (1) the process or mechanism whereby atypical morphology and function of environmental origin in ascendants became, at least, hereditary in descendants. Apparently its solution would be found in the facts of the maleficient consequences of urbanization in human stocks, which escaped extermination by degeneration and disease, and the variations and adjustments which ensued, whereby acquired immunity was attained; and similar facts concerning the consequence of the long continuance over generations of other unfavorable environment, such as insufficient nourishment, malaria, the hookworm, and food deprived of some element necessary to nutrition, or so mistreated as to be relatively poisonous. It might become demonstrated by subjecting short lived animals to definite, unfavorable environment, for twenty or more generations, and observing and correlating the facts thus obtained. Facts from biology as to species of animals and plants subjected for generations to inimicable environment would also aid in the solution. (2) The eradication of degeneracy and its prevention would probably find its solution in the development of euthenics and in the segregation, or the sterilization, of individuals manifesting the more marked degrees of degeneracy, more especially of the hereditary types.

A Résumé of Results in the Radium Treatment of 347 Cases of Cancer of the Uterus and Vagina.—Drs. Howard A. Kelly and Curtis F. Burnam of Baltimore said that after seven years' experience, and with a full knowledge of similar work in other parts of the world, they could now say without hesitation that the use of radium in sufficient quantities greatly enhanced the chance of permanent recovery of patients with uterine and vaginal cancers. In early and good operable cases the use of radium combined with operation added greatly to the prospect of recovery without a recurrence. This was shown in a series of twenty such cases in which they had as yet seen no recurrence. The most remarkable fact about the radium treatment of uterine and vaginal cancers was that it often cleared up those cases which had extended too far locally and became firmly fixed to the pelvic wall; in other words, in a class of cases which were utterly inoperable. They had had 327 patients, including borderline cases, cancers fixed to the pelvic wall, great massive cancers choking the pelvis, and many with general metastases, where the radium was used only to afford relief; and yet over 20 per cent. of this remarkable group had been apparently cured. They did not pause here to dwell upon the great alleviation afforded a large number of those who were not cured, but where discharge stopped, pain ceased, and health was built up. Their conclusion then was that radium had come to stay and was a most efficient agent in treating these cancers of the uterus and vagina.

X-Ray Treatment of Uterine Hemorrhage.—Dr. Robert T. Frank of New York City said that *x*-ray treatment was indispensable in gynecology, but under strict indications and limitations. The rays worked mainly by destroying ripening ovarian follicles, primordial follicles showing great resistance. When no ripe follicles were present, menstruation ceased. In fibroids there might also be a direct effect on the tumor. Fractional exposure implied frequently repeated treatments of small amount. This took more time, but permitted of finely graded dosage. Intensive treatment by use of small multiple fields permitted of rapid attainment of amenorrhea. The rays could be used in all functional hemorrhages (menorrhagia or metrorrhagia) in which expert examination revealed normal pelvic organs, and in which the curettings were free of malignant changes. This saved the uterus of adolescents and women in their sexual ripeness because the bleeding could be "foned down." It also saved women in the pre-climacteric age from operation, if they were bad operative risks. The writer used *x*-ray in about 5 per cent. of fibroids. Only 45 per cent. of fibroids required any treatment. Bleeding was most readily checked by raying. In order to permit of the safe employment of *x*-ray, the writer postulated that no cases should be rayed in which a suspicion of carcinoma or sarcoma could be entertained, that no complications, such as ovarian or adnexal tumors were present, that no urgent symptoms were present. This limited the treatment to clear cases of uncomplicated fibromyoma. Preference should be given to the rays when extreme psychical unrest or severe cardiac, renal or pulmonary disease contraindicated operative measures. The expense entailed by raying precluded its use except in well-to-do patients or in endowed institutions.

Precancerous Changes in the Uterus.—Dr. William S. Stone of New York City pointed out the evolutionary character of the different types of cancer of the uterus as beginning in definite benign lesions, such as erosions, leucoplakia and glandular hyperplasia, which showed variable quantities and qualities of epithelial overgrowth and metaplasia that might differ little from the regenerative activity observed in the benign lesions, or after a longer or shorter time might show atypical features that were differentiated with difficulty from the alterations we knew typified malignant neoplasm. To such pathological changes the author thought the term precancerous might be appropriately applied, as they appeared to represent changes that were neither cancerous nor non-cancerous, but were in the stage of becoming cancerous. Their relation to the development of a cancerous growth was shown by the fact that their morphological features included, in different combinations of quantity and quality, the numerous histological criteria upon which the diagnosis of a fully established cancer was made, lacking only in some instances the features of destructive activity and purpose. The strongest support of this conception was derived from the reproduction of types which were seen in the different stages of their progress. In the author's material, for example, he found the atypical features of a healing erosion determined by the original type of the lesion—simple, papillary, follicular, and the atypical types again reproduced in the different types of fully established uterine cancer. There were atypical erosions which were prototypes of either an epidermoid cancer or a papillary adenocarcinoma. There were leucoplakias which were prototypes of adult acanthomas. There were glandular hyperplasias which led to adenoma or adenocarcinoma. Finally, there were focal areas of leucoplakia, combined with adenomatous hyperplasia which might well furnish an origin for tumors designated as adenoacanthomas. In short, for each type of fully developed carcinoma there was a corresponding type of benign and intermediary change. The literature had been critically reviewed, showing increasing evidence confirmatory of the sequence of benign lesions in the uterus and cancer, but the efforts to define their histogenetic relation had been limited to a few writers. To more fully verify the assumption that morphological features of intermediary stages existed, a closer cooperation between the clinician and the pathologist would be required. For the present, it was no argument against such an assumption because no tumor process was present or followed in a given case. The evidence in the literature was already suffi-

cient to show that a fully established cancer might exist for a certain time without giving gross evidence of its presence, and numerous cases were recorded in which the curette had completely removed the disease. There was no reason to assume that precancerous changes without treatment must always develop into malignant growths. Different types of fully established tumors had a different capacity to grow and destroy rapidly or slowly, and it did not seem reasonable to assume that a developing cancer had the same momentum that a fully established tumor possessed. In the study of beginning cancer of the uterus several authors had directed attention to the fact that a certain type of early cancer might spread superficially over a wide area before showing marked invasive features, and it had occurred to the author that such a mode of growth might account in some measure for the extent of the process before it received the attention of the clinician. With the description of the author's cases there were sufficient clinical data to show the practical side of the problem, that the decision regarding the proper therapeutic procedure in such cases should be assumed by a competent clinician.

Painless Labor.—Dr. J. CLIFTON EDGAR of New York City pointed out that shock from the pain of labor in the highly civilized neurotic woman must be reckoned in general child-bed mortality. Painless labor in these women was a life-saving measure. The problem was the control of the pain in the first stage, the longest stage, after lasting a day or more. For the moment there was no ideal single method of painless labor. The only absolutely painless labor was one terminated by surgical means with complete anesthesia. Conditions would always arise, for example in early rupture of the membranes in which the necessity for painless labor would demand such surgical termination. The most satisfactory painless labor method of the moment combined opium and antispasmodics for the first stage, with possible vapor narcosis towards the end of this stage; vapor analgesia and anesthesia for the first and terminal parts of the second stage respectively. The narcosis aimed at should, until the perineal stage, be analgesic and not anesthetic in character, whether by drugs or vapor—a difficult or impossible object to attain unless one had had considerable experience. In analgesic work, there was the tendency of the patient coming out from under the influence of the gas and to suffer from the effects of shock due to the acuteness of the suffering, or of anesthesia being produced with its dangers in the hands of the novice. To sum up, nitrous oxide-oxygen analgesia or "obstetric" ether or chloroform should be used for the second stage, pushed to anesthesia for the perineal stage; possibly forceps delivery with vapor anesthesia to eliminate part of the second stage. Nitrous oxide-oxygen analgesia or anesthesia was superior to any other during labor because of its oxytocic action. Eventually an established method of painless labor might be related to public health questions. Lessening or abolishing the pain of labor might in the future limit birth control and criminal abortion. Drug addiction, after a prolonged drug narcosis in the neuropathic, was a possible contingency. The dangers to the newly-born child were negligible when drug narcosis was limited to the first stage.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held April 13, 1916.

DR. ROYAL STORRS HAYNES IN THE CHAIR.

Meningococcus Meningitis with Unusual Hemorrhagic Symptoms.—Dr. C. T. SHARPE reported this case, which occurred in a child showing very severe symptoms of meningitis. In addition to the symptoms typical of meningococcus meningitis, hemorrhagic areas appeared at various locations on the surface of the body. The bacteriological examination of the blood from these lesions revealed the presence of the meningococcus. Dr. Sharpe said he believed that this was the first instance in which the meningococcus had been isolated from a skin lesion. He exhibited lantern slides showing the appearance of the lesions.

Dr. HENRY HEIMAN said this case was of extreme interest, and he had never seen anything just like it, one so severe. If it had occurred during an epidemic one would have said that it was a fulminating case, or if there had been a number of similar cases one might have thought they were due to a particularly virulent strain of meningococcus, but this was the only case, and he could only explain it on the theory that there was a low degree of resistance in the individual. He did not believe that the injection of serum into the blood would have been effective in this case as the child was lost from the beginning.

The Deficiencies in the State Law Regulating Overcrowding in Institutions for Infants and Children.—Dr. THOMAS S. SOUTHWORTH opened the discussion. He said that it was admitted on all sides that the mortality among young infants placed in institutions was much greater than it should be, and greater than if the infants remained at home. Boarding out had been suggested as a means of relief, but while boarding out showed much better results than those of the poorest institutions, the results did not notably exceed those of the best institutions. Even if it were desirable institutions could not be done away with at once. Overcrowding was one of the fundamental factors which was definitely contributory to the mortality, but which could be remedied. Overcrowding was permitted and indorsed by their present inadequate and loosely drawn State law which, for lack of anything better, was applied to children of very divergent ages, conditions, and needs, and was largely robbed of whatever value it might possess by a "joker" clause. Chapter XLV of the Consolidated Laws defined the application of the law in question as follows: "To every institution in this State incorporated for the express purpose of receiving of caring for orphan, vagrant, or destitute children, or juvenile delinquents, except hospital." This law went on to say: "The beds in every dormitory in such institution shall be separated by a passageway of not less than 2 feet in width, and so arranged that under each the air shall freely circulate, and there shall be adequate ventilation of each bed, and each dormitory shall be furnished with such means of ventilation as the local board of health shall prescribe. In every dormitory 600 cubic feet of air space shall be provided and allowed for each bed or occupant, and no more beds or occupants shall be permitted than are thus provided for, unless free and adequate ventilation exists approved by the local board of health, and a special permit in writing therefore be granted by such board." The inference was that this law was framed to regulate the sleeping quarters of asylum or reformatory institutions for older children who might reasonably be supposed to spend a considerable part of their time in other quarters during the day. There was no trace of implication that it was intended to apply to infants or to wards in which more or less sick infants lived practically all the time, both day and night, during a very considerable part of the year. It would appear that it was the intention of the framers of this law that there should be not less than 600 cubic feet of air space per inmate, but this intention was nullified by the final or "joker" clause, which was perhaps appended as a compromise. This clause granted to any local board of health in the State the power to issue permits for any larger number of inmates under certain conditions as to "free and adequate means of ventilation." Such adequate means of ventilation should exist. When it came to the practical working of the law in New York City one found that framed permits were hung upon the walls of each ward stating the number of infants allowed therein. Permits were until recently granted by the Board of Health based upon the number of square feet of floor space, allowing about 50 square feet or slightly over, for each inmate of the ward. This had recently been changed to cubic feet, allowing about 500 cubic feet per inmate, and affording at times less than 50 square feet of floor space in certain institutions, depending upon the height of the ceilings. Dr. Southworth said he had been informed authoritatively that this amount might be and was reduced legally as low as 200 cubic feet per inmate in certain other types of institutions covered by the law, and there was nothing to prevent a further reduction below 500 cubic feet in wards for infants. Whether the 600 cubic feet of air space per inmate was or was not adequate for the dormitories or sleeping quarters of older and presumably well children he was not here to discuss, but he did with all earnestness contend that the application of the law for the lack of a better, to wards containing infants under two years of age and especially bottle-fed infants under one year of age, since an allowance of only 500 cubic feet, and perhaps less than 50 square feet of floor space per infant, tended directly to increase both the morbidity and consequently the mortality among such infants,

a mortality which, in part at least, was preventable. The origin and authority for the 600 cubic feet standard appeared to be lost in obscurity, but judging from the answers received in response to a questionaire sent to the American Pediatric Society and compiled and published in the Archives of Pediatrics, September, 1915, such space allowance fell far short of the 1,000 cubic feet demanded by the majority of pediatric opinion throughout the United States. In all except possibly the most modern and enlightened institutions, bottle-fed infants who remained for any considerable length of time did not continue to be well infants, even though they were admitted as such. The wards in which such infants were cared for demanded the larger nursing staff and adequate cubic air space of sick wards. In whatever type of institution they were situated they were to all intents and purposes hospital wards, not dormitories. Overcrowding meant a proportionately decreased care of the individual infant and undercare made for an increased mortality. With exactly the same methods of feeding infants that had been doing well with ample air space, when owing to new admissions the point of overcrowding was reached, ceased to gain, some lost rapidly, and there were a number of deaths until the census of the infants was again reduced. In short, modern feeding methods failed, or availed only temporarily, to prolong the lives of infants where overcrowding was permitted. With our present knowledge it was not necessary to argue that infections, both the more subtle respiratory types and the openly contagious types, were more readily spread by permitting closer proximity of the infants' cribs. The question might be asked: "Why, if this overcrowding so manifestly contributes to the mortality, are not steps taken by the physician of each institution to reduce the numbers in the wards?" The answer was that it was obviously difficult to convince lay managers that the permits issued by recognized authorities concerned with the enforcement of health regulations did not represent the last word in the most enlightened pediatric opinion concerning the needs of infants. The Pediatric Section of the Academy of Medicine had been asked to review this matter as a section and from the pediatric standpoint. Dr. Southworth said that he would suggest that the law be revised; that certain sections should be framed for orphan asylums, reformatories, and older children; and separate sections framed for young children and infants; that provision should be made for ample space in sick wards; that wards containing bottle-fed infants under eighteen months of age should be specifically classed as sick or hospital wards; that the amount of cubic space allowed to each of these main groups should be based upon modern pediatric opinion, and that there should be no qualifying clauses permitting the purport of the law to be nullified to suit individual caprice; that after basic space, which was sufficient with the windows closed had been specified, further provision might then be made for inspections and enforcement by local authorities, with a view to assuring reasonable employment of the usual available means of ventilation. In closing, Dr. Southworth stated that he did not claim that additional air space was a cure-all which would remedy all the difficulties in rearing infants in institutions, but he did maintain that increasing the cubic air space was the surest, most direct, and most feasible way of correcting a number of the evils of institutional life.

Dr. CHARLES GILMORE KERLEY said that the mortality of young children depended on so many other factors in addition to that of cubic air space that he felt that this was comparatively speaking but a small part of the subject. If the air was undergoing active ventilation a smal cubic air space might answer very well. One of the worst features met in institutions was that there was but one room for a group of children, and there they must play, eat and sleep, and this was the factor that did not obtain in ordinary dwellings. Another matter was with reference to an adequate system of ventilation. In his experience with systems of ventilation he did not know of one that really did ventilate; when one wanted ventilation he still had to resort to the open window.

Dr. HENRY DWIGHT CHAPIN said that Dr. Kerley had brought out the two points which he would emphasize. We might have 1,000 or 10,000 cubic feet of air space, and if everything was shut up the supply of air might be insufficient. The essential factor was to have an adequate supply of freely moving fresh air and then the cubic air space was not so important. It seemed that the best way of dealing with institutions for infants was to abolish them as far as possible. It had been said that lay boards made the rule and doctors followed them. The doctors should say that if conditions were not improved they would no longer remain on the staffs of such institutions. We might as well recognize the fact that the trouble was a lack of force on the part of the doctor.

Dr. FLOYD M. CRANDALL said this question had been brought up for very definite reasons, particularly for opinions with reference to accommodations for infants and children in institutions as measured by cubic air space. This was what the discussion should bring out. The question had come up whether the Public Health Committee of the Academy of Medicine should take up the modifying of this law. The question should be considered by pediatricians first, and the doctors who discuss it should bring out something definite and tangible.

Dr. HAYNES suggested that the best way of obtaining the opinion of the members of the Section would be to appoint a committee which should submit a *questionnaire* to the members individually and then present the results to the Public Health Committee of the Academy.

This suggestion was acted upon.

The Hospital Control of the Infectious Diseases of Infancy and Childhood.—Dr. DENNETT L. RICHARDSON of Providence, R. I., read this paper by invitation. He presented some facts on the transmission of contagious diseases learned by hospital observations. He said it was pretty well established that the sources of any infectious disease were three, namely, the clinical case, the missed case, and the carrier. The disputed questions related to the methods by which the virus found its way into the healthy person. Formerly the rôle of air infection was given more attention than the avoidance of infection by contact. Through the observation of some of the French investigators, the conclusion had been reached that the infectious diseases were seldom air borne, and that isolation of the patient was not complete unless rigid antisepsis was carried out. The practical results obtained at the Pasteur and other French hospitals had shown that the employment of antiseptic nursing had made it no longer necessary to house different diseases in separate pavilions. In consequence of this there had developed several methods of construction by which one might obtain physical separation of patients suffering from different infectious diseases and yet treat them in the same ward. These systems were: (1) The cubicle system, having its origin in the Pasteur Hospital and consisting of single rooms, the partitions being complete or only partially reaching to the ceiling and arranged on both sides of a common corridor; (2) the barrier system, consisting of bed isolation of different diseases in a large open ward; (3) the cellular block plan as constructed at the Plaistow Hospital, consisting of two rows of rooms, back to back, with glass partitions between them, each room leading to an open veranda on either side of the building. The statistical records of London hospitals into which these systems were introduced demonstrated the success of aseptic nursing. They showed, however, that measles and chickenpox were the most difficult of the infectious diseases to care for by aseptic nursing. In March, 1910, aseptic nursing was first undertaken by the Providence City Hospital, which, through the efforts of Dr. Charles V. Chapin, who had made a study of contagious disease hospitals abroad, was constructed in accordance with the theories of medical asepsis. In this hospital patients suffering from contagious diseases were accommodated in three pavilions, arranged parallel and containing about 140 beds. Two of these buildings were duplicated, each floor being so arranged that about one-half the patients could be placed in rooms off the central corridor and containing from one to three beds each, while there was a convalescent ward with fourteen beds at the south end of the building. At the present time one of these duplicate buildings was devoted to scarlet fever. The first floor of the other building housed the diphtheria patients; the second floor was used for an isolation ward in which various infectious diseases except measles and chickenpox were cared for. These latter highly transmissible diseases were not included because the nursing in these buildings was largely done by pupil nurses. The third building provided for the care of any infectious disease, including smallpox. Every room was provided with a lavatory, where the water must be turned on by forearm or foot levers, and where nurses and physicians must wash contaminated hands in running water with soap and a

scrub brush. Immersion in an antiseptic solution was also required after such diseases as measles and chickenpox and smallpox, and very septic cases of other infectious diseases. Elaborate construction alone was quite unable to prevent cross infection; proper management was of far greater importance. The latter resolved itself into proper admission of patients to prevent mistakes of diagnosis, securing a history of other infectious diseases in the home, active and intelligent observation of the patients for signs of secondary disease, careful attention to the health of all employees, and the proper and efficient sterilization of hands, utensils, and linen between different infectious units. At the time of admission all doubtful cases were isolated until the diagnosis was clear. Nurses were impressed with the importance of asepsis and taught the details of its administration. When a patient was ready for discharge he was given a soap and water bath and shampoo. This bath was given the day before discharge, and the patient was then put into a clean room set aside in each ward as a discharging room. When the mother came for the child clean clothes were put on him, and if he presented no symptoms after a careful examination he was taken away. The rooms had never been fumigated since the opening of the hospital, but the floors and furniture, and in the isolation wards, the walls within easy reach, were washed with soap and water. A careful record had been kept of the room or rooms occupied by each patient, and he had never been able to trace any cross infection to this source. Infected linen was collected under aseptic precautions and placed directly into the washers, where it was washed by boiling water and its sterility tested by cultural experiment. No sterilizing washers were used. All the elaborate technique of caring for the patient was supplemented by careful supervision of the nurses and the entire hospital personnel. Resident physicians wore white suits. Over their shirts they wore a short-sleeved washable vest, outside of which was worn the usual white coat. When visiting patients the coat was removed and a gown was worn only when making careful physical examinations. The doctor always scrubbed his hands when going from one infectious disease to another. From March 1, 1910, to January 1, 1916, 6,748 patients had been discharged from the hospital. Among these there occurred 166 instances of cross-infection. The diseases contracted were as follows: measles, 48 instances; chickenpox, 78; scarlet fever, 19; diphtheria, 10; rubella, 4; whooping cough, 4, and mumps, 3. The total incidence for the whole hospital was 2.4 per cent. If from the total number of discharges 2,029 adult patients suffering from tuberculosis and syphilis were subtracted, leaving 4,689, the incidence was 3.5 per cent. There had never been a cross-infection between the tuberculous and syphilitic patients. Nearly all instances of infectious diseases arising among employees had occurred among pupil nurses. Aside from the nurses, among 229 employees, only five contracted an infectious disease. These results demonstrated that rigid asepsis was of primary importance. Hospitals for infectious diseases and for children should not have wards of over six to ten beds, and should have sufficient smaller units to accommodate all patients for an observation period. Conservative and accurate diagnosis of patients on their admission and careful supervision would prevent the entrance or continued residence in the same unit of patients suffering from more than one transmissible disease. Among forty-two house officers serving during the period under consideration, two developed diphtheria and one both mumps and rubella.

Dr. George Draper discussed the hospital care of poliomyelitis. He said that a most notable feature with reference to Dr. Richardson's paper was that no mention was made of poliomyelitis. There were two reasons why there were so few cases of these cases in this great institution: First, poliomyelitis had essentially a rural distribution, and, secondly, sporadic cases in the city unusually came into the large general hospital. The care of poliomyelitis in such a hospital as Dr. Richardson had described was a simple problem. The management of this disease was essentially the same as that of scarlet fever and diphtheria. Perhaps particular stress should be laid upon caring for secreta and excreta. There had been a number of instances of cross-infection recorded in Sweden, and among nurses a number of cases had been reported in Europe and America. Their protection, as far as our present knowledge went, depended upon the rigid care of the hands, nasal passages and mouth. The control of the disease in hospitals must be similar to that of other diseases. Possibly in addition there hould be special care given to the nose and throats of contacts. The attendants should use a spray of peroxide solution, or of menthol in oil. Quarantine was at present their best defense in the control of the disease in the community. While most of the means of transmission of poliomyelitis had been determined, some apparently still remained hidden. It had not yet been determined why one infant in a family contracted the disease and not others in the same family; why some sections of a community had a number of cases and others not, and why at another time it would be found in that section of the community which before was free. The part played by abortive cases and healthy carriers must still be cleared up. Contacts must be thoroughly controlled and likewise the carriers and the patients, and the same rigid quarantine must be maintained as in other infectious diseases, though it had not been definitely demonstrated that the virus found in the nose and throat of healthy carriers transmitted the disease. The duration of the activity of the virus in convalescent patients was important. A case had been reported of a child having two attacks of the disease two years apart, and five months after the second attack it still harbored the virus. In monkeys the virus usually disappeared in five or six weeks, but in certain individual monkeys it might persist four or five months. The incubation period of poliomyelitis was normally two to seven days, but there might be a very long latent period, as in one case which had been recorded of a young woman who was committed to prison and who developed poliomyelitis two months after her admission to solitary confinement.

Dr. Henry Heiman spoke of the epidemiology of meningococcus meningitis, and said that this presented features at times so strange and puzzling and so different from the characteristics usually associated with other contagious diseases that its contagiousness had been questioned by not a few observers. As a rule there was no regular progression or extension of the disease. It moved by leaps and bounds and struck haphazard. In considering the hospital control of infectious diseases from the standpoint of meningococcus meningitis, it was advisable to consider first the mode of transmission of the disease. It was well known that the disease was a communicable one, and that it occurred in epidemics. It was also endemic in New York, as were most of the other communicable diseases. It was generally conceded that the mode of transmission was by means of Flugge's droplet infection; that was, that the meningococcus was transmitted to the exposed mucous membranes of previously healthy persons. Meningitis might or might not be the result of this transmission, depending upon the susceptibility or resistance of the individual. A study of the natural history of the meningococcus made it improbable that the disease was transmissible through the agency of the atmosphere of lifeless objects, but from one individual to another. This did not necessarily mean from patient to patient, but it did mean that in most cases the source of contagion was a healthy or apparently healthy meningococcus carrier. Experiments had shown that there were from ten to twenty times as many healthy carriers as there were diseased carriers or patients. Therefore, in order to properly control the spread of meningococcus meningitis, they must devote their attention to prophylactic measures. In hospitals these measures were the gown, the hand brush, and disinfectants; and it would seem rational to add the usual measures, the gargle, and the cleansing of the naso-pharynx of the physician, the nurse, or of any one coming in contact with the patient. The disinfection of all the excreta of the patient, especially those of the respiratory tract, was of the utmost importance. Experience had shown that absolute quarantine in a hospital was not necessary, as transmission of the disease in hospitals was comparatively rare; however, the infection of nurses attending cases had been reported. School infections, though rare, had been reported by Bolduan and Goodwin and Netter and Debrè. The latter observed 10 cases, six of which attended a common school. Among 231 pupils in this school, 40 were found to be meningococcus carriers, that was, 21.21 per cent. Flugge reports that 70 per cent. of those living in close proximity of a meningitis patient became carriers. Netter and Debrè found 41.66 per cent. of those coming in contact with patients having meningitis became carriers during the months of March, April and May, while during June, July and August only 26.66 became carriers. It would not be

amiss to have occasional cultures of the nasopharynx taken from doctors and nurses attending cases of meningitis. Overcrowding in hospitals during an epidemic of meningitis should be avoided. The advisability of sending meningococcus meningitis cases to the hospital should be urged upon the public, not only for the sake of preventing the spread of the disease, but for better observation and better control of the disease by laboratory methods. If patients remained at home, they should be isolated, and intermingling between members of the family and the outside world restricted as much as possible. Children belonging to the family of the patient should not be permitted to attend school for about three weeks from the onset of the disease, unless they could be proved by bacteriological methods to be non-carriers. In concluding, Dr. Heiman emphasized the importance of the healthy carrier in the transmission of meningococcus meningitis, and said that attention should be directed to these almost as much as to the patients themselves. Prophylactic measures directed along these lines would probably help to lessen the dissemination of this disease.

Dr. WILLIAM H. PARK discussed the control of diphtheria. He said it was interesting to observe how a paper like Dr. Richardson's was received. Ten years ago they would have thought that the methods described were not efficient quarantine. They would have thought that caring for two kinds of infectious diseases with only a partition open at the top between them was not effective quarantine. As to diphtheria and the Schick test, a negative Schick test could be absolutely relied upon as evidence that an individual was immune to diphtheria, except in very young infants. Dr. Hess had had one baby that gave a negative Schick test and three months afterwards developed diphtheria. This was because in early infancy the child still had its mother's immunity, which it lost later. Dr. Park said their views with reference to active immunity had changed. They had found that about 90 per cent. of those who were given immunizing doses of toxin-antitoxin did not develop antitoxin for some weeks, so that in hospitals the production of active immunity was only of practical value for physicians and nurses, but for the protection of the patient they must still rely upon passive immunity. Up to the present time nothing had been discovered that was effective in the treatment of diphtheria carriers. A careful antiseptic toilet of the nose and throat simply covered up the bacilli and after a few days without treatment they again showed themselves. The only measure that seemed to be effective was the removal of the tonsils. The production of active immunity to diphtheria had a wide field of usefulness.

Dr. BERTRAM H. WATERS discussed the subject of whooping cough in relation to hospital control. He said it was rather difficult to speak on this subject since so few cases of whooping cough were sent to the hospitals. It was estimated that only about 50 per cent. of the cases of whooping cough were reported and only a very few of these came under the control of the hospitals. Whooping cough presented a rather difficult problem, and the Department of Health did not supervise cases of this disease because of the difficulty of obtaining early reports and since the period of infectivity of the disease was during the time before a diagnosis was made, and also because of lack of men and funds to carry out such work, all of these being needed to look after the more severe forms of infectious disease. At the present time they were considering the advisability of requiring a two weeks' quarantine for whooping-cough cases, that would cover the first week and aid in controlling the infection during the second week. Dr. Waters expressed the opinion that the use of the vaccine gave very promising results in immunity, as was shown by the work of Dr. Park and Dr. Hess.

Dr. ALFRED F. HESS, in discussing the hospital control of measles, said that this subject was particularly interesting because the mortality of measles in hospitals was so different from the mortality in the homes. The hospitals, however, were not so much to blame for their high mortality. They had found that about one-third of the hospital cases of measles were under two years of age. Again the mortality from measles was almost entirely due to pneumonia. During March they had had 25 deaths due to pneumonia; 21 of these cases were admitted to the hospital with pneumonia and four developed in the institution. In February there were 17 cases of pneumonia admitted and two developed the disease after admission to the hospital. The high mortality from measles and penumonia in contagious disease hospitals was largely due to the fact that they received the very severe cases, and that the very severe cases were transferred to the hospital from homes and institutions. Since there was no specific treatment for measles and penumonia, it might be advisable to direct their treatment to the pneumonia and give the patient the treatment for this disease. They had always been afraid of fresh air for cases of measles and shut these patients up, but when measles was complicated with pneumonia it would be well to make an exception and give the patient the benefit of fresh air. Furthermore, unless it was absolutely necessary, no case of measles under two years of age should be sent to the hospital. A mother would be willing to care for a child with measles if told that children with measles did better at home than in a hospital. They should get the cooperation of the community to keep these young children with measles out of the hospitals.

Dr. HAVEN EMERSON said that New York as well as the rest of the country was indebted to our teachers from Providence. The fact that the New York Department of Health had abandoned fumigation might be attributed to the teachings of Dr. Chapin. In their new hospitals for infectious diseases they had practically followed out his plans of construction with very slight modifications. When it came to confining infection to the individual they must establish the same teaching among medical nurses that they had been emphasizing in the training of surgical nurses, that was, they must be taught aseptic technic. If this were possible there was no reason why these diseases could not be treated in a department of a general hospital. If this could be done it would effect a great economy since it cost a great deal to keep up a large number of beds simply on the possibility that they might be needed at certain seasons. It would be a great economy if they could use these beds all the year around, and this could be done by absorbing the acute infectious diseases of childhood during the season when they were most prevalent, and then caring for chronic cases, such as tuberculosis and syphilis when the acute infectious diseases were less prevalent. Dr. Emerson also emphasized the desirability of having physicians teach the people to keep children under two years of age with measles at home. He said it was really a question whether they ought to be admitted under any conditions, certainly only when the home conditions were such that it was absolutely impossible to give them the first elements of decent care. There would always be a need, however, for some hospital that would care for measles in New York City. There was also the question of the advisability of admitting cases of whooping cough (and they would make every effort to admit these cases) when they occurred in a family in which there was a child under two years of age who would be exposed to the infection. Dr. Emerson also suggested that it might be proper to provide a hospital care for cases of gavus and ringworm, since a number of children lost a great deal of time from school on account of these conditions.

Dr. RICHARDSON, in closing, said that from what Dr. Park had said it seemed that their work was more or less misunderstood. They had a ward for scarlet fever and one for diphtheria, into which they had introduced other diseases occasionally. They also had three isolation wards for various infectious diseases. The plan of admission which they carried out was a process of filtration, keeping all the new patients in small units for a one-week period of observation. Their plan meant more to the small town or the small city that could not afford to have a hospital for each infectious disease. In a small city where there was a necessity for economy, this plan could be carried out if one knew the underlying principle, that was, that contact infection, infected human beings, and not environment, was the source of infection, and if they could control the contacts, the mild cases and the clinical cases, they could have much better control of infectious diseases.

Dr. HAYNES asked Dr. Richardson how his statistics with reference to cross-infection compared with those of other hospitals.

Dr. RICHARDSON replied that few American hospitals had published reports on that point. The only one he knew of was Dr. Auker of the St. Paul County Hospital; he gave the number of cross-infections and the number of cases of infectious disease among employees and nurses. This was the only report beside that of the Providence City Hospital in this country that gave this data, but some of the foreign reports

showed that for scarlet fever and diphtheria the number of cross-infections had been as high as 7 per cent.

Dr. KERLEY asked Dr. Richardson if he had had any experience with reference to the incubation period of scarlet fever.

Dr. RICHARDSON replied that the shortest incubation period he had known was thirty-six hours, and as to the other limit he did not think anyone knew. If a child came into the hospital with scarlet fever, and if at the end of four weeks it was necessary to detain him for a day or two, and then another child came in from the same family, one could not say whether he was infected by some other child at home—a mild case that had escaped detection—or whether the incubation period had been long, that patient having been infected by the hospital patient admitted four weeks before. Had the hospital case returned home, the second case would have been looked upon as a return case.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

PATHOLOGY OF TUMOURS. By Dr. E. H. KETTLE. Published by Paul B. Hoeber, New York, 1916. Illustrated. 224 pages. Price $3.00.

LOCALIZATION BY X-RAYS AND STEREOSCOPY. By Sir JAMES MACKENZIE DAVIDSON. Published by Paul B. Hoeber, New York, 1916. Illustrated. 72 pages. Price $3.00.

BACTERIOLOGY, GENERAL, PATHOLOGICAL AND INTESTINAL. By ARTHUR ISAAC KENDALL, B.S., Ph.D., D.P.H. Published by Lea & Febiger, Philadelphia and New York, 1916. Illustrated with 98 Engiavings and 9 plates. 651 pages. Price $4.50 net.

THE TREATMENT OF DIABETES MELLITUS, with Observations Upon the Disease Based Upon One Thousand Cases. By ELLIOTT P. JOSLIN, M.D. Published by Lea & Febiger, Philadelphia and New York, 1916. Illustrated. 440 pages. Price $4.50.

A MANUAL OF OTOLOGY FOR STUDENTS AND PRACTITIONERS. By CHARLES EDWIN PERKINS, M.D., F.A.C.S. Published by Lea & Febiger, Philadelphia and New York, 1916. Illustrated with 120 Engravings; 445 pages. Price $3.00 net.

A MANUAL OF FIRE PREVENTION AND FIRE PROTECTION FOR HOSPITALS. By OTTO R. EICHEL, M.D., Director, Division of Sanitary Supervisors, New York State Department of Health. Published by John Wiley & Sons, Inc., New York, 1916. 69 pages. Price $1.00 net.

DISEASES OF OCCUPATION AND VOCATIONAL HYGIENE. Edited by GEORGE M. KOBER, M.D., LL.D., Washington, D. C., and WILLIAM C. HANSON, M.D., Belmont, Mass. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa. Illustrated. 918 pages. Price $8.00 net.

THE PRACTICE OF OBSTETRICS. Designed for the Use of Students and Practitioners of Medicine. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College, Visiting Obstetrician to Bellevue Hospital, New York City, etc. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa. Fifth Edition, Revised. Twenty-second thousand. With 1316 Illustrations, including Five Colored Plates and 34 Figures Printed in Colors. 1067 pages. Price $6.00 net.

THE PRACTICAL MEDICINE SERIES. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Vol. IV—Gynecology. By EMILIUS C. DUDLEY, A.M., M.D., and HERBERT M. STOWE, M.D. Series 1916. Published by The Year Book Publishers, 327 South LaSalle St., Chicago. 232 pages. Price $1.35.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Edited by P. G. SKILLERN, JR., M.D., of Philadelphia, August, 1916. Published bimonthly by W. B. Saunders Co., Philadelphia and London. Vol. V, No. 4. Illustrated. 771 pages. Price $8.00 per year.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints. Volume XXIV. Published by the Rockefeller Institute for Medical Research, New York, 1916. Illustrated. 515 pages.

Therapeutic Hints.

Simple Treatment for Cleansing in Otitis Media.—Coble recommends the following on account of the materials being found in every home as well as for the known antiseptic properties: Carbolic acid, minims 40-60; water, one quart. Where the perforation is large or the drum membrane almost destroyed, and the discharge has a foul odor, the following prescription has decided beneficial qualities:

℞ Boracic acid, grs. xx
Ethyl alcohol, ʒj

The canal must be first thoroughly cleansed with boric acid solution, dried, and then a diluted solution of the above dropped well into the canal and allowed to remain until the smarting ceases. A one to three solution should begin the treatment and the strength gradually increased until the original prescription is employed.—*Indianapolis Medical Journal.*

Gargle for Adults.—For an astringent and antiseptic gargle Coble recommends:

℞ Ethyl alcohol, ʒij
Cinnamon water, ʒij
Formaldehyde, ♏ij
Glycerin, ʒv
Distilled water, q. s. ad. ʒviij

Simple Rules for the Prevention of Chronic Diseases of Metabolism.—Greely, in discussing diabetes, offers these suggestions for rational living and the prevention of metabolic conditions: The training should begin for the child with the parents and continued until the son or daughter is able to control his or her own life: (1) Thorough mastication prevents indigestion, overeating, and bad teeth. (2) Thorough mastication does away with excessive drinking at meals and thus overcomes a tendency to avoirdupois. (3) The amount of starches, meat, and sugar in the diet should be reduced to a minimum and a corresponding increase made in the amount of vegetables and fruits eaten, especially in adults performing but a moderate amount of work. One cereal food is sufficient at each meal. (4) The final rule of health offered is to live more slowly, and to encourage every man, woman, and child to cultivate a hobby, a resource for happiness in their hour of need, when the real work of life must be suspended.—*Wisconsin Medical Journal.*

Simplest Cure for Scurvy.—Fruit juices, orange or prune, are the time-honored remedy for infantile scurvy, but the white potato has proved just as efficacious and within the reach of the poorest family. The proportion generally used is one tablespoonful of mashed potato to one pint of water, and added to the twenty-four hours' feeding of milk in place of the usual cereal diluent. The potato should be pared very thin and an average-sized potato when mashed covers the amount needed. The mashed potato can be added to the water in which it is boiled and thus all of the vitamines conserved.

Remedy for Carbuncles.—Apply collodion over hyperemic area except the central one-fourth inch space. Cut crucial opening in this space from center toward periphery and inject the following solution:

℞ Acidi carbolici sat., gtt. xx.
Glycerin, ʒij
Aqua dest., ʒij

Dress with sterilized gauze dipped in bromine, I—500, or chlorinated soda in 10 to 25 per cent. solution. Remove all sloughs.—*Medical Summary.*

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THE PROBLEM OF REST OR EXERCISE IN THE TREATMENT OF PULMONARY TUBERCULOSIS; A PLEA FOR LESS ERGOPHOBIA.

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In the treatment of pulmonary tuberculosis there are no more important measures than rest and exercise. On their wise and judicious use rests a large part of the success of our therapeutic measures. In the past a vast number of consumptives have come to their end directly through an injudicious use of exercise, and the advice "get a horse and ride out West" so frequently given thirty years ago was undoubtedly of more benefit to the undertaker than to the patient. Reacting from this rash and foolish use of excessive exercise, our profession have learned the priceless lesson that in the beginning of the treatment of tuberculosis rest is always indicated and the reclining chair and the cot have replaced the mountain climb and the horseback ride with the happiest effect. Twenty years ago many patients came to me suffering from the effects of excessive exercise. I recall two slender young Irish girls from a large Massachusetts town who called me in when one had fainted as the result of a five-mile walk. They were advanced cases of active tuberculosis with excavation, yet the only advice their home doctor had given them was to avoid doctors, to eat freely, and to walk as many miles daily as they could. This advice they had proceeded to carry out, with afternoon temperatures of 103° and over and with the result noted. By absolute bed rest their fever was brought down, their symptoms greatly ameliorated, and the activity in their lungs decreased, and while one was past any cure the other lived for many years a happy if semi-invalid life. Probably any of my auditors could duplicate such a history, but even among general practitioners, to-day there are few to be found who would give such advice. The profession have at last painfully learned that rest is good in the treatment of tuberculosis and patients get much more careful attention on this score than formerly. But doctors, like all other men, are prone to run to extremes, and, while I realize how heretical it may seem to say so, I find that to-day many men are tending to push rest to an unwise extreme. I see patients so indoctrinated by their medical advisors with the idea of the essentiality of rest that when they are discharged they are afraid to move, and they live a useless life, recumbent on the sofa, refusing to exert themselves in any way, and for all the good they are to themselves or the community they might as well have died rather than recovered, if such a life can be called recovery. Patients with normal temperature are kept flat on their backs laying up useless pounds of fat rather than turning that fat to muscle by judicious graduated exercises. Weight as weight and not as representing vitality and working efficiency is looked on as the summum bonum and good in itself, and such stall-fattened patients are only fit for the eternal quiet and contemplation of a Thibetan monastery.

If I were talking to a body of general practitioners I would not speak in this way, for they might misunderstand it, and it is far safer to overdo rest than to return to the former overdoing of exercise. But before a body of clinicians and specialists like this, I can speak freely and not be misunderstood, and for such I believe it is wise to stop a moment and consider in how far rest and in how far exercise are desirable in the treatment of pulmonary tuberculosis.

It is needless in studying this question to go back in the history of medicine to show how intelligent were the views of Hippocrates and Celsus, or to review the dispute between Brehmer, with his theory of the small heart in tuberculosis and the consequent need of active exercise, and the wiser view of his pupil Detweiler, who, seeing the bad effects of over-exercise, advocated recumbent rest. We need only go back to the time when our great American leader in Phthisiotherapy, Dr. Trudeau, as he has so graphically told in his autobiography, went in the 70's to the Adirondacks for his health, and, as we can now realize, wasted much of his superb vitality and his opportunity of permanent cure in over-exercise. By degrees, by the experience of his own case and that gotten with many patients, he was brought to use the rest he had so neglected, and among his followers, not merely in Saranac but all over our land (for he was verily the medical father of all American phthisiotherapeutists whether they had worked under him or not), we find a realization of the value of rest, a healthy fear of the danger of exercise, which in that day was most certainly justified.

The Adirondack recliner soon dominated the hygienic management of the disease, and many were saved who, had they exercised, would have been lost.

What is the basis for the success of rest? First, it lessens circulation and hence toxin absorption. Second, it lessens oxidation and lowers temperature and so decreases tissue waste. Third, it puts the diseased lung at rest. Fourth, it rests the heart. Fifth, it lessens cough and expectoration, probably because quiet decreases physical and pathological activity in the diseased foci. Sixth, it encourages weight gaining. Seventh, if properly managed, it helps to put the mind at rest.

Now, all these things are admirable, and, in

certain stages of the treatment, essential, but there comes a time when disadvantages show themselves and when too long continued rest ceases to be of value and becomes harmful.

When the temperature falls, when the afternoon figure is not over 99.4°, when the pulse slows, showing a decrease of toxin absorption, when strength is improving, when the trouble is less active and we desire to develop the compensating functtion of the healthy part of the lung by the quiet, deep breathing, or by judicious exercises, when cough and expectoration are much reduced and we can, therefore, assume that there is less ulceration and activity in the diseased area, when the patient needs the stimulus of hope and the encouragement of a positive proof of his improvement, when his gain of weight is marked and without exercise is apt to produce fat rather than muscle, then I believe we should take up exercise, not merely on the theory of Pattison, in which I concur, in order that the patient may undergo an autotuberculin treatment, but to prepare him, when he shall be restored, to resume his life in a normal way and not to be turned, as too many now are, into pulmonary hypochondriacs. Because it has been abused many men are afraid to mention the word exercise, just as bleeding was unjustly discredited from its one-time over-use, but exercise is just as essential in phthisiotherapy as is rest, and should be dominant in the latter months of any successful cure. Beginning with from one to five minutes, according to the case, and increased by from one to five minutes a day and guarded by a careful record of symptoms, fever, and pulse, kept by the patient, which the doctor should see twice a week, and stopped or decreased just as we would tuberculin if a reaction occurred, it need subject the patient to no risk. It should be worked up very gradually through the course of weeks and months to as much as three hours on a stretch of walking or eighteen holes of golf. This brings the patient to the end of his cure fit and strong rather than fat, with a weight not over or even slightly under his insurance standard, full of healthy vigor, not afraid of himself, knowing how much he can do and what he cannot do, and ready to resume his work with a chastened knowledge of his former hygienic sins and a confidence that in the future he will know how to combine health with work.

And how shall we safely gauge the use of rest and exercise? First, it is essential that the doctor keep a close tab on his patient's life, at first biweekly, then weekly, and never less than once in two weeks, so as to detect and remove over-exertion.

Temperature.—Of our guides, temperature is the first and best. Every patient, whether febrile or not, should, when first beginning treatment, go through a period of absolute rest not merely for its therapeutic effect, but that we may become familiar with his normal run of temperature. If we find after a few days a normal temperature, and if the other data are favorable, we can allow him up, and give him increasing graduated walks, to be measured carefully by the watch. If the temperature in the afternoon is as high as 99.4° he can be gotten up at first in the morning only, then in the afternoon as well, and finally all day, the graduated walks coming a little later when he has proved that his trouble is inactive enough not to show a fever rise after talking, reading, or visitors. If it is 99.6° to 100.6°, bed rest, while not absolutely essential, is best till it gets and keeps the temperature down as it usually does, but if the patient is of a restless, fretful, high-strung temperament it is often wise to allow an hour or so in the morning in a reclining chair. If the temperature is 100.6 or over, absolute bed rest is necessary, though I cannot agree with those extremists who insist on the use of the bed pan and the urinal and absolute recumbency without motion, for I think, for psychological reasons, this is undesirable. In cases where persistent bed rest fails to reduce temperature, and yet where the general condition is fair or good, I, at times, experiment with getting the patient up, and occasionally find that the temperature will thereupon disappear. It is scarcely necessary to note that the doctor must be sure that the patient is not running a concealed night temperature. During bed rest it is most important to keep the patient heartened up and to teach him mental relaxation and resignation, for many patients who are at physical rest in bed are in a constant mental turmoil, and kicking against the pricks, which is as bad, or worse, for them than physical exertion.

Pulse.—Unduly rapid pulse (100 or over) is a good indication for rest, but when on experiment we find that moderate exercise causes no rise, it need not be an absolute indication for rest, but only for the reclining chair. Further, some people run constitutionally fast pulses, and if we can be sure of this it can be discounted.

Cough and Expectoration.—Abundant cough and expectoration are made worse by talking, laughing, and walking, but such cases are apt to be febrile, so we do not need this as a guide. Blood streaked or pink expectoration is an absolute contraindication, but I have seen patients in whom such blood streaking was apparently a permanent habit, even when they were febrile and doing well, and after long tests I have, with great benefit, allowed walking in such cases.

Weight.—Any patient who is losing weight, save unduly fat ones, where we wish to allow a slow and cautious reduction, must be at chair rest, or at times bed rest. A poor weight, however, is not necessarily a contraindication in a patient who is normally spare but is wiry. In considering weight, I find it of great value to record not merely the patient's average weight, but his average best weight, his absolute best, and his insurance standard as gotten from the tables, and I like to keep the latter before me as my ideal for him; and I consider it unfortunate for him to surpass that ideal very much, a really fat patient not being a good result of our treatment.

Fatigue is one of our best guides. A little healthy tire, passing off rapidly, has no significance, but to get really tired or fagged is bad, whatever the temperature or pulse may be. However, if the patient's exercise is increased by a little each day, this can be entirely avoided, save as an indication of an intercurrent congestion.

Mental Attitude.—A patient who has been treated by prolonged bed rest is usually much afraid of any exercise, and has to be brought to it very gradually, for to make him do what he considers dangerous is unwise; but since the proof of the pudding is in the eating, he will soon be converted if he finds the one, two, or three minutes have no bad effects. Of course, mental rest is much more difficult to obtain than physical. A patient may be lying quiet in bed, and yet, unknown to us, may be worrying or suffering, and fearing terrible things. This is difficult to find out. Yet, if we are to help our patients, it is up to us to discover

it, and it is at this point that the phthisiotherapeutist must take on the character of the kind and sympathetic, but firm, father confessor, in order that the patient may practise with him that mental catharsis which alone can put his mind at rest. Indeed, so essential is mental rest that we should never be satisfied until we have secured it for our patients, if possible.

Methods of Exercise.—In the bed patient, it may, though very seldom, be necessary to give artificial exercise in the form of abdominal or limb massage (never chest) to keep his digestion going and to burn up waste products. The first step toward exercise is in sitting in a reclining chair for half an hour, the time to be lengthened each day, two-thirds of it spent recumbent, one-third erect, and for this a proper chair, which will lie back flat, or come straight up by the motion of the patient's body, is essential; and such a chair must have an absolutely flat back, to encourage erect shoulders, which I believe to be most important for the tuberculous patient. For the patient who has to be constantly recumbent there is nothing better than the Adirondack recliner, but when he reaches the stage of sitting up he cannot let down his legs, and, its adjustment not being automatic, it discourages frequent change of position, which is important to prevent tiring of a single set of muscles and to prevent fatigue or monotony. In this case, the Bloch chair is much better. The next step in exercise is crocheting for women, solitaire for the men, and reading for both of them, but any of these can raise temperature if overdone. Next comes walking, according to the rules already noted. To my mind, no other exercise can compare with it, and it can be perfectly graduated from the very shortest, quiet stroll to a brisk morning's walk uphill and down dale, as indicated. Driving is not as passive and easy for patients as short walks, and no one drives for less than fifteen minutes or half an hour. Moreover, the temptation to overdo is much greater, and the patient does not have the natural warning of his overdoing. Autos are easier than carriages, but I allow neither one or the other until the patient can walk from one-half to an hour without bad effect. When a patient has been afebrile for a long time, when the process is inactive, with no moisture and little or no expectoration, I allow, in selected cases, short rides on a racking or pacing, but never a trotting horse. This is especially good for dyspeptics, and can be worked up by degrees from one to two hours. To those of limited means, trolley riding is enjoyable, and it can be allowed sooner than carriage driving, if the trolley is near the house. After the patient can walk easily for an hour on the level, I have him begin the ascent of increasingly steep hills until the rather steep hills in Asheville can be easily taken, and I am never fully satisfied with the patient, on discharge, if he is unable to walk three hours over our hills with no undue dysconea, with no loss of weight, fatigue or tachycardia. This is the nearest I can come to a test of his ability to stand the tax of his work, and his ability to do this easily shows me that his physical force is reestablished and that he should have such vitality as to enable him to complete the fibrosis of his case and to resume a normal life. What a difference between such a patient, rosy, strong, with firm muscles and bright eyes, with full knowledge of the possible dangers of relapse, yet also with the knowledge of how to prevent it, and, on the other hand, the fat, puffy, timid one, just up from his couch, afraid to make any exertion, and prizing each pudgy pound of fat, which, if he but knew it, represents a burden rather than an asset.

After all, we are not trying merely to save our patients' lives but to return them to normal, useful activity so strengthened that they can reasonably be expected to stand its strain, and so instructed that they will take the happy mean between a timid anxiety lest they relapse and that foolhardy overdoing, and return to old indiscretions, which is so sure to land them into trouble.

Aside from the physical advantages of handling our cases with a less unreasonable fear of exercise, are its manifest psychic advantages. It breeds courage instead of timidity, hope instead of fear, and thus it makes the mental attitude much more favorable for getting a good result. We doctors are too apt to treat our patients' bodies and not their minds, but every patient that leaves the cure must not only be physically rebuilt; he needs, with rare exceptions, to be mentally rebuilt, to be a better man, with more will power, with more knowledge, with more determination, with more self-mastery than he had before, and in the mental education which leads to this I believe that a less timid use of exercise can play a large part.

61 French Broad Avenue.

HISTOPATHOLOGICAL CHANGES IN FIVE CASES OF MYELITIS.

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That the histopathological changes in various organic nerve lesions are not confined merely to the nerve structures, but are also to be found in the neuroglia tissue, is a fact established principally by the late Alzheimer and his pupils. Indeed, the pathological findings in the glia so far are even of a greater variety and interest than those furnished by the nerve tissue proper. It is, therefore, of great importance to follow up the possible changes in the glia, as well as in the nerve elements, in each organic nerve lesion and point out their characteristic features.

As I have had the opportunity to study five cases of myelitis, three of which were due to Pott's disease, I wish to give a brief outline of my findings, as they pertain principally to the changes in the glia.

Case I.—Woman, 31 years old, entered Cook County Hospital April 17, 1915, with a spastic paraplegia of eight months duration. The paraplegia was associated with a total anesthesia of the lower half of the body, incontinence of the bladder and rectum, exaggerated tendon reflexes in the lower limbs, bilateral patellar and foot clonuses, positive Babinski and Oppenheim, and a positive so called "defense" reflex, *i.e.* flexion of the toes (down) caused various spontaneous movements of flexion—extension of the paralyzed lower limbs. The abdominal reflex was absent. The anesthesia reached the umbilicus in the form of a circular line around the body, and three weeks later it was found at the level of the nipples. At the same level a kyphosis was present. A Roentgen examination showed a large abscess in the region of D 3—8 vertebræ and a post mortem, done May 23, 1915, the day following the patient's death, revealed an abscess in the above area, projecting anteriorly into the chest cavity. The sack of the abscess was thick filled with cheesy yellow tuberculous pus. The bodies of the vertebræ, at this level, were eroded, and the cord compressed, in fact was almost

totally severed, and hardly any substance suitable for sections was here left. The meninges, at this level, showed no infiltration, which was very pronounced in the lowest portions of the spinal cord and around the cauda equina. The gross examination of the spinal cord showed, at the level of 5th and 6th dorsal verte-

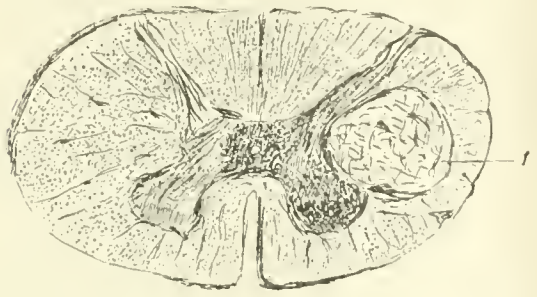

Fig. 1.—Patch of softening in the lateral column, at *f*.

bræ, a triangular cavity, protruding into the posterior columns and the posterior horns. In other places, below, instead of a cavity a round or oval patch of softening could be detected occupying the same place, but in other sections it occupied the lateral columns between the posterior and anterior horns (Fig. 1). In other places the spinal cord appeared collapsed and disfigured. Thus, on Fig. 2 the upper portion of the spinal cord can be seen turned toward the right in the form of an arch ending in a patch of gray matter consisting of Rolando's substance and remnants of gray matter. A part of the latter is to be found also back of the central canal. Such changes are known as heterotopic changes, and are considered as artefacts, due to the handling of the spinal cord which in this case was extremely soft, resembling a thick milky fluid.

The microscopical examination showed, above and below the destroyed areas, the usual picture of ascending and descending degenerations, which were studied along with the patches of softening with various methods: Weigert-Pal, Mallory's anilin-blue, Mann, Bielschowsky, Marchi, Herxheimer, Nissl and combined Marchi-Mallory methods.

Fig. 2.—Heterotopic changes in the spinal cord.

On Mallory anilin-blue and Mann methyl-blue—eosin specimens the degenerated and healthy zones showed preserved medullated axones, but in many places the myelin appeared in the form of yellowish patches or leaves. Many portions of axones therefore were totally uncovered, and the visual field appeared dotted with numerous yellow patches of myelin scattered amidst blue axones.

In the diseased areas, some of the latter were somewhat swollen, spindle shaped, and on anilin-blue specimens counter-stained with osmic acid, they clearly showed the crossings of Ranvier around which the myelin patches were especially numerous.

Chromed sections counterstained with anilin-blue revealed quite numerous blue granules scattered all along the axones and the neighboring glia tissue. These granules are evidently what Alzheimer described as "methyl blue granula" (Fig. 3). The glia fibers were very thin, forming delicate meshes studded with numerous glia cells and amyloid bodies. The characteristic feature of the spinal cord changes of the regions not *directly* involved in the softening, were almost total absence of reactive activity on the part of the glia, the presence of patches of myelin with relatively good condition of the axones and the presence of methyl blue granula.

The microscopical examination of the *patches* themselves shows them surrounded by a wall of glia fibers

Fig. 3.—*mg*, methyl blue granules, *ax*, axone; *myel*, myelin globules.

and consisting of enormous amount of fragments of axones and myelin. Some of the broken axones are tortuous, swollen, thickened, but are not surrounded by glia. The latter shows the usual network of somewhat thickened and proliferated fibers and protoplasma poor glia cells, containing nuclei with numerous dots within ("caryolysis"). Occasionally, but very rare, so-called granular bodies ("Gitterzellen") could be seen within. In general, the patch impresses one as an orderless mass of débris of broken up axones and myelin scattered among the meshes of glia tissue which does not show the reactive changes as observed in cases of secondary degeneration. Neither Marchi nor Herxheimer scarlet red stains show the presence of fat in the patches. It is an established fact that when a nerve fibre is damaged, *i. e.* is broken up in smaller fragments, the gila quite early (during the first few days according to Jacob) begins to manifest various reactive changes of proliferative nature. Thus, the glia cells are transformed into complicated structures—myeloclasts, myelophags—which break up the scattered débris into smaller particles and transform them in lipoid substances which, in their turn, are picked up by other gliogenous cells, the so-called granular, honeycombed, bodies ("Gitterzellen" of various types) and thus finally removed to the blood vessels. The field is then cleared away from the damaged tissue, is as the German authors say, "abgeräumt."

As it can be seen, in this case the damaged nerve tissue, the débris of axones and myelin were not removed, were not buried, as it were, because there were no signs of activity shown by the glia tissue. The latter was evidently rendered by some pathological process as helpless as the nerve tissue itself, and we must assume that the pathological condition of the spinal cord was that of partial necrosis or softening, also known as *myelomalacia*.

In myelomalacia we thus find *lack of reactive activity* on the part of the glia, in the presence of broken up fragments of nerve tissue. Somewhat of a different character are the pathological changes as found in another case of Pott's disease.

Case II.—Man, 22 years old, entered Cook County Hospital June 5, 1915, with a paraplegia which rapidly developed within the last two weeks. He became totally helpless during the last ten days. About eight months previously he fell on his back, but was not confined to bed. The previous and family histories were good.

Examination. The patient is extremely pale and emaciated with normal mentality and normal cerebral nerves. In the left supraclavicular space, and just in front of the left trapezius muscle there was a soft, painless mass, the size of a hen's egg, freely movable. It appeared five days before the patient became paralyzed. A similar mass was present in the left pectoralis major near its origin, extending from the 2d to the 5th rib. Below this mass there was another swelling the size of a half dollar. The puncture showed the presence

of pus which was removed, but the mass filled up again. The neurological examination showed a complete spastic paraplegia with increased tendon reflexes, positive Babinski, Oppenheim, and a bilateral patellar clonus. The defense reflex was very marked, but the abdominal and the cremasteric reflexes were absent. There was incontinence of bladder and rectum. The paralysis was associated with complete anesthesia up to the navel, while from the latter up to the ensiform process the pin pricks were perceived as "finger touch." A couple of weeks later, the anesthesia reached the level of the fourth rib. The Roentgen examination done repeatedly proved negative. The luetin, Wassermann in sp. fluid were negative (blood gave a positive Wassermann). In the further course of the disease, bed sores rapidly developed, and the patient died December 12, 1915.

The post mortem was performed four days later and among other findings, it revealed diffuse tuberculous masses in the lungs, a large tuberculous abscess over the 5th and 6th dorsal vertebræ and an extensive peripachymeningitis over the dorsal and lumbar regions. Nowhere was the spinal cord compressed or disfigured as in the Case I. Weigert-Pal stain showed marked ascending degeneration especially in Goll columns and a descending degeneration in the pyramidal tracts. In addition, there was a "patch" of softening involving one of the posterior horns and a portion of the posterior columns in the lower cervical region.

Longitudinal and transverse sections of various portions of the spinal cord were studied on frozen, celloidin and paraffin sections with the staining methods of Mann, Mallory's anilin-blue, Herxheimer, Weigert-Pal and Alzheimer's Lichtgrün-Acid Fuchsin.

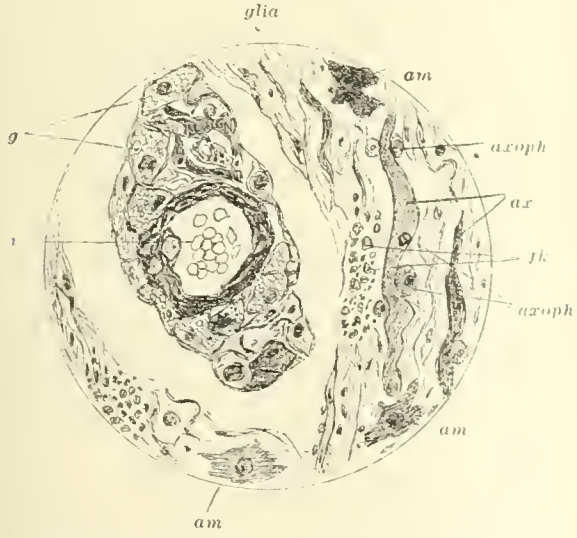

FIG. 4.—*am*, Ameboid glia cells; *axoph*, axophags; *ax*, axone; *v*, blood-vessel with granular bodies (*g*) in the advential space; *fk*, füllkörperchen.

The patch contained enormously swollen axones (Fig. 4), pale and homogeneous in appearance, bluish in color. Occasionally there could be found axones unusually thin and densely red. Some of the axones showed excavations (Fig. 4) filled with glia cells, so-called axophags first described by Buchholz in a case of myelitis in 1899.[2] Everywhere there were scattered, in large quantities, granular bodies which on scarlet red specimens stained according to Herxheimer showed the presence of fat. No glia cells or glia fibers could be detected, these having been replaced by pale homogeneous protoplasma rich cell bodies with a densely stained, so-called pycnotic, and eccentrically located nucleus—ameboid glia cells (Fig. 4, *am*). In other places the glia tissue was replaced by small round or quadrangular in shape bodies described by Alzheimer as "Füllkörperchen (Filling bodies) Fig. 4. The same ameboid glia and Füllkörperchen were in evidence in the degenerated columns of Goll and the pyramidal tracts which were packed with the above-mentioned granular bodies.

The striking feature, in every specimen, was the so-called ameboid transformation of the glia tissue, in the form of the ameboid cells and Füllkörperchen. On Lichtgrün-fuchsin specimens numerous red, dust-like granules covered the ameboid glia, so-called fuchsiophile granules of Alzheimer.

The patch thus shows in this case findings entirely different from those in the previous case. We do not see here the broken up fragments of nerve tissue helplessly scattered among the meshes of glia fibers as if waiting to be removed, but we find here lipoid substances enclosed within numerous granular bodies, so-called "Gittezellen." Instead of neuroglia tissue we find ameboid glia cells and Füllbodies of Alzheimer, both these elements actually dominating the histopathological picture. In this case the broken up or damaged nerve elements evidently were already transformed into lipoid substances and partly removed. Accordingly we see here along with signs of primary nerve degeneration those of secondary degeneration, both being in evidence on the same specimen. The secondary degeneration is represented by vacuoles, which contain fragments of axones, myelin or gliogenous formation described by A. Jacob as myeloclasts, myelophags, while the primary degeneration is represented by swollen and excavated axones, axophags, and lack of glia proliferation. The glia, as I said, was here universally replaced by ameboid glia and Füll-bodies, which types being entirely foreign to typical secondary degeneration were present on every specimen of the gray and white matter. We can therefore speak of universal ameboid transformation of the glia in this case, as it was present in every portion of the spinal cord even where the axones and myeline were undamaged.

The biological significance of the ameboid glia is, according to Alzheimer,[3] to help "liquefying" the damaged nerve tissue and thus to clean up the latter from various catabolic products, the so-called "Abbaustoffe." The ameboid glia does not produce fibers, and it is not certain whether it picks up broken up nerve tissue. At any rate, the presence of ameboid glia indicates, according to Alzheimer, a profound, far-gone destruction of nerve elements, a possible serious infection or intoxication. Therefore, Case II, with its universal ameboid transformation of glia, must be considered of much more serious character than Case I, where no ameboid glia was present and where the clinical symptoms and the course were as compared with Case II considerably milder in character.

CASE III.—The pathological findings varied again in the third case, a woman, 35 years of age, who entered Cook County Hospital July 26, 1915, with complete paraplegia which she stated existed for fifteen days. About two years previously her spine was badly jarred from a fall, for which she has been treated for 18 months in a hospital (had a cast). Six years previously she had pleurisy. The examination showed an emaciation, kyphosis in the upper dorsal and lumbar regions and some râles in the base of the lungs. The lower limbs were totally paralyzed, but as in the previous two cases the so-called defense reflex was present. The paraplegia was spastic, with exaggerated tendon reflexes, Babinski, Oppenheim, and total anesthesia up to the level of the fifth dorsal vertebra, combined with complete paralysis of the bladder and rectum.

The Roentgen examination revealed a marked bone degeneration of the 4th, 5th, 6th and 7th dorsal vertebræ which showed signs of caries and collapsed bodies. The 12th dorsal and the first lumbar vertebræ also were extensively involved.

Enormous bed sores developed and the patient died December 14, 1915, after two years of illness.

The post mortem revealed among other findings an extensive peripachymeningitis covering the D 3-5, the entire lumbar region and the cauda equina; caseous tuberculosis of D 3-12 and L 1-3 vertebræ; marked compression of the spinal cord adjacent to D 3-5; a slight encapsulated nodular right apical tuberculosis, tuberculous abscess (bilateral) of the psoas muscles and necrosis of the D 2-4 vertebræ bodies.

The spinal cord appeared microscopically perfectly normal on transverse sections, but the microscopical examination studied with various methods, mostly on

frozen sections, revealed all over the spinal cord a typical picture of myelitis. On every section the so-called Swiss cheese appearance of the spinal cord was clearly seen, the fields of vision having been everywhere covered with numerous vacuoles. A great many of these were empty, *i. e.* without any contents, but some contained remnants of axones and myelin surrounded by normal or modified glia tissue. The changes in the axones themselves were confined to their tumefaction which, however, was not so pronounced as in the previous case, but as in the latter the most interesting changes were found in the glia. The marginal glia, the white and the gray matter showed presence of numerous ameboid glia cells, frequently in a condition of so called *cystic* degeneration, or in the form of minute granules. Numerous minute blue granula were scattered all over the grey and white matter, so-called methyl blue granula (on Mann specimens). Füll-bodies, so numerous in the previous case, were here scant, but the granular bodies, the so-called γ variety of "Gitterzellen" were present in large amounts. On Herxheimer specimens they showed enormous quantities of larg drops of fat. The vessel walls showed infiltration with lymphocytes. In some areas the microscopical picture was that of typical secondary degeneration which, at the first glance, very much resembled that in amyotrophic lateral sclerosis, but differed from the latter by the presence of the ameboid glia which is foreign to amyotrophic lateral sclerosis.[4]

The typical picture of myelitis, combined with that of pronounced secondary degeneration, is the characteristic feature of this third case, contrary to the focal necrosis and the pronounced phenomena of primary nerve degeneration found in Case II.

Before we proceed with the discussion of the variety of the microscopical findings in these three clinically similar cases I wish to briefly mention the findings in two other cases apparently of different etiology.

Case IV.—Mrs. J., 36 years old, married, with a good previous and family history, entered the Cook County Hospital August 13, 1915, with a spastic paraplegia. The latter existed for about ten months and developed gradually during the previous six months after a severe fall on her back. At the time of her admission to the hospital she has been complaining of severe, sharp, cutting pain in the limbs, in the back and a tingling sensation in the left forearm.

Examination showed a well-nourished white woman lying with the thighs flexed on the abdomen, and the legs on the thighs. Any voluntary movements in the lower limbs were impossible and the passive greatly restricted. Thus the right leg, by using great force, could be straightened almost in full, while the left leg, even with a considerable effort used, could be extended but to a limited extent. The upper limbs were normal in every respect. The abdomen showed a marked rigidity on the left side where a hard mass, somewhat nodular in shape and enlongated, was felt rising from the pelvis up to the level of the costal margin (rigid muscles). The abdominal reflex was absent, the tendon—patellar and Achilles—greatly exaggerated, with a right ankle clonus, positive Babinski and Oppenheim. Patellar clonus could not be obtained on either side. Flexion of the toes caused flexion-extension movements in both lower limbs ("defense reflex"). Sensibility examination revealed anesthesia for pain up to the seventh rib, and a marked hyperesthesia up to the second. The temperature senses (heat and cold) were lost up to the second rib. The muscle sense was present. The bladder and rectum—paralyzed. The spinal fluid was under the increased pressure, gave a positive Wassermann, positive Ross Jones and Noguchi and 30 lymphocytes per cubic millimeter. A Roentgen examination by Dr. E. S. Blaine revealed a shadow of increased density on the left side of the seventh cervical vertebra covering the transverse process. The latter was seen to be complete, however."

Syphilis was denied, and there was but one pregnancy that ended on the third month in a spontaneous abortion.

The patient suffered greatly from pain in the rigid abdomen that resembled a tumor, and from the involuntary discharges.

Mercury inunctions and potassium iodide given for a month were without effect.

The history and the *x*-ray findings suggested an extradural lesion which was interpreted as a possible tumor, or bone changes caused by the fall, but which was shown by the post-mortem to be a hypertrophic pachymeningitis of the upper dorsal region. An exploratory laminectomy was suggested which the patient readily consented to. It was done on November 27, 1915, by Dr. Morf in the region of the third, fourth and fifth dorsal vertebræ. The dura was slit for two inches in the mid line, but no tumor was found. The patient made a nice post-operative recovery and a month later she was transferred back to the neurological service in practically the same condition as before the operation. The anesthesia was found almost complete up to the level of the fourth rib.

In the further course of the disease, the patient developed a cystitis, bedsores in the lower limbs, and a hypostatic pneumonia to which she succumbed March 14, 1916.

The post mortem done within the first 24 hours showed numerous calcified, bony plaques all along the posterior portion of the pia, and an enormusly thickened dura in the region of the seventh cervical segment stretching down to the middle dorsal region. The thickening was ½ inch in width and comprised the posterior and lateral surfaces of the spinal cord, but was more pronounced in the posterior portion. The spial cord was greatly reduced in size in the region corresponding to the thickened membrane.

There were customary changes of secondary degeneration found in the cervical and lower dorsal as well as in the lumbar regions, while in the upper dorsal, corresponding to the area of the thickened dura, there were changes of a different character. A very small patch of softening was present near the posterior commissure, in the posterior columns involving but one segment (approximately the fourth dorsal), and the microscopical examination on frozen sections stained with Mallory's anilin blue, Mann's methyl blue-eosin, Bielschowsky and Herxheimer's scarlet red gave findings as follows: Numerous well retained axones surrounded by an undamaged myelin sheath; many of the axones were tumefied, tortuous, with knobby thickenings, and frequently broken up in small fragments enclosed within vacuoles. Numerous so-called Marchi globules ("Marchi-Schollen") situated in long rows were present in the places of former axones.

More interesting were the findings in the glia, where a great number of protoplasma rich glia cells could be seen, but where the glia fibers were frequently replaced by so-called Füll-bodies of Alzheimer.

These Füll-bodies entirely filled, on some sections, the spaces between the nerve fibers, and were distinctly seen on every specimen stained with Mallory's anilin blue, Mann and Bielschowsky's silver nitrate method.

On the latter specimens, the visual field was totally covered with these bodies among which solitary well-preserved axones could be seen running. Ameboid glia cells were also frequently found, of large size and occasionally cystic in appearance, but surrounded by the Füll-bodies. Other glia cells showed in the form of myeloclasts, myelophags and various forms of granular bodies, so-called "Gitterzellen," principally of α and γ varieties. These granular bodies were surrounded by Füll-bodies, but not by glia fibers as in amyotrophic lateral sclerosis, though in less damaged areas glia fibers could be distinctly seen.

The most characteristic feature was the ameboid transformation of the glia which is almost pathognomonic for the various forms of degeneration to be found in myelitis. The silver-nitrate specimens stained according to Bielschowsky show, with the low power, numerous islands resembling those in the degenerated posterior columns of tabes.[5] However, with the high power, the islands appear in myelitis consisting of a mass of Füll-bodies among which run solitary axones, which in tabes, at least on my specimens, are surrounded not by Füll-bodies, but a mass of delicate glia fibers.

Outside the foci, in the dorsal region, for instance, the spinal cord shows completely preserved axones, but profound changes in the glia—its ameboid transformation. The transverse sections of such areas, not damaged by the myelitis, shows a network of ameboid glia that everywhere surrounded the *normal* nerve fibers. The vessel walls, the adventitial spaces, were infiltrated with numerous granular bodies and surrounded by Füll-bodies, while in the posterior columns numerous methyl blue granules could be seen.

The microscopical picture thus showed a localized myelitis with combined involvement of the neuroglia

and nerve elements. The peculiar features were, in this case, the widespread neuroglia changes even where the nerve fibers were well preserved, and the etiology, in the form of a pachymeningitis. Whether the latter caused the myelitis by edema or direct pressure or toxins I will not discuss this question, but will point out the relatively mild findings in the nerve fibers as compared with those in the glia. That this case was not a tuberculous myelitis is proven by the absence of any primary foci anywhere in the body and by the absence of peripachymeningitis which was so pronounced in the previous three cases. Yet in this case the pathological picture of myelitis, though less severe, was somewhat resembling that in the previous three cases with a different etiology. In Case V we have the most interesting clinical as well as the histopathological findings.

Case V.—Man, 31 years of age, cook by occupation, entered the Cook County Hospital with a flaccid paraplegia, retention of urine, and feces and anesthesia up to the inguinal region on both sides. The paralysis set in suddenly three days before he entered the hospital, preceded by a burning sensation all over the body and retention of urine which lasted for two days previous to the paralysis. Five days previous he contracted a gonorrhea. Fifteen years ago had a chancre. The patient was married, but had no children. His wife had one miscarriage.

Examination showed a well-nourished male, with normal mentality, normal pupillary reaction and normal cranial n.n., normal heart and lungs. The abdomen was greatly distended, tympanitic, no tenderness, no tumor. Inguinal glands palpable. A purulent discharge containing gonococci from the urethra. The lower limbs were in a condition of flaccid paralysis with complete loss of the tendon reflexes, absence of Babinski and Oppenheim, loss of abdominal and cremasteric reflexes. Marked anesthesia up to the inguinal region, and hypoesthesia up to the level, midway between the umbilicus and ensiform process. The patient suffered much from persistent vomiting, great abdominal distention and labored breathing. The condition grew worse and the patient died March 15, 1916, one week after he entered the hospital, and ten days after the onset of the paralysis. A diagnosis of lumbar myelitis was made, probably of gonococcus origin. Wassermann in the spinal fluid was positive, Nonne and Noguchi also positive. Lymphocytes in the spinal fluid showed 30 cells per c.mm. The post mortem showed a diffuse myelitis of the entire lower half of the spinal cord and a large focus of softening in the lumbodorsal region. The lumbar enlargement of the spinal cord was the seat of a large softening, one inch long, occupying the posterior half of the spinal cord. The adjoining dura showed no changes. In the lower dorsal region another focus of softening was present. In the remaining portions of dorsal region of the spinal cord a diffuse infiltration was noticed, obscuring the distinction between the white and gray matter.

Transverse and longitudinal sections from various levels were stained with Nissl, Mallory, Mann, S-fuchsin-lichtgrün, Mallory's hæmatoxylin and Herxheimer.

The most interesting findings were in the glia, which in some places (in lumbar region, for instance) was totally replaced by ameboid glia and Füll-bodies which could be found even in the normal areas. The ameboid glia cells were unsually large, excavated, eaten away, as it were, the excavations having been filled with glia cells. In other places the ameboid cells appeared cystic, in the presence of a large number of unchanged proliferated, glia cells. The blood vessels were unusually proliferated, hyperemic, their lumen often restricted, the adventitial spaces—packed with a large amount of lmyphocytes (Fig. 4) and granular bodies filled with fat (Herxheimer scarlet red stain). The gray matter, especially the posterior postions in the damaged areas, was rich in Füll-bodies, ameboid glia, and methyl blue bodies, the changes in the ganglion cells and axones having been not very pronounced.

The areas, not directly involved, as the upper dorsal and cervical regions, also showed glia changes, in the form of ameboid glia. The anterior, the lateral columns which practically contained normal fibers showed ameboid transformation of the glia. Some of the ameboid cells were cystic, granular, containing a shrunken nucleus eccentrically located. Füll-bodies in the undamaged areas were exceptional.

As this case was posted on the fifth day after death, there were, as in Case II, numerous changes present due to post-mortem changes as described by Rosenthal,[6] especially on lichtgrün-fuchsin specimens. I will not touch upon these findings which I shall report in full some time in the future.

The glia changes in this case were of much graver character than in any of the previous four cases—they were more pronounced and more widespread. The question arises whether the severity of the clinical symptoms, of their course, reflects in any way upon the condition of the glia, or vice versa, whether the degree of glia changes can give any idea of the seriousness of the nerve lesions. This problem was studied experimentally by F. Lotmar[7] on rabbits, in which he produced myelitis and encephalitis by injecting the dysenteric virus either in the form of sterile agar cultures of *B. dysenteriæ* or in that of a solution of toxins. The injected animals were left alive from fifteen to twenty-one days, some having succumbed to the infection, some having been killed by bleeding. Of fifty-five animals thus experimented upon twenty-four were killed and showed pathological changes in the central nervous system, which changes he divides in two types. To type I he refers those cases of acute myelitis, where the degeneration of the nerve fibers was associated with the ameboid transformation of the glia; to type II he refers cases in which the destruction of nerve tissue was combined with glia changes of progressive or proliferative character. Lotmar found a clinical and pathological difference in both these types. The pathological features in type I were hemorrhages in the tissues and around the vessels, exudation of fibrin, of polynuclear leucocytes, thrombosis of the vessels, degeneration and vacuolization of the ganglion cells, swelling of the axis-cylinders and ameboid transformation of the glia with changes of the marginal glia in the form of so-called glia reticulum. The glia in this type of myelitis lacks reactive activity. It does not and cannot replace the defects caused by the dying or dead nerve tissue.

In type II the glia, on the contrary, shows remarkable activity and replaces the damaged nerve elements, the vessels, the endothelium and the adventitial elements proliferate. The glia is in this type stimulated, forms numerous granular bodies rich in lipoid substances, while in type I the glia is insufficient, is unable to replace the dead nerve tissue, and thus must necessarily reflect upon the clinical picture. Indeed, in myelitis type I the animals live a very short life, only one rabbit could be kept alive for seven days, while with type II the animals could be kept alive up to twenty-one days, and then their life was cut short artificially.

The course was very mild in type II, the paralysis and other clinical phenomena having disappeared at the time of death, while in type I the symptoms showed no retrogressive signs. The prognosis was, therefore, bad in type I and comparatively good in type II. Such pathological and clinical manifestations much depended upon the dose injected and also upon the individual resistance of each animal. Small doses of the dysenteric toxin usually caused the milder type II, the large doses, type I, while medium doses would cause either type or a mixed type, depending upon the individual resistance. In the mixed type lesions peculiar for either type may obtain or in the same focus of myelitis lesions of

both types may be present. The reason why type I gives a bad prognosis Lotmar sees in the fact that the ameboid glia, though able to retain *in loco* the products of the broken up nerve tissue, cannot transform them into lipoid substances, which process is accomplished by the mesodermal elements of the blood vessel walls. Therefore, this type of myelitis is rich in so-called *prelipoid* substances which are not yet converted in fat and which on suitable specimens show as various granula—fuchsinophile, lichtgrün, methyl-blue granula, etc. In type II a powerful glia proliferation takes place with enormous production of fat into which the dead or broken up nerve tissue is transformed and thus rendered harmless, which is not the case in type I. In the latter the glia is "insufficient," and cannot transform the products of plasma desintegration into lipoid substances. These products may thus reach the blood and create a general danger for the entire body. Such an occurrence is impossible in the type II, where the glia is "sufficient," producing granular bodies, which retain the dangerous products until rendered harmless.

F. Lotmar's instructive conclusions were arrived at from experiments on animals. It was, therefore, interesting and even imperative to determine whether human pathology ofiers any facts similar to those established by F. Lotmar. In the five cases of myelitis I studied with the same methods used by Lotmar the pathological findings as I showed somewhat varied in each case, but one feature was common, namely, the ameboid transformation of the glia, which was very pronounced in four cases out of five. In one case (Case I) the dead focus was sequestered and walled off from the rest of the tissues, and no ameboid glia could be demonstrated in this case, while in two cases (II and V) with especially severe and rapid course the ameboid changes were equally severe. Yet in both these cases the pathological findings were different from those in Lotmar's experiments, *i.e.* in none of my cases was type I of Lotmar present, but always combined with type II. In other words, the mixed type of myelitis, as given by Lotmar, was the characteristic feature in every case where the ameboid transformation of the glia was pronounced. This was very severe in the cases II and V, which also clinically showed a rapid malignant course (Case V) and a profound general intoxication (Case II). The clinical facts are thus in complete accord with the serious pathological changes of the glia. The condition of the latter may probably indicate the extent of the lesion of the nerve tissue, the extent of intoxication or infection or, as Alzheimer puts it, "the more the neuroglia resembles the ameboid type the more profound are the pathological changes in the central nervous system which changes may, to a certain extent, be measured by the degree of the ameboid glia formation."

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BRAIN-TUMOR OR HYSTERIA.

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THE following case is one of peculiar interest from the point of view of diagnosis—and the frailty of diagnoses—and of considerable importance in elucidation of the difficulty that may at times arise in differentiating an hysterically patterned clinical picture from one actually and pathologically occasioned. This history also points to discrepancies in hospital observations, difficult to explain.

The patient, L. R., 31 years of age, was first seen by me at Roosevelt Hospital in mid-September, 1913. The history given by the patient at that time was that she *suddenly* became sick in March, having been entirely well previous to this, and after trying home treatment, or no treatment at all, for a few months, and not improving, finally went to the —— Hospital. The symptoms complained of throughout these months and because of which she finally applied for admission to the latter hospital, were: continuous vomiting, headaches, buzzing in the head, dizziness, "spots before the eyes," and great weakness of the right hand and foot, "almost paralysis," as the patient put it. Vision of the right eye seemed entirely gone. She remained several weeks under observation at this hospital, where brain tumor was diagnosed and operation advised. The patient refused operation and left the hospital. A little while after she applied for admission to Roosevelt.

On inquiry it was learned that the patient's urine on her admission to the ——— Hospital contained abundant albumin and casts, that the fundi showed changes, and that her vomiting had been projectile. Nephritis in addition to the brain tumor had been thought of.

At Roosevelt, our patient gave in addition to the above, the history of having vomited blood on three occasions, 7, 3, and 1 week before admission (which no doubt came from her throat, which was severely congested—from constant vomiting and coughing), that she had frequent choking sensations, frequent attacks of hoarseness, and that she often saw double.

On my visit I made the following anamnestic notes: Her parents and grandparents appeared to be normal individuals. There were neither alcoholism, psychoses, epilepsy, hysteria, nervous disease, nor eccentricities in the ascendants. Six children of these parents, however, were *very* nervous, two of them being sleep-walkers and another having varied fears. A cousin of the patient is insane.

Infancy was normal save for convulsions "from teething." She walked and talked at the proper age. As a child she had measles, scarlet fever, and pneumonia, and recovered from each without residuals. She did not have chorea, strange spells of any kind, somnambulism, enuresis, nor headaches. But from the age of six on she would occasionally get hoarse without apparent cause, off and on, even up to the present. Convulsions.* which "began early," continued "once in a while" up to her eighth year (never thereafter). No reason could be given for the convulsions, which, the patient assured me were not accompanied by tongue bite, enuresis, or injury.

During adolescence some stomach trouble occurred (nature and cause not known). She bore two healthy children. There were no miscarriages. She never took intoxicants nor drugs nor came in contact with any metal poisons, nor experienced a shock at any time, either physical or psychic. Bowels have been regular.

*These were not the same "teething" convulsions which occurred in his infancy.

Menses regular up to three months ago, then became irregular. She occasionally finds it impossible to void urine though the desire to do so is imminent. She knows of no cause whatsoever for her illness, and believes she lost at least 100 lbs. (?) since it began. She grew worse at the first hospital (?) (and no better at the second). Uranalysis at Roosevelt was negative (also on several later examinations at Vanderbilt Clinic laboratory). It appears, however, that after my first visit a number of uranalyses were made in which a "heavy trace to a cloud of albumin" was recorded, no sugar, never any casts, pus considerable, sp.g. 1017-1030. (Report kindly furnished by Dr. Martin.)

The facies of our patient showed no apprehension (in spite of the "brain tumor" and the advised operation) but looked flushed and "hysterical." This hysterical look was given by the eyes, the lids of which were not entirely raised ("pseudo-ptosis" one might have said). For her age, her face was also decidedly girlish or even childish, her lips constantly pouting. (This I later put down as "hysterical pseudo-infantilism.")

On examination, at this visit, I made the following notes: The head-contour was normal. There was some tenderness on pressure and percussion over the left side of the crown. No stigmata of lues or degeneracy were present. On standing with closed eyes, the patient swayed decidedly (on later examinations she even occasionally fell when tested). Her gait was decidedly and exquisitely cerebellar. On being told to close her eyes while walking she would stagger badly. Both at Roosevelt and at Vanderbilt Clinic it appeared to us that the patient's gait was much worse when she was being observed. She did not stagger to any particular side.

Vision tests showed (monocular) diplopia of the right eye (this had also been noted at the ——— hospital). On the left there was no vision at all in parts of the field, and the patient saw two objects as one (!) with this eye. Absolute shaft-vision obtained (using both eyes). There was also great and rapid vision fatigue. The color fields were irregularly inverted and much contracted. Ocular movements were normal. There was some nystagmus on extreme lateral excursions. There was no real ptosis (though it sometimes looked as if there might be. At all times the eyelids could be raised in the normal way if the patient was asked to do so). There was frequent and abnormal trembling of the lids. The pupils reacted normally to light and accommodation. The fundi were examined by Dr. Holden, who reported clear macula, no choked discs.

The sense of smell was absent on the right side. Motor and sensory fifth were normal. The corneal reflex was present and prompt. The facial seemed to show a slightly weaker innervation on the *left* side. (At the ——— Hospital it was found that the patient's mouth was drawn slightly to the left when smiling or whistling.) Cochlear and vestibular appeared normal. (Hearing test with fork and watch showed L<R.) The tongue, which was coated, trembled considerably at times and was anesthetic on the *right* half. It did not deviate. The *right* side of the mouth was also anesthetic. The pharyngeal reflex was absent. (This reflex, however, I find wanting in so many normal individuals that I do not lay much stress upon its absence.) The palate rose normally on phonation. Speech was entirely normal, though always a trifle hoarse. The neck (tonus, glands) and thyroid were entirely negative.

Examination of the upper extremities showed the following: There was a paresis of the *right* side. The right hand registered nothing with the dynamometer on the first test and only 3 K. on spurred effort. The left hand was also weak, though not as bad, registering 6 and 8 K. There was no spasm. Coordination was normal, also diadochocinesis. There was a strong, non-intentional tremor present, equal on both sides. Tactile, pain and thermal sensation were *completely absent* on the right side. (They had been only "diminished" when the patient entered the ——— Hospital.)

On testing for deep muscle sense it was my opinion that the patient was malingering. This was also the opinion of the house physician at Roosevelt. It was this, in fact, that made him suspect something functional in the case, and because of which he called me in to examine the patient. There was no pain on pressure over the nerve trunks. There were no trophic disturbances. Reflexes were normal (muscle and tendon). There were no contractures and no abnormal movements. *In spite of the absolute anesthesia on the right side, stereognostic sense was normal.*

The lower extremities, examined while prone, showed paresis and ataxia of the *right* leg. Asked to move the toes, the patient did so on the left, but scarcely on the right. The left side was entirely normal. There was complete anesthesia, analgesia and thermaesthesia on the *right* side. On testing for deep muscle sense the patient's responses again suggested malingering; in fact, this seemed almost positive. There was no pain on pressure over muscles or nerves, nor any trophic disturbance. The patellar reflex was present, not very strong, equal on both sides. The Achilles was present and normal on the right, but obtained with difficulty on the left. Babinski and Oppenheim were negative. The plantar reflex was brisk on the left, weak on the right side. There was no clonus.

The entire trunk showed the same complete sensory disturbance on the right side as did both upper and lower extremities. The abdominal reflex was not obtained (but this may have been due to the flabby condition of the abdomen).* The spine showed no abnormality. The report as to the visceral examination (examined at the hospital and later at Vanderbilt Clinic, and later again at other hospitals) was negative. The pulse was 96, regular, not very strong.

Mentally the patient appeared of moderate intelligence. Her memory (on tests) was excessively poor; otherwise the mental examination, rapidly carried out, however, was normal. There were no delusions, hallucinations, etc.

As to diagnosis, it was necessary in this case first to say whether or not a cranial tumor was present, and if so, to locate it, whether the hysterical symptoms were caused by the tumor (or whether we had a tumor here in an hysterical individual), or finally whether it was pure hysteria—and no tumor whatsoever. The question of nephritis would also have to be considered.

We concluded that this was a case of pure hysteria (plus renal disease?) and because of the following reasons: The absence of heightened reflexes and of clonus on the right side, and the *completeness* of the sensory disturbance (especially the complete involvement of the face, almost never found in brain tumor, also of the mucous membrane of the cheek, of the half of the tongue, and apparently also of the mucous membrane of the right nostril to smell—that of touch being maintained), argued against brain tumor. That the sensory disturbance should be so complete and yet no astereognosis whatsoever be present is also scarcely conceivable in brain tumor. Just this, however, is very common in hysteria. Some months later on examining the patient at Vanderbilt Clinic we could push a needle into the skin of her right hand without her feeling it, yet on this occasion stereognosis was normal *and electricity could also be normally felt.* One had to admit that none of the findings spoke absolutely for organic disease, and all could be accounted for by pure hysteria. The monocular diplopia, the seeing of two objects as one, the shaft-vision and contracted color fields, all spoke for hysteria. Inversion of the color vision, however, could not be used diagnostically as it has also been observed in brain tumor. The responses given on testing for deep muscle sense surely showed malingering (a condition observed often enough in hysteria).

Besides, the fundi were normal (examined on 2 or 3 occasions). Had abnormalities of the discs due to nephritis been present, the diagnosis would have been more difficult.)

(In preparing this history for publication, and only after the above had been written, further data concerning the patient's condition on her admission to the —— Hospital were very kindly supplied to

*The patient appeared to have lost some weight, possibly even considerable weight; but by no means the amount she thought she had lost.

me. As to the eyes, Argyll-Robertson pupils were noted, and beginning choked discs. Four days after, it was thought that the choked discs in both eyes were increasing. The veins of the right eye were much swollen and tortuous; small hemorrhages were present. The left eye showed "enormous size of optic disc." How shall we reconcile these diverse findings? Could a cyst filling, and being absorbed, or a meningitis serosa account for it? In the latter case where optic nerve changes occur, the headaches are often agonizing; and if choked discs occur they do not again disappear, or if the changes are inflammatory, even then the nerve does not so rapidly become normal. The first hospital findings were in August; normal backgrounds were reported at Roosevelt, in September.

A stereoradiographic examination of the head was also made at the first hospital and the bony structures at the base of the skull were found to be normal in contour. There were no bone defects. The sella turcica and mastoid cells were normal. A note was added that this examination excluded any brain tumor which was of a very dense nature or which contained any calcium salts; but that it did not exclude the presence of any cystic or soft tumors in the brain tissue proper.)

The patient was later discharged, and visited me on October 30. Her symptoms and signs were about the same. I induced her to come to the Vanderbilt Clinic where Dr. Starr was at the time lecturing on brain tumor, and she was shown to the students as a case of hysteria resembling brain tumor. All her symptoms were still "intact." I then began treating her with hypnosis* with apparently good result, for Dr. Starr was able to show the patient at his clinic one week later, with all her anesthesia, in fact all her sensory disturbances, gone. The paresis had also cleared up, and the grip was fairly good, though the dynamometer registered but 8 k. to 19 k. on that occasion. Headaches and vomiting, however, though improved, still persisted (these have continued to persist, at times getting worse, at times improving).

In the next week or two I tried to allay these symptoms with different methods, using mental therapy, drugs, electricity—all to no very good purpose. At this time the patient contracted a cold and took to bed with an elevated temperature. I sent one of my clinic associates to see her at her home. He reported that though he could hear only a few râles here and there in the chest and noted but little fever, the patient appeared quite sick and he suggested her going to St. Luke's Hospital, thinking she was making for pneumonia. Whether through the association of "hospital,"† or through the shock of the mild bronchitis her hysterical symptoms returned, cannot be said, but at any rate, the "tumor syndrome" came into evidence again and so convincingly that the receiving physician at St. Luke's (Dr. Lambert's service) at once diagnosed brain tumor and advised immediate decompression. Dr. Mount of St. Luke's was kind enough to give me the following facts concerning the patient's conduct while at the hospital:

She vomited practically every day and had to be catheterized most of the time. The urine at times had a trace of albumin, with hyaline and granular casts. Blood pressure remained at 160 systolic and 115 diastolic. Several Wassermanns were negative, even after a provocative dose of neosalvarsan. A luetin test was also negative. Lumbar puncture showed clear fluid, low pressure, cell count 10 per cubic centimeter, all lymphocytes, Wassermann negative. Nothing developed in the chest and the patient was discharged on February 24.

During the last week of her stay at the hospital the patient showed a strange mental condition which had not cleared up at the time of her discharge. She became rather noisy and difficult to control, apparently had some delusions of persecution (?), believed that all the patients thought she was pregnant or, at another time, that she was infected with syphilis. She said her sister was dead in the ward and that she was not permitted to see the body; talked about woman's suffrage; issued commands to children as though conducting a kindergarten, etc. [Nothing of this sort had been noticed before.]

A few days after, she again appeared at Vanderbilt Clinic. She knew nothing of having had any of the above delusions and acted no differently than when at our clinic previously. On treatment her general condition improved considerably and after a while I again lost sight of her.

On my return to the clinic in September, our patient showed up again. It appears that she had looked for me in the neurological room a few days before, and was seen by one of the men, who after examining her, gave her a slip which she was to present on her next visit. Her next visit, however, was to my psychotherapy room (at that time in the Applied Therapy Department). She showed me the slip with rather a peculiar expression on her face. The slip read, "examine for possible brain tumor." The patient told me she was again very sick, vomited, coughed, and had severe headaches, etc., all, she believed, brought on by some baths which had been prescribed for her. She very probably had taken cold.

Examination on this occasion (Oct. 12, 1914) showed the following:

Station and gait similar to former visits, though improved. Smell normal. Vision normal (the shaft-vision has entirely disappeared; no dyschromatopsia, no visual contraction, etc.). III, IV, and VI nerves normal. Reaction to light and accommodation normal. Occasional nystagmoid movements on extreme lateral ocular excursions. For the first time one notices a tendency to a positive Von Graefe (occasionaly met with in hysteria), but there is no Moebius or Stellwag. Looked at from above, the eyes protrude a very little (?). The lids "blink" excessively on closing. Corneal reflex normal. Facial is normal, the right innervation slightly stronger than the left. Motor fifth is negative. There is a "burning feeling" in the forehead. On the left cheek there is an irregular area of anesthesia.

The upper extremities: Movements, coordination, and diadochocinesis normal; but there is almost complete adynamia of the hands on *both* sides (with dynamometer: average of 2½ K. on the right and 1½ K. on the left). On the left hand the interossiæ evidence no power at all. Electrical examination of all muscles of hands is negative. Reflexes normal.

Sensory examination with needle and brush on the right side shows a complete and typical glove anesthesia and analgesia up to the wrist. On the forearm a few irregular small patches of anesthesia. The upper arm and shoulder are negative. On the left side there

*It was quite impossible to treat this patient with persuasion, direct suggestion, etc. One could not make any impression whatsoever upon her.

†According to Pawlow's studies on dogs (Vorlesungen, etc., Bul. d. Akad., St. Petersburg, No. 14, 1907) a non-related stimulus (β) through concomitance to (a) while (a) is producing the effect (c), may, after a brief time, become in itself a direct stimulus, acting precisely as (a). Hence ringing a bell will produce gastric juice in the dog if for a time he heard it ring while being fed. Mental associations may not in the same way (the psycho-reflexes of Bechterew), and (β) be made to associate (c) without the individual recalling (a) at the time. It is very probable that many of the symptoms and return of symptoms in hysteria may be explained in this way. How actual this mechanism is in the behavior of children, A. Czerny has pointed out.

is a glove anesthesia up to the wrist, a few very small spots of anesthesia on the forearm, and complete anesthesia and analgesia from the elbow to the shoulder. *Stereognostic sense on the right hand normal!*

On the left, astereognosis; but on suggestive treatment with electricity (high frequency) the astereognosis disappears immediately (test made with a piece of lead, coins, pencil, cotton, pen, etc).

The lower extremities were entirely normal.

The picture has now, one year later, lost its brain-tumor resemblance.

For a few days I lost sight of the patient, and then learned that she had been sent to Bellevue Hospital. It appears that she had had several "hysterical" attacks the night after she had visited the clinic, seemed very ill, and was sent by her family to the hospital. She came on Dr. Norrie's service—and Dr. Norrie at once diagnosed the case as hysteria. She remained two weeks—having an anuria during the entire period. She was allowed to go 56 hours on one occasion, without catheterization. The uranalysis showed some albumin, some pus, but no casts, sp. gr. 1030. The fundi were found normal. Color vision was considerably contracted, and general vision strongly on the nasal side. Another Wassermann was found negative.*

Again she returned to me—her hands now quite normal, but complaining of the same emesis and headaches, spots before the eyes, *and visions*. She saw faces, whether she opened or closed her eyes. These she knew were only fancies, yet they were there, nevertheless, and extremely distressing. This was her chief complaint on one or two visits.

The patient not returning, we made inquiry and were told that she had gone to friends in the country, and that she was feeling very much improved. As a matter of fact, however, our patient had gone to the Mount Sinai Hospital. This I learned much later, and only after the foregoing part of this paper had been prepared for publication.

Reviewing the case thus far, certain facts of interest may be noted. The diagnosis "brain tumor" in the first hospital made the patient worse. At Roosevelt she no longer had a hemihypesthesia, she had a complete hemianesthesia, etc. The bronchitis and examination by one of my associates and the transference to St. Luke's, and later again the slip of paper with "brain tumor" written upon it, made her decidedly worse. My own second examination (rather fully carried out, and made in the presence of a psychologist visiting the clinic), even though, remembering Babinski's admonition, I took great pains to avoid suggesting any symptoms *into* the patient, was followed that night or the next by "attacks" and a feeling of being very ill. Had the patient been neglected, had her various examinations been but superficial (a thing out of question, considering that brain tumor had to be excluded) she would probably have improved instead of gotten worse—for in several ways she did get worse. Her hypesthesia became anesthesia (this finally was cured by hypnosis). Later she had hysterical delusions, and when I last saw her, fancies of seeing faces. The headaches and vomiting continued. Are these latter due to some (intermittent) renal trouble? How shall we explain the divergent uranalyses at the various hospitals and clinics, some reports entirely negative, some noting albumen and pus, but no casts, again casts but no pus? Can we rely on the examination by internes who often are novices in the laboratories, and possibly more often overworked? But the ophthalmoscopic examinations in hospitals are usually made by ophthalmologists of experience. Can it be that what one sees with the ophthalmoscope is after all not a definite picture but something which must be "interpreted" and hence may be interpreted differently by different eyes? Think of the gravity of this! A diagnosis of choked discs means intracranial pressure, and this most probably means decompression, a most serious operation (and looking for a brain tumor fearfully serious). On the other hand, think how disastrous such an operation could prove to an hysterical individual—and our patient is that without question—and how many "post operative" additions might be linked in to the neurosis!

Finally, why do the hospitals discharge a patient directly the diagnosis hysteria is made? Is this not indeed a serious disease at times, and did not this patient of ours really need hospital treatment? I have found it quite impossible even to get my younger clinical charges taken into any of the hospitals when the diagnosis of hysteria was made. And yet, out of their homes, they could be so much more easily cured. And was not possibly some kidney abnormality neglected in the final conclusion that here was an hysteria? To many physicians hysteria is almost synonymous with malingering—and such a patient treated as if she were "putting on" or "imagining" her troubles. Hysteria, whether entirely functional or not, is surely as really pathological as is brain tumor. Lastly, what was the cause of so serious a disturbance in this apparently strong woman? Is some viscus at fault, or some abnormal process, waking up a congenital, latent hysterical disposition? Much remains unanswered in this interesting case—though I believe we may safely exclude the presence of a brain tumor.

It was after the above had been put together, that, as already mentioned, I learned our patient had been at Mt. Sinai Hospital (between October 30, 1914 and January 16, 1915).

Through the kindness of Dr. Sachs and Dr. Strauss an outline of the hospital record of the case was sent to me. From this very thorough account I shall be able merely to give the important facts.

The symptoms for which our patient sought relief were the same as in the beginning: headaches, projectile vomiting, and defective vision.

In the history given the patient maintained that she had been at St. Luke's Hospital, suffering from pneumonia (which, as we know, was not the case). The eye complaints referred now mostly to the left eye (in my own history it was the right eye that had been affected).

The sensory chart accompanying the Mt. Sinai history showed, indeed, the very remarkable fact that the sensory symptoms, formerly all noted on the right side, were now on the left side of the body! The patient staggered, falling to the left (this was noted several times in the subsequent history). There was lateral and verticular nystagmus. The right eye was somewhat sunken, tremor of lids. Reaction to light and accommodation normal. Corneal reflex diminished. Moderate stasis of lids. Weakness of right external rectus.

Tongue: marked tremor; ears: diminished hearing on the left side. Lungs, heart, liver, spleen: normal. Abdomen: pendulous; no tenderness. Reflexes: difficult to elicit.

Upper extremities: tremor, mostly right side. Weakness of left hand. Finger-nose test: overpoints to left. Adiadochocinesis.

Lower extremities: knee-jerk present, diminished, especially on right side. Achilles reflex diminished both sides. No abnormal reflexes. Slight tremor.

On November 2 there was noted astereognosis of left side, with loss of position. Right side normal. Slight facial palsy. Fundi normal (several examinations were made at this hospital, and with one exception, all reports were normal).

On November 3 the following facts were noted: Hoarseness, forgetfulness, head in cerebellar attitude, tendency to fall to left while seated. Cog-wheel phe-

*I am indebted to Dr. Norrie for these facts.

nomena both arms; most marked on right. Hemianesthesia left side; recognition of position present on right side. Imitation on left side poor. Sense of weight lost on left side. Flattening of right side of face. Faradic response of facial nerves equal both sides. Change of chronic catarrhal otitis media. Watch: right, ½; left, 3. Fork 512 lateralized to good ear. Air conduction within normal limits.

November 4: Complete fixation right half of larynx; right, recurrent paralysis. Patient says she has been constantly troubled with visions of cats, dogs, corpses, which she tries to drive out of her mind. No olfactory or gustatory hallucinations. Has auditory disturbances. Hears dead relatives converse with her, making references to her children and consulting her as to her husband's condition. The patient is fairly conscious during these hallucinations and tries to drive them away by covering face with her hands. Sees bright stars and lights, black circles like snakes, and tries to hide from them. An hour ago she saw children being brought in on stretchers.

November 8: Occipital headache, burning and hammering in character. All objects appear contracted. Vision normal. Choking sensations. For past three days generalized chilliness and elevated temperature (ranging between 99° and 101°). Has to be catheterized.

November 11: Lumber puncture. Five cubic centimeters of fluid obtained under 160 mm. pressure. Wassermann and globulin tests negative. No cells. Wassermann of blood also negative.

November 13: Patient attempts to get out of bed. Five minutes after knows nothing of occurrence (spell noted as of "epileptoid" nature).

November 14: Still has visions as before. Has fallen out of bed several times. Remembers nothing of this. Vomiting constant. Tremor as before. Occipital headache constant. *Urine shows albumin and casts.*

November 16: Left chronic Babinski position of toe. No Oppenheim nor Kernig. Distinct hypotonia and diminution of power in left upper and lower extremities. Weakness of right external rectus distinct. Hemianesthesia as marked as before. Symptoms point to a lesion involving right optic thalamus and posterior third of internal capsule and symptoms of cerebellar order. Double ptosis. There appears to be, by rough estimation, a right hemianopsia.

November 21: Quieter. Right facial hemispasm, followed by increased movement and then rigidity of right side. Marked increase in tremor on right side. Tremor of right face; right side catalepsy.

December 5: Ophthalmoscopic examination: Left fundus normal; right disk shows slight blurring at its upper and inner border. May be developing optic neuritis.

December 6: Difficulty in moving left lower limb. Burning sensation in entire right side of body. Difficulty in rotating head because of pains in back of head. Tremor of right upper and lower limbs. Cannot smell through left nostril. Memory failing.

December 9: Suddenly developed pain in right chest. Chills, fever, sweats, cough. Physical examination reveals a patch of dulness, bronchovesic. breathing and crepit. râles in lower right axilla. Temp. 102°, resp. 60; W. B. C. 12,000; polymorphonuclears 64 per cent.; lymphocytes 36 per cent.

December 10: Temperature, etc., as previous day. Resp. 32 (previously 60). Râles gone. Breathing diminished.

December 12: Ulceration of nasal septum on both sides.

December 14: Temperature normal. Pains worse. No signs present. Patient says she smells pepper.

December 17: *Patient was observed breathing. Respiration rate considerably increased. Later again observed (this time unawares), breathing found normal* (24). *When physician entered room again increased (to* 60). *Ten p. m. nurse takes respiration rate* (100). Pulse 90, and feeble. Occasional deep breath. Complains of a sticking in the left side of the chest. Nothing found. Patient acts peculiarly. Always wants physician. Asks for him constantly, asking foolish questions. Says she smells with one nostril; then the right half of body is numb, then the left. Hour after hour the physician is annoyed in this way.

December 18: Complete hemianesthesia, even nasal half. No Babinski. Nystagmus to left distinct.

The question comes up whether there is not a functional exaggeration of symptoms. After to-day's examination there is suspicion of a possibility that there may be an exaggeration of functional element in this case.

Though hemianesthesia present, patient, caught unawares, responds to pinprick. Tremor of left lower limb and even right brought on by suggestion.

December 19: Larynx cords fail to approximate with much more mobility on the left than right side, so that the condition is rather to be regarded as a double adductor paralysis than a recurrent.

December 21: Patient tumbled over sideboard and fell to floor. When asked why she did this she replied: "I was sending the children to school and wanted to get their rubbers." Asked how many children she had she replied: "How many do you think I have?" and burst out into hysterics.

December 31: Sat up out of bed; did not fall. Later asked to walk. Physician noticed that she would either attempt to fall or jump ahead when she thought she was not being noticed.

January 4, 1915: To-day symptoms appear largely functional.

January 16: Fundi normal. The following note: Patient first thought to have a lesion in the right optic thalamus involving the adjacent part of the intermediate capsule. It is now evident that condition is one of hysteria. Contracted fields of vision. Left hemianesthesia; pinprick not perceived as pain, but causes a reaction, *i.e. deep inspiration.* Many of previous symptoms have disappeared. Now able to walk. At times falls suddenly, apparently intentionally. Discharged improved.

I have not seen the patient again, and after considerable search, during the last year, have given up trying to locate her. It would be interesting indeed to learn how many more hospitals gave her a night's lodging and how this story ended.

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A REVIEW OF THE HISTORY OF CHEMICAL THERAPY IN CANCER.

By WILLIAM S. STONE, M.D.,

NEW YORK.

The presentation of a method of cancer therapy other than operation with the knife has usually been conceived either in ignorance or in the hope of financial gain. In the case of the chemical caustics, unfortunately for progress in the treatment of the disease, the unqualified condemnation of the manner of their exploitation has repeatedly prevented educated surgeons from learning how to use them and excluded a scientific study of their possible efficiency.

It is a remarkable fact that, so far as "cancer cures" relate to the local treatment of the disease, they have almost invariably been found to consist of arsenic, zinc, or the alkaline caustics. Arsenic is known to have been the effective ingredient of the applications made to cancerous tumors by the Indians, Egyptians, and Persians, and a salve, designated as Unguentum Egypticum, consisting of arsenic and vinegar, was in general use until the middle of the fourteenth century, when two notable surgeons of the University of Avignon, Henri de Mondeville and Guy de Chauliac, made efforts to improve the methods of diagnosis and treatment. Prior to this period it is clear that all classes of people—physicians, scholars, mendicant friars, and old women—treated all kinds of tumors with escharotic pastes and solutions, the most effective of which contained arsenic. The most skillful applications were undoubtedly made by the friars. The Hippocratic theory of the nature of cancer, "the atra bilis," was recognized in all therapeutic efforts, but exerted little influence on the methods of treatment. Diagnostic error, as a factor in the determination of successful results, applied alike to the use of the knife and to caustics. While

Galen and others of the Greek school supported this theory, two kinds of growth were differentiated: (1) the so-called scirrhus, which evidently included both benign tumors and the hard, slowly growing, and more definitely localized malignant growths; (2) those growths which were plainly evident to both patients and physicians as the more rapidly growing and destructive neoplasms. It is probable that chemical caustics were more generally used than either the knife or the heated iron, especially with the ulcerating growths.

Guy de Chauliac (1368), a great writer on surgery, as well as a skillful operator, directed attention to the use of caustics as an adjuvant to the use of the knife. He used arsenic mixed with clay and noted no toxic symptoms from its employment. Ambroise Paré (1510-1590), by his development of the use of ligatures and sutures, created a fresh enthusiasm for the use of the knife in the treatment of cancer, and, although using mild salves and solutions on ulcerating growths, tried to discredit the use of arsenic because of the baleful effects of its indiscriminate application. In Germany, Fabricius Hildanus (1560-1634), who was known as a skillful operator, and is reported to have excised the axillary glands in amputation of the breast, also tried to discredit the use of arsenic. We find, however, little evidence during the succeeding centuries that surgery profited much by the possibilities which the work of Paré and Fabricius had indicated. Clowes, physician to Queen Elizabeth, advocated as an additional therapeutic procedure the laying on of the Queen's hand. In Germany, theories regarding the nature of cancer simply became more numerous, and under the designation of "systems" their chief practical achievement was the exploitation of a constitutional cure in the form of conium maculatum by a Dr. Störck of Vienna, in 1761, an account of which eleven years later extolled its merits and the discoverer in terms of the highest praise. In 1779 a society in Bantzen offered a prize of 30 ducats for a cure of cancer without the use of the knife, mercury, cicuta, stramonium, belladonna, napello, and aconite, but there is no record of any award of the prize. In France the efforts to apply the recent discoveries in chemistry to the study of the nature of cancer had elicited the fact that tumors arise from the same tissue in which they appear. In 1773 Bernard Peyrilhe, in a thesis offered for the prize question by the Academy of Lyons, "Qu'est-ce le cancer," presented a scientific interpretation of the subject, and is credited with being the first to make use of animal experimentation in the study of the disease. The dog, however, into whose back the cancerous material had been injected, howled so continuously from the resulting lesion that its keeper removed him from the field of Peyrilhe's observations. In regard to treatment, he recommended for cancer of the breast the removal of the breast, excision of the axillary glands, and the removal of the pectoralis major muscle. For the treatment of nasal cancer he advocated the use of the recently discovered "kohlsäure."

The beginning of the nineteenth century was marked by efforts to overthrow ancient philosophy and medieval empiricism, and a new era in the conception and treatment of cancer appeared through the English and French anatomical researches. While John Hunter's (1786) lymphatic theory dominated the minds of the majority of the great surgeons, it included a new conception of cancerous growths as being the result of some vital activity on the part of normal tissues and subject to the same laws of life, growth and nourishment as the normal organism. In London (1771) the Middlesex Hospital had established a special ward for cancer patients, and in 1802 a committee of London surgeons was formed for the investigation of the nature and cure of cancer. During the three years of its existence its chief attainment was the distribution to the medical profession in England of an elaborate questionnaire, the result of which was as futile as it probably would be to-day if a similar method was pursued. Among the practical surgeons there were two factions regarding the theory of cancer—the "localists" and the "constitutionalists." The latter did not hold to a specific theory, but their ranks were largely derived from the orthodox surgeons of the day who had been so uniformly disappointed with the results of their operative work.

A publication by Young in London appeared in 1805 on cancer and the use of chemical caustics in its treatment, in which a remarkably clear summary is given of the fallacious arguments of those who maintained that cancer has a specific virus, is contagious or hereditary, and its action constitutional. His own conception of cancer presents with astonishing accuracy the present views of scientific men. "Morbid and natural structures, having the same principle necessary to each and governing both," he says, "a morbid alteration should never be viewed independently of the natural organization and functions of the part, or as beyond the laws of life." Briefly summarized, he considers cancer as a growth arising from acquired actions about a local structure that has been altered by injury or disease. On the recurrence of cancer, he says: "It must be obvious that the disease arises from such small beginnings, unfortunately, that it can never be detected until the obstruction has made considerable progress; and, as no specific virus is with it so as to offer any peculiar evidence from which one might take alarm, the disease thus proceeds securely in the minute parts of structure until such a circle of alteration is acquired as to make the change evident to the touch; so that when a surgeon takes out such a scirrhus tumor it is impossible to act beyond the reach of his perceptions, and to discover changes which can only be imagined, which may be there, or may not. . . . It is impossible to ascertain the distinct line between health and disease, and . . . some portions may be left, from which . . . the disease may ultimately recur."

Based upon this conception of the disease, Young directed the attention of the educated physician to the advantages which he believed the chemical caustics possessed if they were more discriminately and skillfully applied. He says: "It must be very evident to the most sanguine expectations that this disease, although the treatment of it in the future may be greatly improved, must still, in many instances, fall short of all possibility of cure. But . . . are we to relax in effort because effort is more required? Shall we withhold what *can* be done, merely because all that we wish *cannot* be done? Such, however, seems to have been the desperate sentiment in which science has left the disease almost to itself. It appears to have been considered as a thing so deeply rooted in its own sin and wickedness as to be beyond reprieve—a hardened malefactor, denied *every* consolation but that of the *knife*. This negligence on the part of science has given proportionate scope to the invention

of the quacks: they have seized upon the arms the regulars threw away, and have certainly played no unsuccessful part. Even old women, enlisted under the banners that were deserted, have proved at least (as far as their knowledge of the question went) that there is just as much orthodoxy in a piece of caustic as in a piece of iron."

As illustrating the attitude of the regular surgeon at that time toward the use of caustics, Young narrated the story of a published correspondence between two surgeons of the time. A regular surgeon, Mr. Guy, had purchased a nostrum, known as the "Plunket remedy," which he had been using extensively and apparently successfully without disclosing its composition, but claiming it had none of the qualities of a caustic. The surgeon to the King, Mr. Gataker, who, it afterward was ascertained, had also been using a caustic without the same success as had his colleague, publicly and vehemently denounced Mr. Guy because he was using a secret remedy. The efficient ingredient of the "Plunket remedy" was eventually ascertained to be arsenic. Young says: "Thus posterity seems equally obliged to these two gentlemen; to the one for condemning a thing which it is very evident he was totally ignorant; and to the other for the warm support of what it is equally clear he did not understand, or (which would seem still less innocent) of what he did not choose to understand." Young indicates that a more general use of caustics became introduced from this remedy, which considering the unqualified and indiscriminating way in which they were applied, were attended with more success, he says, than could have been looked for.

Young conceived that the advantage gained by the proper use of caustics was derived from their power of exciting newly formed tissues into an activity beyond their power, which is always less than normal structures. For this purpose he considered arsenic as particularly well suited because its action extended to all of the tumor tissue without rapidly producing a superficial eschar, the formation of which prevents the extension of the action to the deeper parts. An old preparation, known as Magnes Arsenicales, which he regarded as most efficacious, consisted of equal parts of antimony, sulphur, and arsenic, the antimony, he believed, adding to the extent of the area affected. Young urged the importance of applying treatment during the early stages of the disease, and, in order to avoid concealment of these tumors until it is too late, he writes as follows: "So long as the extirpation of scirrhi of the breast is performed by the knife, so long shall we have the disease fostered in secret, and, in too many instances, procrastinated beyond the point of safety, through the dread of an operation that is inevitably dreadful. For the operator may argue until doomsday ere he shall persuade his patient that cutting the breast with the knife is a mere nothing. . . . This rhetoric never gained a jot on the fears of ignorance, or on the quick feelings of diseased delicacy. The truth is that, when the operation is submitted to, the mind is seldom made up to it but as a last resort—seldomer from the convictions of reason, and never from an absolute command over the natural terrors of the heart."

There is no reason to doubt that Young's presentation of the subject had a favorable effect on the professional mind in both England and France. He was a graduate of the Middlesex Hospital, and, although not a member of the staff of that institution, he was a protege of Mr. Brodbeck, who made the first financial contribution to the establishment of its cancer ward. He became better known by a publication in 1815 on the treatment of cancer by compression, a method which received wide attention for many years. Récamier was enthusiastic about its efficacy, and devoted two volumes to a discussion of its principles and technical application.

From the beginning of the nineteenth century we find that all of the noted surgeons felt the need of some adjuvant to or substitute for the use of the knife, and until the last quarter of the century the use of caustics in cancer therapy was regularly discussed in the standard surgical textbooks. There are, however, few contributions to their technical application and very little discussion of the kind of cases to which they are applicable. Of all the noted surgeons of his time Velpeau seems to have made the most use of them, a paste designated as "caustique noir," consisting of concentrated sulphuric acid made into a paste, being his favorite formula. He says: "I have frequently employed caustics in the treatment of cancer, and I have frequently thought, I must confess, that they have more certainly prevented secondary cancerous affections in the neighboring glands than the extirpation with the knife. I have twice seen voluminous and indurated glands in the axilla diminish in a remarkable degree during the period I was destroying a cancer of the breast by caustics, and I have observed the same effect on the submaxillary glands, while cancer . . . of the lower lip was treated in a similar manner." Maisoneuve also refers repeatedly to the efficiency of caustics, especially of the chloride of zinc, in the removal of cancerous tumors, and of the long interval before they recurred. Dupuytren, as a part of his armamentarium, used a paste consisting of two parts of arsenic and 200 parts of calomel, which Parker refers to as generally too feeble in its action. Manec, of the Salpêtrière Hospital, Paris, used a paste consisting of one part arsenous acid, eight parts of cinnibar, and four parts of burnt sponge, made into a paste with a few drops of water. The results from its use were favorably commented upon by Lebert, who, Parker says, was not an ardent advocate of caustics. All of these cases had been referred to Manec by other distinguished surgeons as incurable.

Sir Astley Cooper is quoted by Parker as follows: "It behooves medical men to direct their minds to the trial of the numerous agents which chemistry and botany have lately abundantly discovered and simplified." Most of the pastes used during the first third of the nineteenth century consisted either of arsenic or the mineral acids, chiefly the former, and numerous accidents resulted from their use. Parker observed arsenic in the urine twelve hours after the first application, which continued to be detected during a period of eight or ten days. Toxic symptoms are recorded as occurring after the use of such strong pastes as the very old one, known as Frere Côme's, which is said to have cured Pope Gregory X of a cancer of the face. Maisoneuve mentions several cases in which its employment produced vomiting, precordial anxiety and other symptoms.

During the years 1834-1838 Canquoin of Paris reported the results which he had obtained from the use of a paste, the essential ingredient of which was chloride of zinc. He described four formulæ, as follows: (1) equal parts of zinc and flour; (2) zinc

one part, flour two parts; (3) zinc one part, flour three parts; (4) zinc one part, muriate of antimony one part, flour 1½ parts. Water from 20 to 30 drops for each formula. In 1838 a complete account of his results in 600 cases was published, in which the recurrences were given as 12 per cent. as compared with 75 per cent. after the use of the knife. Regarding the details of its application he says that formula (1) applied four lines in thickness for 48 hours destroys the parts to a depth of 1½ inches; that the same formula three lines in thickness applied for the same length of time acts only to about the depth of an inch. The depth to which the paste acts can, he says, with a little practice be regulated to the utmost nicety, depending upon its strength and the time it is applied. Plaster of paris may be substituted for flour, thus rendering it less delinquescent. The antimony was added in formula (4) to give it the same consistence as soft wax that it may be applied more uniformly over an unequal surface, such as is presented by an ulcerating growth. The advantage of the Canquoin paste over the arsenical preparations is attested by the fact that, with few exceptions, chloride of zinc has been the effective ingredient of all pastes since used by surgeons and quacks. Parker (1867) says: "The chloride of zinc will effectually remove the chief evil attendant on the application of caustic remedies to the destruction of cancerous growths—the amount of prolonged pain they occasion. It may be applied with a degree of precision unobtainable by any other caustic; it destroys the tissue in direct relation with the thickness of the layer applied; it never runs or fuses; it destroys only those parts which it covers, and these it divides from the surrounding structures as cleanly as though they had been cut with a knife. The crust or scab formed by this caustic is hard, dense, and white; there is no sanguinous or other discharge produced by it. The eschar separates at the end of twelve or fourteen days, leaving a clean, healthy granulating surface underneath." In 1855 there appeared in the *Dublin Quarterly Journal* a method introduced by Llandolfi, chief surgeon of the Sicilian army and Clinical Professor of Cancerous Diseases in the Trinity at Naples, in which he used bromine, either alone or in combination with the chlorides of zinc, antimony and gold. The introduction of this method was not enveloped in any mystery, and Llandolfi's personality and method of presentation produced such a favorable impression in Paris, Germany and Vienna through which he traveled that his paste was tried by many and used with considerable success.

The efficiency of chloride of zinc is illustrated by the story Parker relates of a Dr. Fell, an American, who went to London and so successfully treated numerous cases of cancer that a certain number of patients at the Middlesex Hospital were placed at his disposal under the condition that he reveal and publish the composition of his remedy. This was ascertained to consist of equal parts of chloride of zinc and a decoction of sanguinaria canadensis, with enough flour to make a suitable paste. The hospital staff were apparently favorably impressed with the results. A little later, a Dr. Pattison, a London homeopathic physician, in association with an American from Louisiana, vaunted a remedy as a sure cure for cancer without the use of the knife or caustics, the results of which had evidently obtained for the exploiters considerable fame and fortune. Their refusal to reveal the nature of their remedy prevented its being tried at the Middlesex Hospital, but it was subsequently found to be a combination of chloride of zinc and hydrastis canadensis. Both Fell and Pattison administered the "novelty" in their preparations also internally, the latter in a dilution commensurate with his homeopathic traditions.

It is clear that the staff of the Middlesex Hospital, as well as surgeons of other hospitals, must have had innumerable experiences of this kind, but the results were evidently sufficient to make the use of caustics—in the earlier years of arsenic, and later, after the work of Canquoin, of the chloride of zinc, an important adjuvant to the use of the knife. Moore and De Morgan, of the Middlesex Hospital, the former of whom is known especially for his work in the development of the radical operation with the knife, used weak solutions of chloride of zinc—20, 30, 40 grains to the ounce of water, after their cutting operations in order to destroy cancer cells that may have been disseminated through the wound or the neighboring tissues. De Morgan was so well satisfied with the improved results from this method that he expresses the hope that it will be more extensively applied. They found that the use of these solutions made no appreciable difference with the primary healing of their wounds.

A disadvantage in the use of the chloride of zinc was its failure to satisfactorily remove the normal skin over the tumor site, and for this reason in part the alkaline caustics and mineral acids retained their vogue. The well-known Vienna paste consisted of five parts of potassium hydrate and six of quick lime. The "Filhos" caustic contained the same ingredients in different proportions, and was fused and run into leaden tubes like nitrate of silver or potassa fusa. Of the mineral acids, nitric acid was introduced by Rivallie (1850), in the form of monohydrated nitric acid made into a paste with scraped linen or charpie. For cancer of the servix uteri, Routh (1866) advocated to the Obstetrical Society of London the use of bromine—five grains to the ounce of spirits of wine. Tilt indicates that in his hands and others the application of the acid nitrate of mercury to a cancer of the uterus produced satisfactory results.

Reviewing the situation from the text-book literature of the sixth and seventh decades of the nineteenth century, we find Thomas (1869) expressing the opinion that, if it should be impracticable to remove completely a cancer of the cervix by amputation with the ecreseur, scissors, or the galvanocautery, it should be destroyed as completely as possible by the actual cautery, potassa cum calce, or one of the mineral acids. Erichson says: "The employment of caustics . . . requires neither knowledge of anatomy nor of operative surgery, and so they have always been popular with many who would hesitate to use the knife. In this country, however, . . . they have not perhaps been legitimately employed to the extent they deserve. The chief argument in favor of caustics is that when cancers are thus destroyed they are less liable to relapse than when extirpated with the knife. There is, however, no positive proof of this before the profession; but it is not improbable that the chemical action of the caustics may extend so widely into neighboring structures as to destroy or render unproductive the cancer cells by which they are infiltrated, and on the development of which the local recurrence of the disease depends. Another advantage urged in favor of caustics is that enlarged

glands are more likely to go down under their use than when the primary cancer is extirpated by the knife." In 1872 Bougard, a prominent Belgian surgeon, wrote most enthusiastically of the advantages in the use of caustics, stating that recurrences were less frequent than after the use of the knife. His formula, consisting largely of chloride of zinc with a small amount of arsenic, was used by numerous surgeons for several years. Willard Parker (1873), in a paper on cancer of the female breast, says: "In the superficial cancer of the breast it is very well to use caustics. The same thing might be said with regard to cancers upon the face. The treatment with caustics in that region is good surgery. When the tumor is situated to any extent below the surface, the idea of caustics is bad surgery." He referred to two cases of fatal poisoning from their use. In the discussion of this paper Fordyce Barker says: "Because of the general use of caustics by charlatans a great majority of the surgical world have been satisfied with regard to their uselessness. My own prejudices have always been against this method of treatment." As a result of his observations in the St. Bartholomew's Clinic in London, the whole process seemed so revolting that he did not pursue his investigations further for some time. In 1870, however, he became so pleased with the work which he saw in the London Cancer Institute by Marsden that he applied this method of treatment successfully in two cases—one a cancer of the breast in which an operation with the knife had been refused, the other a cancer of the cervix uteri. He used the Marsden paste, which consisted of equal parts of arsenious acid and acacia. Sands, in his discussion of Parker's paper, said that he had had no experience with the use of caustics, but used the knife for the following reasons: (1) Nature of the tumor can not be determined prior to its removal; (2) now and then undoubtedly a malignant tumor is cured by operation; (3) expediency. J. Collins Warren says: "I have had little experience with the use of caustics. I find little difficulty in persuading patients to resort to more radical measures." About the face, to rodent ulcer, he preferred the use of the cautery, especially near the angle of the eye, because there resulted less of a scar, it being more difficult, he thought, to be economical of tissues with the knife, and more deformity resulted than when nature is allowed to borrow skin from all directions.

Stephen Smith (1880) describes his use of the anhydrous sulphate of zinc in the form of a powder, using a strong sulphuric acid paste for the removal of the skin. He says: "This remedy, though all but discarded by surgeons in the treatment of cancer, has a place in the therapeutics of cancer not yet accurately defined. It is one of the destructive measures which we may resort to, having capacities limited only by the possibilities of its application. As ordinarily employed, its real virtues are not fairly nor adequately defined. We are advised, or rather permitted by authorities to apply caustics to ulcerated cancerous surfaces, the growth no longer being amenable to the knife. That is, caustics are recommended as a last resort, when the disease has taken such deep root that it is certain to prove fatal. If useful under such circumstances, may they not be far more serviceable at an earlier period? In my experience caustics judiciously selected and thoroughly and persistently applied give the best results of any method of treatment yet adopted." Dabney (1882) also reports favorable results from the use of this powder. Billroth (1889) expressed his preference for the use of the knife, but in very old, anaemic, or timid patients, thought caustics may be employed, and, if the treatment be continued until all the diseased portion is destroyed, the result will be favorable. "Physiologically," he says, "caustics would have some advantages; for it is supposable that the cauterizing fluid may enter the finest lymphatic vessels, and thus more certainly destroy the local disease. But this does not occur readily, because the tissue with which the caustic comes in contact instantly combines with it, and its further flow is thus prevented." For a caustic Billroth preferred chloride of zinc. Robinson (1892), in discussing the treatment of cutaneous epitheliomas, says that caustics with less scar remove more tissue than the knife. He used caustic potash and the formula of Bougard. Lewis (1893) used the Marsden paste for a number of years in the treatment of superficial cancer of the skin. Snow (1893) writes of the advantages obtained in the use of caustics on small superficial lesions, and in chronic epitheliomas, or rodent ulcers. He considered potassa fusa to be the most thorough and rapid, its action being instantaneously checked by the use of water, and causing no subsequent pain or shock. Parmenter (1894) says that it has not been proved whether caustics are better or worse than the knife, but he believes that the intelligent application of a proper caustic to easily accessible and definitely localized tumors, such as those of the skin, lip and external ear, has many advantages. Bulkley (1894) has found use for Marsden's paste, the potassa fusa, and Bougard's formula in early superficial malignant growths. Allen (1904) takes exception to White's statement that "the caustic treatment in the form of injections, pastes, and all other kinds of mixtures, rarely prove of any service, and usually only deceive and render more uncomfortable the existence of a patient. They have been discarded by almost all except charlatans." Impressive evidence of the value which the proper application of caustics may still possess in cancer therapy is furnished by the following words of Halsted (1907), in a paper on Carcinoma of the Breast: "I am indubitably convinced that the local and regionary recurrences after incomplete operations, which come with amazing rapidity when the knife has been used, are, to say the least, relatively late in making their appearance when chemical or actual cauterization has been employed. I have several times had to operate upon cancers which had been vigorously and repeatedly treated with caustics, and to note the comparatively admirable condition, the freedom from cancer premeation of the surrounding tissues and of the axillary nodes; whereas, after incomplete operations with the knife the local manifestations of recurrence were almost invariably deplorable and the prognosis, of course, invariably hopeless." He also says, "I doubt if any melanotic tumor of the skin should be removed with the knife."

From this review we learn that since the beginning of the nineteenth century chemical caustics were an increasingly valuable resource of all the noted surgeons in cancer therapy until Langston Parker (1867) in the Annual Address in Surgery, before the British Medical Association, showed that they had become a fair rival of the knife. In spite, however, of the undoubted success which attended their use during this period, we find that they were being applied less frequently by the skillful surgeons during the last quarter of the century. During the

early years of the twentieth century their position in cancer therapy is not unlike that described by Young over one hundred years ago. "Caustic applications," he says, "were ushered in under the equivocal sanction of a nostrum, they were pursued as a nostrum, and then they were turned out as a nostrum. All regular inquiry has been withheld from the merits of the practice, and because it did not succeed in all things its efficacy was not allowed to any. Thus transferred from the irregulars to the regulars it was turned back to its original holders."

In the light of this history it may not be unprofitable to ask if they have a field for use at the present time?

Regarding the continuation of their use by the "original holders," we may hope that our educational propaganda and a more intelligent legislative restraint will ultimately solve that part of the problem. The question of renewal at the present time of the consideration of their efficacy by the educated surgeon naturally reverts to an estimate of their value when previously used and to the reason for their abandonment.

Their value as compared with the operation by the knife was apparently not satisfactorily defined at the time they were given up. No statistical data were available. We know that operations with the knife during a greater part of the nineteenth century were almost invariably incomplete and that the cures were few. Sands says, "Now and then a cure was accomplished." After the use of the chemical caustics, however, we have the evidence of numerous competent observers that the interval before recurrences appeared was often long, and there is much reason to believe that cures were more frequent than after operations with the knife. The danger from poisoning was made a negligible factor by the very general substitution of zinc chloride for arsenic.

We do not find therefore that their value in the hands of competent surgeons was discredited, but the reason for their abandonment appeared to be in the new conception of the possibilities which scientific medicine furnished to the practical surgeon during the closing years of the century. Pathological anatomy was making an early and exact diagnosis more available, the results of bacteriological research promised to make primary mortality a negligible factor and primary healing of the wound a definite certainty, thus encouraging the surgeon to believe that ultimately the development of his technique would preclude the necessity of using chemical methods which were less attractive and extremely difficult to apply. Frequent and early recurrences could not obliterate the attractiveness of the primary result, and, until the past decade, sufficient solace could always be obtained in the idea that constitutional taint or heredity were compelling factors in the unfavorable progress of the disease.

The result is that the "salvage," as expressed by Clark in regard to uterine cancer is greater, but, owing to our failure to increase appreciably the number of patients applying for treatment in the earliest stages of the disease, the primary mortality has markedly increased, operative sequellæ are frequent, and recurrences are still discouragingly large. The words of Peterson (1912) are important, who, after expressing his strong belief in the radical operation for carcinoma of the uterus, says, "My added experience has not made me any more confident that the next patient I operate upon will either survive the primary operation or will ultimately be cured." Finally, there is the important fact that the availability of surgical skill sufficient to effect a respectable salvage is extremely limited—as much so as is that of radium.

We believe, therefore, that the evidence of the value of chemical caustics is sufficiently strong to justify a new study of their technical application and a discussion of the kind of cases in which they may be most efficiently applied. In so doing they may afford a valuable adjuvant to the use of the knife and become applicable to a number of well developed growths, the extirpation of which at the present time results in a high primary mortality and a high percentage of recurrences.

Regarding the educational propaganda of cancer, it seems to the writer that the study and application of all reasonable methods of treating cancer will be of aid in encouraging the public to seek early relief from competent hands. While anaesthesia and skill have diminished the dread of the knife, the fear of an operation still remains an important reason for the frequent delays in asking for advice.

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CYSTOSCOPY AS A DIAGNOSTIC AID IN SPINAL CORD DISEASES.

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IT has long been known that lesions of the spinal cord give rise to bladder disturbances, in some cases early, while in others late in the disease. This is due to the innervation of the bladder. The lower the lesion in the cord the earlier the symptoms.

To understand fully the mechanism of it it is necessary to describe the anatomy and physiology[2] of the bladder. The bladder is a muscular organ serving as a reservoir for the urine until it is fully distended, when it empties itself completely; this process repeats itself at regular intervals. It is an elastic body made up of a mucous layer of transitional epithelium, a muscular coat arranged in three incomplete layers, viz., an outer longitudinal, a middle circular, which is strongly developed at the internal sphincter, and an inner longitudinal; the outermost layer is the serofibrous coat. There are motor and sensory nerve ganglia in all the three coats. The plexus supplying the bladder is called the vesical plexus, which is an offshoot of the hypogastric plexus of the sympathetic nervous system. The hypogastric plexus divides into the pelvic plexuses and these in turn give off plexuses to the various viscera, to wit, the vesical, prostatic, seminal vesicle, and cavernous plexus. The various plexuses are connected with one another by means of ganglia, and with the sacral nerves by the rami communicantes; and lastly with the lumbar nerves through the hypogastric nerves and the inferior mesenteric ganglia.

In order to get perfect contraction of the bladder the afferent, central, and efferent neurones must be intact. It is still a mooted question how the process of micturition takes place. According to Goltz[3] the series of events is as follows: The distention of the bladder by the urine causes a stimulation of the sensory fibers of the organ and produces a reflex contraction of the bladder musculature, which squeezes some urine into the urethra; this in turn stimulates the sensory nerves in the urethra, giving rise to a desire to urinate. If no obstacle is present the bladder empties itself, aided partly by the abdominal muscles and partly by the bulbocavernosus. The emptying of the bladder can, however, be prevented by the voluntary contraction of the external sphincter, thereby counteracting the contraction of the detrusor muscles of the bladder; and if the bladder is not too full, then the desire will eventually pass off. Hence it is seen that the voluntary control of the process is limited to the action of the external sphincter and the abdominal muscles, while the contraction of the bladder itself is an unconscious reflex act taking place through the sacrolumbar center. Goltz and others proved by severing the spinal cord in a dog at the junction of the thoracic and lumbar regions that micturition still took place, and that it was a reflex act with its center in the lumbar region. The same author adduces evidence to show that the sensation to urinate and of fullness comes from stimulation in the bladder itself caused by the pressure of the urine. He points out that the bladder is very sensitive to reflex stimulation; that every psychic act and sensory stimulus causes a contraction and an increased tone of the bladder. The bladder is subject to continual changes in size from reflex stimulation, and the pressure within it depends not only on the quantity of urine, but on the condition of bladder tonicity as well. It is easy to understand from this viewpoint how it happens that we may at times have a strong desire to urinate with but little urine in the bladder—for instance, under emotional excitement.

Again Langley and Anderson[4] have shown by experiments on dogs, cats, and rabbits that the bladder receives two sets of motor fibers; first, from the lumbar nerves, the fibers passing out in the second to the fifth lumbar nerves and reach the bladder through the inferior mesenteric ganglion and the hypogastric nerve; second, from the second to the third sacral nerves, being contained in the nervus erigens. Stimulation of the hypogastric nerves causes comparatively feeble contractions of the bladder, while that of the nervus erigens brings forth powerful contractions.

According to Nawrecki[5], the spinal sensory fibers to the bladder are found in the posterior roots of the first to the fourth sacral nerves, and when these are stimulated they reflexly stimulate the anterior roots of the second and third sacral nerves, these being the motor fibers.

The bladder is governed by the same laws of physiology as all other striped and unstriped muscles, the vitality of the tissues depending on the uninterrupted nerve supply, while that of the nerve fiber on the integrity of its cells and ganglia. If a nerve be cut, the part which is separated from the cell degenerates. The irritability at first increases, but soon diminishes, being wholly lost in three to four days. As the nerve regenerates, the irritability returns gradually, and not until the axis-cylinder has grown down into the fiber is the nerve capable of responding to induction shocks. The muscle will likewise be affected; at the end of a fortnight the irritability of muscle lessens. For

about six to seven weeks the response to mechanical irritants and direct battery currents increases, while to the faradic current diminishes; then the irritability lessens progressively until it is entirely lost at about the eighth month. This is followed by muscular degeneration.

When the posterior spinal ganglia are diseased as in tabes, the posterior columns degenerate; in the course of time the ganglia themselves atrophy. The peripheral nerves undergo some changes the process of which is not thoroughly understood. As a result of all these changes the arc of conductivity is broken, and the deep reflexes are either diminished or completely abolished. When during this process the bladder centers are involved, then the sensitiveness of the bladder will be reduced to such an extent that the desire to urinate will not arise until there is more than the average amount of urine in the bladder. This finally results in vesical distension, and the process of micturition will more than ever be executed by the will, since the fibers from the anterior horns are not affected at all. The contractions of the feebler and the emptying of the viscus is largely carried out by the aid of the abdominal muscles. In the course of time secondary changes in the bladder and kidneys will follow stagnation and infection. Imperfect contraction of the bladder musculature is probably just as much responsible for circulatory disturbances in the bladder wall as the residual urine. However, long before symptoms of infection manifest themselves marked changes in the bladder take place. The changes are not unlike those found in heart diseases where dilatation and hypertrophy go hand in hand. Owing to the peculiar arrangement of the muscle bundles in the bladder wall, where they run in various directions, some of these muscles become markedly hypertrophied and project into the lumen of the viscus, resembling the fleshy columns of the heart. In some places numerous diverticulæ of different sizes result from it. In spinal cord cases I found the trabecular and the diverticular formations more commonly on the roof and lateral walls than on the fundus, while in cases resulting in similar changes from long-continued obstructions due either to hypertrophied prostate or to an impervious stricture, I found them more often and better developed on the fundus of the bladder. As the disease progresses the muscle fibers atrophy and degenerate, resulting in atony of the bladder. When this stage is reached the bladder becomes enormously distended and then an overflow (incontinence) follows. When the lesion starts in the anterior horns, then the atrophy and muscular degeneration set in earlier, resulting in incontinence due to paralysis of the sphincter.

All these changes occur in practically every cord lesion where the sacrolumbar segment is diseased, but the time of occurrence depends on the extent and progressiveness of the lesion. As a rule the urinary symptoms arrive late in the disease, although their early presence may be overlooked by the symptoms of palsy. Occasionally one may see a patient with no symptoms referable to the cord but to the urinary organs, namely, difficulty of micturition, and on examination find a considerable amount of residual urine. Cystoscopy in such cases shows marked trabeculations and diverticulæ formations.

When one finds such a group of symptoms in the absence of any physical signs pointing toward a stricture or an hypertrophied prostate, even though there are no signs other than urinary, one may reasonably suspect an oganic disease of the cord. The lesion may have started in the bladder center, but it has not advanced far enough to give evidence of other forms of paralysis.

It behooves us, therefore, in every patient who presents himself with urinary disturbances to examine his nervous system, and if no signs be present, provided the local condition is not accountable for it, to cystoscope him, and if such physical signs as I have just described are present, and if they in addition are associated with chronic constipation which started at about the same time as the urinary difficulties, then it is almost certain that the patient is afflicted with a grave nervous lesion of the cord, which will sooner or later manifest itself with all the other characteristic symptoms.

The following cases will illustrate the effects of cord lesions on the bladder:

Case I.—B., 34 years, denied venereal history; presented himself for difficulty of micturition and a small stream. Urethra and prostate normal. Residual urine 12 to 16 ounces. Cystoscopy showed a markedly trabeculated bladder with numerous diverticula on the roof, lateral walls, and fundus. His superficial reflexes were present, but the knee jerks absent; pupils reacted sluggishly to light. He had no ataxia; marked atony of the rectum. Wassermann negative. I followed him up for about three months with no improvement in his condition. His lesion probably started in the sacrolumbar region about the bladder and rectal centers before invading the other parts.

There is another class of patients who have absolute loss of sphincteric control caused by either a paresis of the sphincter or exaggerated reflexes in the bladder, where a few drops of urine are sufficient to set up contractions in the bladder, or, perhaps, by a combination of the two, as might occur in ataxic paraplegia, where the lesions are in the dorsal and lateral columns of the cord.

Another illustrative case showing an absolute paralysis of the sphincter:

Case II.—A young man of about 26 came to me with the following history: About five months prior to this he became paralyzed in both legs, this being followed two months later by incontinence of urine. He wore an improvised urinal for the relief of this condition. On examination I found the head of the penis and part of the frenum were macerated, and sloughing on account of the irritation by the escaping urine. Cystoscopy was futile on account of the sphincteric paralysis, and the bladder could not be distended. He had atrophy of his limbs with loss of reflexes. His lesion was in the anterior horns.

Case III.—M., 27, had gonorrhea but no syphilis; used alcohol excessively. He presented himself for treatment for what he thought was gonorrheal arthritis and a weak bladder. He complained rather of stiffness and weakness in his right hip and knee than actual pain. On examination I found a spastic gait, fibrillary contractions of his right thigh muscles, marked increase of both knee reflexes, no ankle clonus; no ataxia of his arms or legs; pupillary reflexes normal; loss of temperature sense in his right leg and foot. Wassermann negative. He had difficulty in starting to urinate, and had nocturnal enuresis. At times he lost his sphincteric control of both bladder and rectum; at other times he had frequency caused by an overdistended bladder. Examination of the urethra showed an annular stricture of 22 French calibre at the penoscrotal junction; residual urine eight ounces. Cystoscopy revealed marked trabeculations of the bladder. In this case the trabeculæ could not be attributed to the stricture alone, for it was of a fairly large calibre; and had they been caused by the stricture without any cord lesion, then there would not have been any residual urine in the bladder, for young healthy individuals even though they develop such marked changes in the bladder from impervious strictures, regain the normal tone of the bladder as soon as the obstruction is removed and practically expel every drop of urine. He sustained

a severe burn of his right foot while bathing it, due to his loss of temperature sense.

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120 East Thirty-fourth Street.

THROMBOPHLEBITIS IN THE TUBERCULOUS, WITH AUTOPSY.*

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While thrombophlebitis is of every day occurrence, its incidence in the tuberculous appears to have escaped the attention of writers on tuberculosis. And yet, even as a complication of tuberculosis, it is not rare. We have observed it at the Chicago Fresh Air Hospital no less than seven times in 1400 cases.

My material comprises three men and four women patients at the Chicago Fresh Air Hospital; three of the women were in the far advanced stage of their disease, as was the fourth, who was, however, of the chronic type; the three men and two women had thrombophlebitis of the lower saphenous of both legs.

One woman (autopsy) had thrombosis of the inferior vena cava and of both iliac veins. One woman developed thrombophlebitis of the arm which extended upwards into the external jugular vein. In the cases of the two women and three men the phlebitis began in one leg and, after subsiding here, attacked the other leg. The patient with thrombosis of the basilic and jugular improved after leaving the hospital. No subsequent history was obtainable except that she died some months later. The other women died with thrombophlebitis still active. One man is well, his pulmonary condition under control by artificial pneumothorax; he is working steadily as dining-car conductor; the second man is an invalid but free of vein symptoms; the third man is convalescent as regards his pulmonary condition, his thrombosis being manifest only through the thickened veins, palpable under the skin.

Case with Autopsy.—Mrs. D. S., age 30, housewife, was admitted to Fresh Air Hospital, May 21, 1914. Father living and well, mother died of "dropsy." Patient has had three children, one dead born and twins which died aged 3 days and five weeks, respectively. Patient has had rheumatism. Five years ago the "present trouble" (pulmonary tuberculosis) began with cough; bleeding from the lungs has occurred several times; there have been night sweats. Patient is constipated and suffers from "stomach trouble;" appetite bad; menses absent. Appearance of patient cachectic; face sallow and much emaciated.

Sputum contains tubercle bacilli corresponding to Gaffky II, urine cloudy, sp. gr. 1020—some albumin. Pulse 112; temp. 39.2° C. Blood pressure, systolic, 79.

Physical examination. — Right Lung—Anteriorly: Amphoric respiration, Moist rales, Wintrich sign I, II, I. C. S.; Tympany down to III rib.

Posteriorly: Tympany, Amphoric respiration from apex to III rib.

Left Lung Anteriorly: Amphoric respiration, apex to IV rib.

Posteriorly: Cavernous respiration with amphoric character II—IV ribs, creaking and moist rales.

*Read before the German Medical Society of Chicago, April, 1915.

June 15, 1914, the patient was attacked by severe pain in the left leg. On examination there was found redness along the long saphenous vein which was painful on pressure. June 20, the inflammation was recognizable in the femoral vein. July 1, the pain was less and on the 11th of the same month was nearly gone. August 1 pain was felt in the region of the inferior cava which was aggravated by deep pressure over the vessel; pressure also elicited pain in the pelvis.

Diagnosis: thrombophlebitis of the iliac veins.

On September 1 the disease attacked the long saphenous of the right leg. From this last named date until her death, October 1, the patient was never free from pain; temperature was constantly around 38.5° C.

Autopsy (by Dr. Olga Pickman). Body of an extremely emaciated woman; hips and abdominal walls very edematous, feet and lower legs edematous. The saphenous and femoral veins were felt, cordlike, under the skin.

Thorax: Left, many pleuritic adhesions, extensive consolidation; several walnut sized cavities in both lobes; much scar tissue—Right lung: here, also, many cavities and extensive consolidation; the lungs were heavy as the result of much cicatrization. Heart small, musculature pale and flabby, valves competent.

Kidneys congested and degenerated (fatty). Spleen congested and enlarged. Liver congested and degenerated.

A piece of the long saphenous vein of the right leg was removed, the vein found to be thickened and entirely filled with thrombus. The left leg was not examined. The inferior vena cava was smaller than usual—thickened and partly blocked with thrombus, the clot extending down into both iliac veins from the cava; the lumen of the cava, as of the iliacs, was also about one-half filled by the thrombus.

Miscroscopical: The excised portions of the veins were examined by Dr. Oscar Nadeau, to whom my thanks are due. The specimens were stained with carbol fuchsin for tubercle bacilli which were not found, however, by this method. With the picrin stain, a few tubercle bacilli were found in the thrombus. In one section a bacillus was found in the intima of the iliac vein. With the Much stain, granules were found in many sections of the vena cava.

Bacilli are not constantly found in the circulating blood. According to the observations of various students of this subject, the blood may be flooded with tubercle bacilli in the death agony. It is not certain that the bacilli circulate in the blood in moderate infections. Brieger, experimenting on guinea-pigs, found that the bacilli were solitary in the blood, never in clumps. Also, in his experiments, he determined that the intravenous inoculation was mostly negative.

Klopstock and Seligmann (*Ztsch f. Hygiene*, Bd 76 H. i.) examined the blood of four consumptives. In no case did they produce definite signs of tuberculosis in guinea-pigs by the inoculation of these bloods. Bandelier and Roepke refer repeatedly to the presence of tubercle bacilli in the circulating blood in far advanced cases and cite the occurrence to explain tuberculous infection of other structures.

It will thus be seen that variance of opinions exists regarding the infectiousness and incidence of tubercle bacilli in the blood stream.

Nevertheless, infection of the venous vessels in the tuberculous is here shown to be of sufficiently frequent occurrence to give rise to inquiry as to the mode of production.

2744 Pine Grove Avenue.

Alcoholic Insanity in Kansas.—Newcomb states that but 1.7 per cent. of insane committed in Kansas during 1915 were suffering from uncomplicated alcoholic insanity. He contrasts this figure with the general average of 10 per cent. throughout the country, some special hospitals giving a minimum of from 4 to 5 per cent. The incidence in rural communities of alcoholic psychosis is very low—2.6 per 100,000 inhabitants—and it may be urged that Kansas is much more rural than urban, but about half the cases came from counties adjoining wet States.—*Pennsylvania Medical Journal.*

A CASE OF PAN-SINUSITIS, COMPLICATED WITH ACUTE SUPPURATIVE APPENDICITIS AND ACUTE MASTOIDITIS.

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THE following case seems to be worthy of permanent record:

Miss M. H., age twenty-six, consulted me July 23, 1915 for a continual discharge from her nose. For the past two years she has had more or less continual discharge from the nose of a purulent nature. During the past eight months she has complained of headaches, principally on awakening in the morning, of a frontal character, which lately have become occipital, and which were gradually getting worse; they would last well into the afternoon. Coughing with expectoration followed with loss of weight amounting to eighteen pounds within one year. The past history reveals nothing of importance. Her father and mother are alive and well, and two brothers and one sister are still living.

Examination shows a pale girl with drawn features and an anxious expression. There is extreme tenderness over the right frontal sinus with swelling and tenderness over the right antrum. The left frontal sinus and antrum also are somewhat tender to pressure. Transillumination reveals dark shadows over the antra and both frontal sinuses.

Examination of the nares showed much mucopurulent discharge with markedly enlarged turbinates, and there was a high deflection of the septum. Probing both sphenoidal cavities showed that they were diseased. The antra were opened and found to contain pus. The patient was advised to go to the hospital and submit to an operation. She agreed and an operation, followed by many more, resulted.

Herewith is the blood picture: Blood Wassermann negative. Complement fixation test for gonorrhea negative. Luetic test, negative. Von Pirquet and Morro reactions negative.

Blood Count: Hemoglobin, 60 per cent.; red corpuscles, 2,800,000; white corpuscles, 13,000; polys, 72 per cent.; small lymphocytes, 16 per cent.; large lymphocytes, 10 per cent.; eosinophiles, 1 per cent.; transitional cells, 1 per cent. No malarial parasites.

The smear of discharge from the nares showed a staphylococcus and a streptococcus with a large bacillus present. A combined vaccine was made and given with little or no effect on the discharge.

The sputum was negative for the tubercle bacillus. The urine showed a faint trace of albumen. There were no casts present.

On August 15, 1915, both middle turbinate bones were removed with a total eradication of the anterior and posterior ethmoid cells on both sides. These cells were found to be wholly diseased. Both frontal sinuses were opened, irrigated, and drained, much purulent matter being exuded. The smear of the frontal sinuses showed a staphylococcus, a streptococcus, and a small bacillus present.

On September 13, 1915, both inferior turbinate bones were removed and the antra opened and curetted. The sphenoid cavities were opened also and curetted. For three weeks following injections of arsenic and iron were given.

On October 5, 1915 the blood examination showed the following result: Hemoglobin, 75 per cent.; red corpuscles, 3,200,000; white corpuscles, 11,000; polys, 69 per cent.; small lympocytes, 21 per cent.; large lymphocytes, 8 per cent.; transitional cells, 2 per cent.

On November 5, 1915, both frontal sinus openings were enlarged. The smear showed a streptococcus, a staphylococcus, and a small bacillus present. A combined vaccine was made and given with little result.

On January 3, 1916, the antral openings were enlarged and curetted, and both sphenoid cavities were curetted again.

On January 15, 1916, both frontal sinus openings were again enlarged.

On March 20, 1916, on account of the persistence of the discharge from the right antrum a radical operation was resorted to.

On March 22, 1916, the patient complained of severe pain in the right side of the abdomen and on March 24 an appendectomy for suppurative appendicitis was performed, a smear from the appendix showed a streptococcus, a staphylococcus, and the colon bacillus present. Ten days after the appendix was removed, patient complained of pain in both ears. A 10 per cent. ichthyol solution in glycerin was instilled in both ears with no results. Twenty-four hours later both ear drums were incised, with a complete amelioration of the symptoms in the left ear. The pain continued in the right ear and suppurative mastoiditis developed.

On account of the weakened condition of patient, I was inclined to temporize with this new surgical condition. On April 10 the symptoms became so urgent the mastoid was opened under cocaine anesthesia and later ether was resorted to. A total eradication of the mastoid cells was performed and the lateral sinus was laid bare as there existed a perisinus abscess. A smear from the opened mastoid showed a streptococcus and a staphylococcus. A combined vaccine was made and the patient improved under this treatment.

Ten days after the mastoidectomy the patient was discharged from hospital.

The blood examination showed at this time the following: Hemoglobin, 80 per cent.; red corpuscles, 4,000,000; white corpuscles, 9,000; polymorphonuclears, 68 per cent.; small lymphocytes, 24 per cent.; large lymphocytes, 7 per cent.; eosinophiles, 1 per cent.

An examination of patient at present time (June 20, 1916), shows her to have gained much in weight. The sinuses have all ceased discharging with the exception of the right frontal sinus, which at times discharges a thin mucoid substance. The patient has had no fever for the past four weeks and is about to resume her former duties.

24 EAST FORTY-EIGHTH STREET.

Medicolegal Notes.

Competency of Physician's Testimony. — After filing objections to the probate of the scrip purporting to be the last will of his wife, the objecting husband died, and the executor of the deceased husband, who was made a party, offered to prove by the physician who attended the testatrix immediately prior to her death that at the time she executed her will she lacked testamentary capacity. New York Code Civ. Proc. § 836, relating to waiver of the privilege of a physician by enumerated persons, declares that any other party in interest may waive such privilege. The Surrogate's Court, King's County, held that the executor of the deceased husband was a party in interest, entitled to waive such privilege, for the probating of the will would affect the husband's estate, and so the testimony of the physician was competent. In re Mele's Estate, 157 N. Y. Supp. 67.

Liability of Private Hospitals for Negligence.—A patient voluntarily entered a private sanatorium, and after once leaving without permission returned and voluntarily consented to be removed to another ward where he would be practically a prisoner. Those in charge did not, during the process of removal, forcibly restrain the patient, though an attendant walked by his side. The patient suddenly broke away and fled from the sanatorium half-dressed. He entered a house where were a woman and two small children, so frightening the woman that as a result, the evidence tended to show, she was afflicted with neurasthenia and cystitis (!) for which she sued the proprietor of the sanatorium. The Wisconsin Supreme Court held that the evidence did not show negligence on the part of the proprietor, and that the plaintiff could not recover.—Torrey v. Riverhouse Sanitarium, 157 N. W. 552.

Verification License to Practise.—The Texas Court of Criminal Appeals holds that a license issued to a physician by a member of a medical examining board in 1892, certifying that the physician had been examined by such member of the board, and was thereby licensed to practise medicine and surgery until the next regular meeting of the board, showed on its face that it was a mere temporary license, good only until the next regular meeting of the board, and under no circumstances could be considered the verification license required to be filed under the present law, Acts 30th Leg. c. 123, regulating the practice of medicine in Texas. That statute has been held constitutional by the United States Supreme Court and many times by the State courts.—Gay v. State, 184 S. W. 200.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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See fourth page following reading matter for Rates of Subscription and Information for Contributors and Subscribers.

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PATHOLOGICAL ANATOMY OF UNDULANT FEVER.

THE symptomatology of this affection is extremely varied, and our knowledge of the pathological anatomy correspondingly scanty. The low mortality (in medium cases) is doubtless responsible for lack of interest in this subject. Each case should therefore be subjected to close scrutiny during life and every fatality should lead to a careful autopsy. In *La Riforma Medica* of June 26, Lunghetti reports a fatal case, in part as follows: The patient, a man of forty-four, had been ill for about a month, the chief symptoms having been fever and abdominal pain. Interned in the University Hospital, Sienna, he began to show prostration with attacks of vomiting and later became stuporous. An erythema, hemorrhagic, appeared on the face. Examination of the thorax and abdomen gave negative results. The heart's action was feeble, pulse small and frequent. The Widal test was negative. Lumbar puncture showed slightly increased tension. The patient's condition became progressively aggravated, and the pulse rate was increased to 180. The mental state likewise became worse. At no time was there any elevation of temperature. The precise method of death is not stated. Autopsy begun 30 hours after death showed a very emaciated cadaver in incipient putrefaction. There was slight congestion of both brain and meninges. The abdominal contents appeared to be normal. There was slight dilatation of the heart, especially of the right side. There was some induration of the myocardium. The lungs were the seat of pronounced edema. The spleen weighed 200 grams and had a reddish brown pulp. The liver weighed 1550 grams and presented incipient fatty degeneration. All the other viscera were without alteration. The gastrointestinal canal with exception of the colon showed a slight catarrh and the mesenteric lymphnodes were tumefied. Peyer's patches were swollen, pale, and softened.

In order to exclude the possibility of a typhoid or paratyphoid infection, a careful bacteriological study of the intestinal contents was made, but only the normal bacterial flora was present therein. The *Micrococcus melitensis* was, however, after some difficulty, cultivated from the splenic pulp. The cultures were agglutinated in the blood serum, 1 to 200, but not by control fluids of various kinds. Microscopic studies of tissues involved could hardly be termed sufficient for an autopsy diagnosis. Much time was devoted to Peyer's patches, the mesenteric lymphnodes, the remains of the thymus, and the spleen. Other organs investigated were the liver and kidneys. The micrococcus was found in the intestinal wall and mesenteric lymphnodes. It is conceivable that in the course of its absorption by the intestine the coccus caused local alterations and that once in the circulation it produced those alterations in the viscera which have caused the disease to be termed a form of septicemia. Marked changes were noted in the central portion of the mesenteric nodule where the tissues were constituted of elements of the most variable nature. In most of the cells the nuclei would no longer take their proper stain and the protoplasm was opaque, granular, and disintegrated. Between the individual elements was much detritus, including fragments of red corpuscles. In certain areas these were all the evidences of recent necrosis.

The finds in the spleen and viscera in general, while inconclusive enough, may be brought into definite relationship with those of other recent investigations and with the view that Malta fever is a form of septicemia. Not so many years ago Manson stated that the pathological anatomy of the disease could be summed up by "tumefaction of the spleen." Occasional local phenomena, as well as the various dominant symptoms, resemble those seen in various well-know severe infections. This is borne out by the cerebral symptoms, the hemorrhagic rash, the intestinal symptoms, the severe and terminal intrathoracic symptoms, and involvement of abdominal viscera, all present in the author's case. Certain severe lesions of general infection, as endocarditis and nephritis, were notably absent in this case, although occasionally found by others. Malta fever occasionally masquerades as a pneumonia or other severe local affection. Taking the clinical with the autopsy finds the author would place this fever nearest to paratyphoid or to colisepsis.

MEDICAL MATTERS IN MADAGASCAR.

FROM remote corners of the world, if any place can be called remote nowadays, come reports of medical discoveries, sanitary measures, successful operations, and other bits of news which make us look forward to the time when in the darkest district of the Malay Archipelago the witch-doctor shall have been supplanted by the good old G. P. The Sultan of Sulu no longer invokes a familiar when he has the tummy-ache; he has a leucocyte count and the court physician betakes himself to his office and sharpens up his favorite scalpels. The name of Madagascar is somehow associated in our minds with long, low, rakish-looking canoes manned by ten or twenty savages, crinky kreeses dripping with blood, cannibal feasts by moonlight, and all the other sanguinary appurtenances of barbarism. It would seem, however, that in hygienic matters at least this island is fully up to date, thanks to the efforts of the late French governor, General Gallieni, whose work is described by Dr. Kermorgant in the *Revue d'Hygiène* for June.

When General Gallieni first assumed charge of the island in the early nineties he was horrified at the insanitary conditions prevailing, the fearful mortality from preventable diseases, and the low birth-rate. With an enthusiasm suggesting rather a doctor devoted to his profession than a military man he set himself to remedy these conditions. His chief work and his happiest results were along the line of infant mortality. He had native women trained as midwives and he established and popularized maternity institutions. He regulated marriage and restricted divorce. He exempted the fathers of five children or more from taxation and taxed bachelors instead. He gave prizes to the mothers of large families and organized hospitals, dispensaries, and orphanages.

In 1896 Gallieni founded a medical school for the natives which, after many vicissitudes, due largely to native prejudice, is now turning out well-trained physicians. In 1899 a Pasteur Institute was founded for the production of smallpox vaccine and the treatment of hydrophobia. Lazarettos were established for the segregation of lepers, a central pharmacy for the supervision of drugs, and information about disease and its prevention was disseminated in a popular way.

Gallieni's services, it is gratifying to record, were appreciated by his subjects as well as by his mother country. The former named him "Ray Amandreny," meaning "both father and mother," and the French Academy of Medicine awarded him a gold medal, the highest gift in its power. These labors of the general in the cause of human welfare will overshadow, in the mind of the medical profession at least, his military achievements, glorious though they undoubtedly were in the present war.

THE DAILY MORNING HEADACHE OF HYPERTENSION.

Daily morning headaches have been said to occur under a variety of conditions. In the malarial days of New York it often meant "dumb ague" and responded readily to quinine. Occurring early in the forenoon in a man in his forties it betokened the need of glasses. Waking early with a headache could mean alcoholism or uremia. There is much reason to look with scepticism on this pigeonholing arrangement. There is reason to believe, for example, that headaches "due to uremia" may often arise simply from hypertension, or conditions which cause or follow the latter.

For fifteen years Rathery kept track of morning headaches, and associated them with interstitial nephritis of scarlatinous origin, syphilis, nicotinism, and excess in protein consumption. As accessory factors he recognized sedentary occupation, excessive mental labor, and great responsibility. Renon, in an equally long observation period (*Journal de Médecine et de Chirurgie*, etc., August 25), in which Pachon's oscillometer was used, found the presence of excessively high tension. This headache may involve the entire cranium or only portions of it (it is seldom occipital). It comes on early in the morning and may waken the patient at 5 or 6 A.M. It is intense, and he does not feel like getting up. It has a maximum at 9 or 10 A. M., and may disappear at noon. The subject, unfitted for labor or even for coherent thinking, rushes for the headache powder or equivalent. He has tried them all. One gives him relief for an hour and a half, and three may keep him free during the forenoon. Meanwhile he becomes the victim of the drug and its toxic effects, until the remedy is worse than the disease. Such a man shows an enlarged left heart, accentuated second sound, and polyuria with traces of albumin. In other patients there is only a dull morning headache augmented on slight mental or physical exertion ("painful thinking"). The condition is progressive and Renon has never seen a recovery. Often death occurs with great promptitude after the diagnosis is made. Nevertheless intensive treatment will give relief.

First, the coal-tar derivatives must be shut off, as well as tobacco. Mental rest must be ordered. For a week at least the patient must go on a milk regimen as the sole diet. Then he may have milk days and live for the rest on fruits and vegetables for two weeks more. He is then placed on a light, low protein regimen for several weeks. If the blood tension has not come down, and if headache still persists, Renon advises certain harmless hypotensives, such as thiosinamine. Iodides are given only if a syphilitic basis can be shown. Otherwise they aggravate the symptoms.

A Warning.

We are obliged to call attention of our readers once more to the taking of subscriptions to the Medical Record, *The American Journal of Obstetrics and Diseases of Women and Children*, or the *British Journal of Surgery*, by unauthorized persons. There has for a long time been an organized band of these rascals working the cities and larger towns in many sections of the country. Their scheme, or one of their schemes, is to represent themselves as an association of indigent students (the latest one we have heard of calls itself the "Western Students' Benefit Association") who are given free tuition in a medical college in return for a certain number of paid subscriptions, new or old, to either or all of the above-mentioned journals. They thus work upon the sympathies of their dupes who feel they are helping deserving young men to get a medical education, while at the same time they are treating themselves to some of the best obtainable medical literature. The latest trick is to offer a physician whose subscription happens to be overdue a receipt in full for the payment of $4.25; naturally such a generous offer is accepted in many cases. We would again warn our present subscribers not to give money for renewals to any but our authorized agents, or preferably (as a forged authorization may be presented) to send it direct to the subscription department of one or the other journal. As to the intending new subscribers, we are doing our best to protect them by notifying the police of the cities where these gangs of sharpers are working. We would also suggest to our friends that they would be doing a favor not only to us, but, and especially, to their colleagues if they would speak of this matter in their society meetings, cautioning their fellow-members never to pay money for books or for subscriptions to this or any other journal to

any but authorized agents of the publishers. By giving such warning they would help the readers not only of this but of other journals, for the subscribers to several of our contemporaries have been defrauded in the same way and by the same persons.

Another Theory Exploded.

Solomon Yacovitto of Brooklyn, a lamplighter of that city and a victim of rheumatism in the legs, his vocation suffering as a result, was told by a friend that if he would bathe in water in which a certain drug had been dissolved his rheumatism would be cured and, in addition, his skin would be whitened. This wonderful drug the friend said, or so Solomon understood, was calcium carbide; so he purchased a can of this, filled his bathtub, seated himself in it, and then emptied the contents of the can into the water. Perhaps there was some mistake. At any rate, there was an explosion and a flash of flame, and Solomon instead of curing his rheumatism added severe burns to his other troubles, and so far from bleaching his skin came out of the tub much blacker than when he went in. Which all goes to show that amateur prescribing is not always successful.

News of the Week

Poliomyelitis Epidemic Decreasing.—In New York City, for the week ending September 30, 140 new cases of poliomyelitis were reported, a decrease of 14 as compared with the previous week. The total number of cases in the city to the same date was 9,029, and of deaths 2,286. So far as any serious danger to children is concerned, the health officials believe that the epidemic is now a thing of the past. The course of the epidemic since July 1 is shown by the following table, giving the number of new cases reported each week since that time:

Week ending		Week ending	
July 8	557	August 19	922
July 15	979	August 26	744
July 22	795	September 2	487
July 29	962	September 9	351
August 5	1,168	September 16	254
August 12	1,210	September 23	160

The forcible removal by the Department of Health of a nineteen-months' infant believed to be suffering from the disease, from its home in Jamaica to the Queens Borough Hospital, has caused some bitter feeling in the town, and the Civic Association of Jamaica is threatening to bring before the next Legislature an act to restrict the powers of the Board of Health.

Poliomyelitis Serum Collected.—The Harvard Medical School has recently appointed a commission, consisting of Dr. Robert W. Lovett, professor of orthopedic surgery, chairman; Dr. Milton J. Rosenau, professor of preventive medicine; and Dr. Francis W. Peabody, assistant professor of medicine, to supervise the collection of blood serum from persons who have recovered from infantile paralysis, and its distribution among physicians, in an attempt to stop the spread of the disease. The serum will be distributed to physicians free of charge.

City Death Rate Low.—For the week ending September 23, the death rate in New York City was only 11.17, as compared with 11.79 for the corresponding week of last year. The rate for the first thirty-nine weeks of the year, however, is slightly higher than that for the same period of 1915, the respective figures being 14.33 and 14.26 per 1,000 of population. The increase is due in part, of course, to the epidemic of poliomyelitis.

Sick Rate Among Troops.—Slight increases in the sick rate of the troops on the Mexican border are shown in a report made on September 25 to the War Department. For the week ending September 16 the morbidity percentage among the men of the National Guard was 2.13, as compared with 1.91 for the week preceding. Among the regular troops the rate for the same week was 2.16, against 2.15 for the preceding week. The deaths during the same time numbered five among the National Guard and two among the regulars.

Civil Service Examination.—The New York State Civil Service Commission will hold an examination on November 4 for the purpose of filling a vacancy at Sing Sing prison in the position of assistant physician, and of other vacancies as they occur. The examination is open only to men who are licensed medical practitioners in this State, and since graduation have had at least one year's experience on the resident medical staff of a general hospital. The salary is $1,500 without maintenance. Further details and application blanks may be obtained from the State Civil Service Commission, Albany, N. Y.

Association for the Study of Internal Secretions.—With the object of correlating the work of physicians and other students interested in the investigation of the internal secretions, this association was recently formed. The plans of the society include the establishment of libraries and the publication of a scientific bulletin containing a résumé of the work being done in this field. The secretary of the Association is Dr. Henry R. Harrower, Glendale, Los Angeles, Cal., who will be glad to send full details in regard to membership, etc., to those interested.

Cost of Disease.—At one of the meetings of the American Chemical Society, held last week in New York, it was stated that this country is losing close to one billion dollars a year through preventable occupational diseases, in spite of the growing movement in the direction of better working conditions. A paper by Dr. W. A. Lynott of the Federal Bureau of Mines contained statistics showing that every worker in the United States loses an average of nine days' work a year through occupational diseases that could be prevented by the use of proper machinery and through sanitation.

Health Exhibit Popular.—The New York Social Hygiene Society, which is conducting a campaign in this city for the prevention of venereal diseases, announces that between July 21 and September 20 of this year 19,390 persons visited this society's exhibit at Coney Island.

Physicians Oppose Compensation Act.—A number of physicians, representing the members of the Massachusetts State and Massachusetts Homeopathic Medical Societies, met in Worcester on September 20, and made formal protest against one section of the workmen's compensation act of that State. It was declared that the law, as it now stands, works a hardship on the workman as well as on the physician, in that it deprives the former of the right to call in a physician whom he knows—the family doctor. Plans were formulated for an active campaign before the next session of the Legislature to have the act amended.

Medical Colleges Open.—The College of Physicians and Surgeons, Columbia University, New York, opened on September 27 with a total registra-

tion of 480, the entering class numbering 142. At the opening exercises, Dr. Warfield T. Longcope, Bard professor of medicine, spoke on "Milestones in Medicine."

The thirty-seventh annual session of the College of Physicians and Surgeons of Boston began on September 20, with an enrollment said to be the largest in the history of the college.

Lectures on Mental Hygiene.—The New York City Department of Education, in conjunction with the Mental Hygiene Committee of the State Charities Aid Association, has arranged a course of six lectures on mental hygiene, to be given on Wednesday evenings during October and November, in the Young Men's Christian Association Hall at 5 West 125th Street, New York. Among the lecturers will be Dr. Stewart A. Paton of Princeton University, Dr. Ira S. Wile of New York, and Dr. William Mabon, superintendent of the Manhattan State Hospital, New York.

Yellow Fever Commission Returns.—Gen. William C. Gorgas, chairman of the commission sent out by the Rockefeller Foundation to investigate the occurrence of yellow fever in South America, returned to New York with other members of the commission on September 25. The commission has already made investigation in Chile, Peru, Bolivia, Ecuador, and Panama, and will shortly sail for Brazil to continue its investigation of the disease in that country.

Gifts to Charities.—By the will of the late Mrs. Juliet C. Percival of New York the Hahnemann Hospital of this city receives a bequest of $40,000, to be used for the establishment in the children's ward of beds in memory of the giver's son, George Sidney Percival.

A number of New York institutions are remembered in the will of the late Mr. H. B. Dick of this city. The Presbyterian Hospital receives $7,500, the Roosevelt Hospital, the Manhattan Eye and Ear Hospital, the Babies' Hospital, and St. Luke's Home, $5,000 each, and St. John's Guild $3,000 for the floating hospital.

By the will of the late Eckley Brinton Coxe, Jr., of Philadelphia, bequests are made as follows: Children's Hospital, $100,000 as an endowment, and in addition $10,000, the income of which is to provide for Christmas presents and an annual dinner for the children patients, the nurses, the servants, and members of the dispensary staff; Orthopedic Hospital and Infirmary for Nervous Diseases, $50,000; Pennsylvania Epileptic Hospital and Colony Farm, $25,000.

By the will of the late Stephen B. Colladay of Philadelphia the sum of $2,000 is bequeathed to the Samaritan Hospital.

Personals.—Dr. Bernard Glueck has been appointed physician and surgeon at Sing Sing prison, succeeding Dr. Amos O. Squire, who recently resigned. Dr. Glueck has recently been conducting the psychopathic clinic founded by Mr. John D. Rockefeller at the prison.

Dr. Murray H. Paterson of Chatham, Ontario, returned to New York on September 30 from active service in France, where he won the Military Cross for bravery under fire. On July 1, when the allied offensive began, Dr. Patterson led a party of bearers out under a heavy fire and succeeded in bringing a number of wounded soldiers safely within the lines.

The death of Dr. A. Magnan, chief of the Bureau of the Insane in Paris, and director of the French School of Advanced Research, has recently been reported.

Dr. Paul E. Bechet has removed to 40 East Forty-first Street.

Dr. Raimundo Menocal has been appointed Secretary of Sanitation in Cuba, to succeed Dr. Enrique Nuñez, who died recently in this city.

Medical Society Elections.—COLORADO STATE MEDICAL SOCIETY: Annual meeting at Glenwood Springs, in September. Officers elected: *President*, Dr. A. C. Magruder, Colorado Springs; *first vice-president*, Dr. S. B. Childs, Denver; *second vice-president*, Dr. A. L. Trout, Walsenburg; *third vice-president*, Dr. W. W. Frank, Glenwood Springs; *fourth vice-president*, Dr. A. J. Nossoman, Pagosa Springs; *delegate to the American Medical Association*, Dr. Oliver Lyons, Denver; *alternate delegate*, Dr. C. W. Plumb, Grand Junction; *councillors*, Dr. M. R. Fox, Sterling, and Dr. Samuel French, Meeker; *member of the Publication Committee*, Dr. Philip Hillkowitz, Denver. The next meeting will be held at Colorado Springs in September, 1917.

UTAH STATE MEDICAL ASSOCIATION: Annual meeting at Salt Lake City on September 12 and 13. Officers elected: *President*, Dr. Samuel C. Baldwin, Salt Lake City; *first vice-president*, Dr. Joseph R. Morrell, Ogden; *second vice-president*, Dr. P. M. Kelly, American Fork; *third vice-president*, Dr. David C. Budge, Logan; *treasurer*, Dr. T. A. Flood, Salt Lake City.

OREGON STATE MEDICAL ASSOCIATION: Forty-second annual meeting at Portland on September 14 and 15. Officers elected: *President*, Dr. R. C. Yenney, Portland; *first vice-president*, Dr. H. J. Clements, Salem; *second vice-president*, Dr. Leo Chilton, Canyon City; *secretary*, Dr. Clarence J. McCusker, Portland; *treasurer*, Dr. Katherine R. Manion, Portland.

WASHINGTON COUNTY (VT.) MEDICAL SOCIETY: Annual meeting at Northfield on September 19. Officers elected: *President*, Dr. George S. Bidwell, Waterbury; *vice-president*, Dr. Clarence H. Burr, Montpelier; *secretary-treasurer*, Dr. Harlow A. Whitney; *auditor*, Dr. De F. C. Jarvis, Barre.

NEW ENGLAND ASSOCIATION OF JEFFERSON MEDICAL COLLEGE GRADUATES: Tenth annual meeting at Farmington, Conn., on September 9. Officers elected: *President*, Dr. Eckley R. Storrs, Hartford, Conn.; *vice-president*, Dr. Albert C. Getchell, Worcester, Mass.; *secretary*, Wallace P. MacCallum, Boston; *treasurer*, Dr. Frank I. Payne, Westerly, R. I.

Obituary Notes.—Dr. JOHN WAYT POINDEXTER of Prairie Home, Mo., a graduate of the Medical College of Virginia, Richmond, in 1875, died at his home recently, aged 65 years.

Dr. EDWARD REESE FELL of Philadelphia, a graduate of the medical department of the University of Pennsylvania in the class of 1861, and assistant surgeon in the United States Army during the Civil War, died at his home on September 15, at the age of 77 years.

Dr. THOMAS A. C. KEPHART of Altoona, Pa., 47 years old, was killed in an automobile accident on September 18. He was graduated from the University of Pittsburgh School of Medicine in the class of 1912.

Dr. FRANK WEBSTER of Dayton, Ohio, a graduate of the Pulte Medical College, Cincinnati, Ohio, in 1882, died on September 21, aged 62 years.

Dr. JOHN H. WILSON of Bethlehem, Pa., a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1860, and a member of

the American Medical Association, the Medical Society of the State of Pennsylvania, and the Northampton County Medical Society, died at his home on September 12, after a long illness, aged 81 years.

Dr. SANFORD HANSCOM of Somerville, Mass., a graduate of the Medical School of Harvard University, Boston, in 1868, and a member of the American Medical Association, the Massachusetts Medical Society, and the Middlesex South District Medical Society, died at his home on September 20, aged 75 years. Dr. Hanscom was a veteran of the Civil War.

Dr. THOMAS FITZGIBBON of Milwaukee, Wis., a graduate of Rush Medical College, Chicago, in 1882, a member of the American Medical Association, the State Medical Society of Wisconsin, and the Milwaukee County Medical Society, and formerly professor of gynecology in Marquette University Medical Department, Milwaukee, died at his home in St. Francis on September 17, after a long illness, aged 62 years.

Dr. RICHARD MOTT MOORE of Rochester, N. Y., a graduate of the University of Buffalo, Medical Department, Buffalo, N. Y., in 1878, died at his home on September 13, aged 59 years. Dr. Moore was a member of the American Medical Association, the Medical Society of the State of New York, the Monroe County Medical Society, the Rochester Academy of Medicine, the Rochester Academy of Science, the Board of Health of Rochester, the Monroe County Milk Commission, and was physician to the Rochester General Hospital.

Dr. JOHN LESTER KEEP of Brooklyn, N. Y., a graduate of the Hahnemann Medical College and Hospital of Philadelphia, in 1860, and of the New York Homeopathic Medical College and Flower Hospital, New York, in 1866, consulting physician to the Cumberland Street Hospital, a member of the American Institute of Homeopathy, the Brooklyn Medical Society, and the Associated Physicians of Long Island, and a former president of the Alumni Association of the New York Homeopathic Medical College, died at his summer home on Shelter Island, New York, on September 30, at the age of seventy-eight.

Correspondence.

THE BROAD STREET HOSPITAL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the News column of the MEDICAL RECORD for September 30 there is an item concerning the Broad Street Hospital, in which it is stated that "the institution will serve the district south of Fulton Street which has not heretofore had a general emergency hospital." Your informant is evidently in error in respect to this matter, for the House of Relief of the New York Hospital, known as the Hudson Street Hospital, served that district for many years, and provided an ambulance service that was apparently quite adequate. During the past year a portion of the district served by the Hudson Street Hospital was given to the Volunteer Hospital, whose ambulance district includes that mentioned in the paragraph. So far as it is possible to learn from unprejudiced sources, the Volunteer Hospital is rendering complete and satisfactory general emergency service at the present time, so that the statement quoted is inaccurate as it stands.

R. G. S.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

BRITISH ASSOCIATION—FATIGUE AMONG SOLDIERS—DECIMAL COINAGE—WEIGHTS AND MEASURES—CASES OF PLAGUE—CERTIFYING SURGEONS—COUNCIL FOR COMBATING VENEREAL DISEASES—OBITUARY.

LONDON, Sept. 15, 1916.

THE meeting of the British Association closed last week. Of its twelve sections that on Economic Science obtained a good deal of attention, as it considered the subject of fatigue among our soldiers as well as among munition workers. Dr. Hunter urged that it is time to consider decimal coinage and weights and measures if Great Britain is to hold her own after the war, for neutral countries would naturally deal with those who used those to which they were accustomed. The United States were aware of this. The French had adopted our meridian, why should we not change our weights and measures for the system adopted by every other civilized nation? We should save immensely by so doing and no other nation would try our system. The colonies would follow, and in fact only waited our lead. Professor Kirkaldy (presiding) wished it to go forth that in the view of this section, the Anglo-Saxon world should come together and try to bring about this reform. The next subject of discussion was fatigue, on which a report was presented of a committee of investigation and another by Dr. Maitland, who had special opportunities for observation during the war in Serbia. He said military necessities and the impossibility of providing reliefs, rest and uninterrupted sleep prevent an army getting the utmost value out of the unit. In fact, long continued strain in the trenches resulted in cases of breakdown; these recovered after rest, but on return to the trenches broke down again and had to be discharged as of no further use. We could not hope to obtain an ideal working day for each military unit, but with the increased ability to supply reinforcements we could diminish the strain and it was most important that one should do so.

The announcement that cases of plague had occurred in England gave rise to considerable public excitement and doctors in all directions have been closely questioned about it. Three cases were reported last week at Bristol and two at Hull. The rat-flea is the carrier of the toxin to man and our seaport towns are in the chief zone of danger. The vessels carrying grain are so commonly rat-infested that they transmit plague over long distances and it is probable that the cases at Bristol and Hull were ship-borne.

Certifying surgeons have been relieved of some of the duties that have been long carried on in respect to accidents, but notice of poisoning by lead, phosphorus, arsenic or mercury has still to be sent to the inspector as must also notice of toxic jaundice and of anthrax.

The National Council for Combating Venereal Disease has issued a synopsis of its report made by Captain Douglas White. In a prefatory statement the chairman of the commission (Lord Sydenham) hopes it will be found a convenient compendium of the whole subject of this disease as elucidated by the inquiry of the commission and it seems probable that this hope may be realized. The synopsis is very well described as only "a shortened report," the shortening being effected, not by whole-

sale omissions, but by systematic abbreviations, while the economic effects of the disease are stated in full and the summary of recommendations is given verbatim. This report will be of great assistance to those who have charge of local schemes and may serve as a hand-book to their deliberations. At the first meeting of the National Council for combating the disease, Dr. Fred. Taylor, President R. C. P., explained the attitude of the profession toward this important campaign and pointed out that the National Council has for one object an inquiry into medical education in reference thereto. He remarked that medical education is a life-long occupation of the profession and suggested that it might be carried on more actively, though at present there is a shortage of clinical material in the schools which would serve the purpose. Unfortunately at some institutions there is prejudice against the admission of venereal cases, but it is hoped that this is fading and in time will be eradicated.

Lieut-Col. Wm. Selby, I.M.S., Principal of King George's Medical College, Lucknow, Hon. Surgeon to the Viceroy of India, died September 8. Born 1869, he took the double qualification 1892, proceding to F. R. C. S. Eng. in 1905. He was in the relief force in Chitral in 1895, for which he had the medal and clasp. In 1897-98 he was in the operations of the Northwest Frontier of India and in the Tirah campaign, for which he was mentioned in dispatches. He was awarded the companionship of D. S. O.

CANADIAN LETTER.

(From Our Special Correspondent.)

ONTARIO MEDICAL ASSOCIATION—PERMANENT DISABILITY OF INVALIDED SOLDIERS—ELECTION OF OFFICERS—CONFERENCE OF HEALTH OFFICERS OF ONTARIO—MILITARY HOSPITALS' COMMISSION—POLIOMYELITIS—OBITUARIES.

TORONTO, September 30, 1916.

ALTHOUGH now somewhat ancient history, it may be said, more especially as little notice has been taken of the matter in American medical journals, that the meeting of the Ontario Association, which was held at the end of May last, was one of the most successful from all standpoints ever held. Several causes combined to bring about this result. The annual meetings of the Canadian Medical Association which should have taken place in 1915 and 1916 have been postponed and consequently the lack of exchange of views and opinions, rendered possible to a large extent only by such meetings, was felt by members of the Canadian medical profession. Moreover, the war in Europe had supplied an abundance of military and surgical topics of which full advantage was taken. Dr. H. B. Anderson of Toronto, the president, delivered an able address to which it would be impossible to give due credit within the limits of a letter. Sir James Grant, the nestor of medicine in Canada, in the course of an appreciation of the address paid an eloquent tribute to the splendid work being done both at the front and at home by Canadian medical men and nurses. It will not be out of place when mentioning Sir James Grant to call attention to the fact that he was a pioneer in the employment of serum therapy. Recently in *American Medicine* he described his work in this direction which has now been generally recognized throughout Canada.

The Hon. Senator J. C. McLennan, M.D., gave an address on "Problems and Plans of the Military Hospitals' Commission in Dealing with Invalid Soldiers." Among other facts that Dr. McLennan stated was that out of 200,000 soldiers who had gone from Canada, only six had returned totally blind and only five wholly unable to work. Tuberculosis had not been nearly so prevalent among Canadian soldiers as had been anticipated. The military commission had provided for 1,700 consumptive men, but the hospitals had never been more than two-thirds full.

At the business session Dr. A. Dalton Smith of Mitchell was elected president for the ensuing year, and Toronto was decided upon as the place of meeting. The other officers elected were: *Vice-President*, Dr. C. L. Starr, Toronto; *Treasurer*, Dr. J. H. Elliott, Toronto; *Secretary*, Dr. R. A. Clarkson, Toronto; *Representatives to the Canadian Medical Association*, Dr. H. B. Anderson, Dr. H. J. Hamilton of Toronto and Dr. G. S. Cameron of Peterborough; *Executive Committee*, Dr J. D. Wishart of Toronto and Dr. F. C. Neal of Peterborough.

The fifth annual conference of the health officers of Ontario was held at the University of Toronto, on the last two days of May. Dr. A. J. Macauley, medical officer of health of Brockville, vice-president, presided in the absence of the president, Dr. Macpherson of Peterborough, who was on active service. Of the many instructive discussions given none was of greater interest than a lecture upon sanitation in Serbia given by Major W. D. Sharpe who served as surgeon with the British Naval Hospital in Belgrade in the first year of the war. The next meeting will be held in Toronto. The officers elected were: Dr. A. J. Macauley, president; Dr. T. W. Vardon, vice-president; Dr. J. W. S. McCullough, secretary.

A year ago the Military Hospitals' Commission of Canada was appointed and since its inauguration there have sprung into being no fewer than 22 military convalescent hospitals. The convalescent hospital in the building formerly used as Bishop Strachan's girl school in College Street, Toronto, is certainly the best equipped in Canada and probably as well equipped as any military hospital in the world. It contains mechanical means for treating injuries and conditions of every description, under the charge of Mr. F. Davies, who is experienced and skilled in the employment of such modes of treatment. I shall have occasion to refer to the convalescent hospital and to the excellent work of Mr. Davies in greater detail in a future letter. It has been suggested, and the suggestion seems worthy of consideration, that a series of military hospitals should be established throughout Canada, not for convalescents who have already received abroad such surgical treatment as their condition called for, but for soldiers, who while they will be unfit for further active service, are yet capable of making the sea voyage to Canada to receive surgical treatment at the hands of Canadian surgeons. This procedure would tend to relieve the already overtaxed capacities of British hospitals and would also possess the advantage of bringing the men back to home and friends sooner.

Col. Herbert Bruce of Toronto, who has just been made a full colonel in the Canadian Army Medical Corps, has received a commission to inspect all the Canadian hospitals and medical institutions to which the Canadian Government is contributing, to report upon their work, and to offer any recommendations in regard to the same which he may

think fit. According to the lay papers Colonel Bruce has inspected the hospitals and institutions in Great Britain, has criticized some features of their management, and has made certain recommendations. He will afterward proceed to France to inspect the various base and stationary hospitals, casualty clearing stations, and field ambulances, and will then visit Salonica. Colonel Hodgetts, head of the Canadian Red Cross in England, has announced the intention of the society to establish another hospital of 1,000 beds, probably on the Kentish coast.

Poliomyelitis is more or less rife in different parts of Ontario. Toronto has been comparatively free, in fact there have been only one or two isolated cases. In Hamilton the epidemic was somewhat serious. However, every precaution was taken by the officers of health to prevent the spread of the disease. Dr. Charles Hastings, M.H.O., of Toronto, has stated recently that despite the excessive heat and continued drouth of the past summer, the death rate of Toronto has been lower than in 1915. This is especially true of diseases of children.

Prof. Thomas Gregor Brodie, F.R.S., who was associated with Prof. A. B. Macallum in the department of physiology at the University of Toronto since 1908, died suddenly in London, England, on August 20. Dr. Brodie was born in Northampton, in 1866, and was educated at Cambridge and London. He had held several important appointments in England, including that of director of the Research Laboratories of the Royal College of Physicians and Surgeons. Dr. Brodie had done some important original work in the sphere of physiology.

Dr. Harry Goodsir MacKid of Calgary, one of the best known medical practitioners in the northwest of Canada, died suddenly at his home in Calgary on Aug. 17.

Capt. D. Watterson, C.A.M.C., of Montreal was killed recently in action in France.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 21, 1916.

1. The Rat and Infantile Paralysis: A Theory. Mark W. Richardson.
2. Some Medical Aspects of the Workmen's Compensation Act. Francis D. Donoghue.
3. The Major Divisions of Mental Hygiene—Public, Social, Individual. E. E. Southard
4. What Recent Investigations Have Shown to be the Relation Between Mental Defect and Crime. A. Warren Stearns.
5. Epilepsy. Everett Flood.
6. Idiosyncrasy to Cow's Milk: It's Relation to Anaphylaxis. Fritz B. Talbot.

1. The Rat and Infantile Paralysis: A Theory.—Mark W. Richardson, who was intimately concerned in the investigation of infantile paralysis from 1909 to 1914 as secretary of the Massachusetts State Board of Health, calls attention to facts that are against the transfer of infantile paralysis by direct or indirect human contact and presents those supporting the theory that the disease is transferred by rodents, insects, or both. Militating against the transfer of the disease by personal contact, direct or indirect, are the summer incidence of infantile paralysis; the maximum prevalence of the disease in country districts, where personal contact is least intimate at all times; failure to spread in general hospitals; extreme rarity of the disease in doctors, nurses, and other attendants; entire absence of infection in laboratory workers with the virus of infantile paralysis; comparatively rare occurrence of more than one case of the disease in large families of children; the cessation of epidemics in mid-career, so to speak, before the human material has been exhausted and the opportunities for direct or indirect contact are at their maximum; the long-continued immunity of cities and towns in close commercial relations with infected centers, even though interchange of population is marked; the observation that the disease travels radially from centers of infection, and that it is very common to find the later cases on the outskirts of the infected area, and finally the practical immunity of severely infected districts for a considerable period of years in spite of the fact that new material is constantly being furnished. Facts supporting the theory that the rat and its parasite, the flea, are the principal agents in the spread of infantile paralysis are that the rat has a world-wide distribution and is found in the habitations of all classes of the community; in the winter time it keeps largely to its hole coming forth with the advent of warm weather; it is highly probable that the rat is more common in the country than in the city; the great increase in poliomyelitis during the past twenty-five years may be explained by the increase in facility of transportation; the distribution of the disease near railroads may be due to the rat-infected cars and the dropping of rats from freight cars. In the study of the epidemiology of infantile paralysis it has been a common observation that the disease occurs in foci, cases spread more or less radially, the intensity of the infection rises in one neighborhood, while it is decreasing in a focus in the immediate vicinity. These facts are hard to explain through human transmission, which would result in irregular distribution of cases. In the transfer of the infection from the rat to man the agency of the flea is assumed, although the possible contamination of food by rodent excretions might well be considered. The insect transfer may be simply mechanical or it may require a preliminary cycle of development of the virus in the flea. Furthermore, the possible rôle of cats, dogs, and other animals, or even human beings, as carriers of infected fleas, would be apparent. In grossly unsanitary surroundings the fleas might carry the infection from one child to another directly.

3. The Major Divisions of Mental Hygiene—Public, Social, Individual.—E. E. Southard, after analyzing a group of over 2,000 admissions to the Psychopathic Hospital, finds that many of the considerations in mental hygiene may be grouped under three headings. There is a mental hygiene of a public or governmental nature; a mental hygiene of a social nature, and the far more familiar and well-known mental hygiene which considers the individual as such. A certain large proportion of the cases are routine cases, whose public, social and individual features are obvious and clear, immediately suggesting an appropriate disposition and appropriate measures of treatment. They may not be successfully treated from the standpoint of the individual, but from the standpoint of society and the public authorities; they may be successfully handled on the basis of familiar and well-understood rules of government, society, and medicine. There are a minority of cases which may be called the *intensive* group, as cases of mental complications of pregnancy or of brain syphilis, requiring special treatment. There is a small but perturbing group of *public service* cases, in which one may have to deal with a family dispute with respect to will making and the like, with superior court cases given over for medical examination and decision, or with cases from the police or juvenile courts. There is in addition what may be called a *social service* group of cases in which the legal problems are not prominent, but in which economic, domestic, and other environ-

mental difficulties predominate. Finally, there are a great number of individual cases which do not belong exclusively to any of these groups. The writer points out that the mental hygienist usually starts out with the problem of improving the outlook of the individual, while lawyers, judges, and many probation officers need go a long way before they will arrive at what medical men would regard as a proper individualization of the material. He discusses the important functions of the social workers, who form the intermediary body between all the various agencies, carrying the decision of the physician to the lawyer, and the decision of both to the family, and carrying back news from the individual to the family, from the family to the judge, to the probation officer, to the physician, and to the public institution administrator. Development of the public branch of mental hygiene is in the hands of the lawyers and the institution administrator, upon whose experience, judicial decisions, and statutory provisions will gradually develop the power of society over the psychopath and his family.

6. Idiosyncrasy to Cow's Milk: Its Relation to Anaphylaxis.—Fritz B. Talbot reports two cases of pronounced idiosyncrasy to cow's milk occurring in breast-fed infants. He discusses the phenomena of anaphylaxis and points out that in certain instances it is necessary to so space the doses of the foreign protein as to sensitize and not immunize the individual. Just as when a laboratory animal has its dose of foreign protein given it at stated intervals during the process of sensitization, so much the foreign protein (in the case of the baby, cow's milk) be given the infant. This might happen when a baby was given a bottle of cow's milk only once in ten days. In other instances the first cow's milk, and all subsequent bottles, that are given the baby are vomited immediately, in which case it may be assumed that the sensitization was hereditary and present at birth. Foreign proteins may pass through the intestinal wall of infants shortly after birth, and in later infancy, when the mucous membranes are injured. Idiosyncrasy to cow's milk can be demonstrated, at least in some instances, by a specific skin test. The treatment consists in giving the infant milk from another species of animal, preferably that of the goat; goats' milk was well taken by the infants in the cases reported.

New York Medical Journal.

September 23, 1916.

1. The Psychology of Diseases of the Respiratory Tract. G. Hudson-Makuen.
2. The Hospital Treatment of Simple Chorea. Pearce Bailey.
3. Infective Pulmonary Endarteritis Occurring with Patent Ductus Arteriosus. Morris Manges.
4. Acute Anterior Poliomyelitis. Alfred Gordon.
5. Anterior Poliomyelitis: The Aftermath. Lucy Osborne Wight.
6. Occupational Specialization in the Defective. Henry M. Driedman.
7. Congenital Syphilis. Walter James Heimann.
8. The Problems of Adolescence in Relation to Social Hygiene. Harold W. Wright.
9. Bothriocephalus Latus Infestation. A. I. Rubenstone.
10. A Cystourethroscope for Diagnosis and Therapeutics. C. Morales-Macedo.

1. The Psychology of Diseases of the Respiratory Tract.—G. Hudson-Makuen emphasizes the importance of a recognition of the interdependence of specialties in medicine and of the broad general principles which should underly all specialism in medicine and states that the specialties upon which laryngology chiefly depends for its future progress and development are those of psychology and neurology. In no other specialty of medicine is the psychical element so great a factor in the causation, not only of functional, but of organic disorders as well as in laryngology. It must not be overlooked that faulty methods of breathing, vocalization, and articulation, although at first of psychical origin, frequently result in organic diseases which cannot be differentiated from diseases having purely physical bases. Many a tonsil has been sacrificed and many a turbinate bone for no other reason than that the patient is suffering from some purely psychical disability, and the sooner this fact is fully realized by the laryngologist and the rhinologist, the better it will be for all concerned. It is not enough, either in acute or chronic cases, to do operations for the correction of disturbed functions without at the same time studying the psychological aspect of the case and immediately thereafter doing something in an educational way to correct the faulty habits which accompany, either as cause or result, the condition to be modified or cured. The same principle applies to the disorders of speech. Education and re-education should always be used in addition to the necessary medical and surgical measures for the relief of disturbed respiratory phonatory and articulatory functions. The new psychology teaches not merely how to treat diseases of the special organs, but how to treat the patient himself or the reactions of the patient to these particular diseases.

2. The Hospital Treatment of Simple Chorea.—Pearce Bailey relates his experience with the hospital treatment of forty-eight cases of simple chorea. The treatment consisted in rest in bed and isolation, no communication with other patients or visitors being permitted. In certain cases cold packs were given, and in the presence of rheumatic history, and even without it, rheumatic remedies, especially aspirin, were prescribed. In a few violent cases lumbar puncture was resorted to. It was found wiser, whenever possible, to insist on three or four weeks' treatment for the purpose of re-establishing the tone of the nervous system. From his experience with these cases the writer is inclined to believe that relapses are rare among cases treated in a hospital by rest and seclusion.

3. Infective Pulmonary Endarteritis Occurring with Patent Ductus Arteriosus.—Morris Manges reports this case because of the rarity of ineffective pulmonary endarteritis, this being only the fourteenth case which has been reported or observed of which he has been able to learn. The occurrence of patent ductus arteriosus and infective endarteritis is very rare. Although the case did not come to autopsy, the clinical features agree in nearly all ways with the case reported by Hamilton and Abbott. The striking feature in this case was the mild course of the disease over a long period of observation. It was only when the patient had a rise of temperature to 104° F., and also when she had a pulmonary infarct that she was willing to consider herself sick. That infective pulmonary endarteritis should occur in congenital cardiac lesions is by no means astonishing, as the conditions which favor bacterial infection are identical with those that exist in the hearts and vessels in acquired endocarditis and endarteritis. The low grade of fever in this case and the low blood count serves to emphasize the importaance of the rule which is followed at Mount Sinai Hospital to take blood cultures of all cardiac patients who have even low temperatures. A number of cases of infective endocarditis have thus been discovered where the clinical course would not have led to a suspicion of its existence. There were no cardiac symptoms previous to the patient's illness and she had borne two children without the manifestation of any cardiac symptoms. Four additional cases are cited to show how erroneous is the view that the diagnosis of congenital cardiac disease is improbable unless there are more or less cyanosis, dyspnea and clubbed fingers, as

well as a history which goes back to early childhood. When the congenital lesions exist singly, without other complicating congenital defect, very few circulatory symptoms are present, the only evidence of them being the physical signs. This patient brings up another point which is also true of two other cases of patent ductus arteriosus referred to by the essayist, and that is the ease with which these women bore children. What is true of these women with congenital cardiac disease is also true of acquired cardiac disease. There is only one condition which gives trouble, and that is uncomplicated mitral stenosis. This view with reference to cardiac women refers to hospital patients. In private practice it is different. The prevailing views of the profession do not encourage such women to marry or have children. The poor patients, whose lives have not been made miserable by the chance of finding a murmur and whose compensated hearts have not been so needlessly and harmfully disturbed and coddled by over-solicitous physicians, usually fare better than their rich sisters. The writer does not wish his remarks to be misunderstood as too sweeping, but urges that compensated hearts should be regarded in a much more favorable light as regards marriage and pregnancy than is now the rule.

9. **Bothriocephalus Latus Infestation.**—A. I. Rubenstone reports this case which illustrates the futility of attempting to diagnose vague clinical manifestations without the aid of laboratory study. The treatment employed consisted in starvation for twenty-four hours, during which only weak tea or water was allowed. The patient then received the following prescription: Oleoresin of aspidium 45 minims, tincture of fanilla 45 minims, powdered acacia half a dram, and water enough to make one ounce. This was followed one hour later by fractional doses of calomel, one-half grain each, until three grains were administered. About eight hours later the patient sent a mass of tapeworm into the laboratory. Four fish tapeworms were entangled, varying in length from three feet six inches to five feet four inches. In a case recently reported castor oil was administered before and after aspidium and it was stated that the patient was severely ill after the treatment. This may be explained on the ground that the oil caused the absorption of some of the male fern. Oils increase the absorbability of filix-mas, and thus may lead to acute constitutional disturbances.

Journal of the American Medical Association.

September 23, 1916.

1. Sarcoma of the Intraabdominal Testis, with Report of a Case. W. W. Grant
2. The Surgical Problem of Unilateral Symptomless Hematuria: Its Cause and Surgical Relief. R. L. Payne, Jr., and William B. MacNider.
3. Comparative Results in Antirabic Treatment with the Pasteur Method and with Dessicated Virus. D. L. Harris.
4. Uremia: A Differentiation of Types. Nellis B. Foster.
5. The Value of Recent Laboratory Tests in the Diagnosis and Treatment of Nephritis, with Special Reference to the Chemical Examination of the Blood. Arthur F. Chace and Victor C. Myers.
6. A Comparative Study of Tests for Renal Function: Phenolsulphonephthalein, Nonprotein Nitrogen and Urea Nitrogen of the Blood Ambard's Coefficient of Urea Excretion, and the Test Meal for Renal Function. Herman O. Mosenthal and D. Sclater Lewis.
7. The Rôle of the Anteposed Uterus in the Causation of Backache and Pelvic Symptoms. Henry T. Hutchins.
8. Colonic Infections: Some Rarely Observed Unclassified Types. Jerome Morley Lynch and W. Landram McFarland.
9. The Paralysis of Poliomyelitis: Its Treatment in the Early Stages. H. B. Thomas.
10. A Child Weighing Twenty-five Pounds at Birth. D. P. Belcher.
11. The Cautery in Treatment of Jacksonian Epilepsy. Frederick A. Rhodes.

1. **Sarcoma of the Intraabdominal Testis.**—W. W. Grant. (See MEDICAL RECORD, July 1, 1916, page 38.)

2. **The Surgical Problem of Symptomless Hematuria, Its Causes and Surgical Relief.**—R. L. Payne and William B. MacNider. (See MEDICAL RECORD, July 1, 1916, page 39.)

3. **Comparative Results in Antirabic Treatment.**—D. L. Harris. (See MEDICAL RECORD, June 17, 1916, page 1111.)

4. **Uremia: A Differentiation of Types.**—Nellis B. Foster. (See MEDICAL RECORD, July 1, 1916, page 31.)

5. **The Value of Recent Laboratory Tests in the Diagnosis and Treatment of Nephritis, with Special Reference to the Chemical Examination of the Blood.**—Arthur F. Chace and Victor C. Myers. (See MEDICAL RECORD, July 1, 1916, page 31.)

6. **A Comparative Study of the Tests for Renal Function.**—Herman O. Mosenthal and D. Sclater Lewis. (See MEDICAL RECORD, July 1, 1916, page 31.)

7. **The Rôle of the Anteposed Uterus in the Causation of Backache and Pelvic Symptoms.**—Henry T. Hutchins. (See MEDICAL RECORD, June 17, 1916.)

8. **Colonic Infections: Some Rarely Observed, Unclassified Types.**—Jerome Morley Lynch and W. Landram McFarland. (See MEDICAL RECORD, July 8, 1916, page 80.)

9. **The Paralysis of Poliomyelitis: Its Treatment in the Early Stages.**—H. B. Thomas calls special attention to the advantages of less vigorous and more closely supervised treatment in the case of weak muscles. He agrees with Lovett and others who have pointed out that the greatest danger to the convalescing infantile case is fatigue of the weak or paralyzed muscles. These weak and paralyzed muscles are sick muscles, with deranged nerve and blood supply, and should be treated as such. Sick muscles tire easily, not only by active use, but also by passive use and massage, and when they tire they are less likely to functionate the following day. Their ultimate usefulness is also harmed. In each case a study should be made of the result following treatment. It is better to undertreat rather than to overtreat. Fatigue should be avoided.

10. **A Child Weighing Twenty-five Pounds at Birth.**—D. P. Belcher reports this case and states that a search of the literature shows that of all the cases cited in which the weight of the infant was unusual it has been less than in this instance. This case is remarkable because it was a girl child, and the maternal measurements, taken after delivery, were not abnormal save for circumference at the hips, which is rather large. The baby was stillborn, but perfectly formed. It was born without mechanical assistance and caused but slight perineal laceration. The greatest difficulty was encountered in the delivery of the shoulders. The measurement across the shoulders was 12 inches and the length 28 inches. The nearest approach to these measurements found in the literature occurred in a case reported by Ortega, in which the measurement across the shoulders was 7½ inches, the length 27 inches and the weight of the child 24.8 pounds.

11. **The Cautery Treatment of Jacksonian Epilepsy.**—Frederick A. Rhodes reports a case of Jacksonian epilepsy, giving a history of having been injured twice in the right motor area. The motor area was removed by cautery with such satisfactory results that the writer has continued its use in other cases with equally good results. He finds removal of the motor area by the cautery much more satisfactory than by the knife as it is followed by less bleeding and there is less possibility of as many adhesions. There is little doubt that the motor area of the opposite side takes on the functions of the destroyed area. The operation should produce a paralysis of the affected part by which one knows that he has been successful in cauterizing the right area. This paralysis disappears rapidly after the first week.

The Lancet.

September 2, 1916.

1. An Experimental Study of Latent Tuberculosis. Chung Yik Wang.
2. The Diagnosis of Enteric Fevers in Inoculated Individuals by the Agglutinin Reaction. Georges Dreyer and E. W. Ainley Walker.
3. A Method of Drop-measuring Liquids and Suspensions. R. Donald.
4. A Note Upon the Employment of Blood Transfusion in War Surgery. Edward Archibald.
5. Three Cases Illustrating the Functional Consequences of Head Injuries. T. E. Harwood.
6. The Heart and Active Service. Treatment of Convalescent Soldiers. H. J. Seeuwen.
7. The Use of Picric Acid in War Surgery. T. F. Brown.
8. The Shiah Pilgrimages and the Sanitary Defenses of Mesopotamia and the Turco-Persian Frontier. F. G. Clemow.

2. The Diagnosis of Enteric Fevers in Inoculated Individuals by the Agglutinin Reaction.—Georges Dreyer and E. W. Ainley Walker state that in a certain number even of the mildest cases of these infections the rise and subsequent fall in the agglutinin titre are so definite that the diagnosis could never be in doubt. In other cases the rise and fall of the curve are much less marked and differences of opinion may exist as to whether the case is one of active infection or not. In order to assist in the elucidation of such cases the following points are of importance in the interpretation of the agglutinin curves: 1. The maximum agglutinin titre of active typhoid or paratyphoid infection occurs between the sixteenth and twenty-fourth day of the disease, and most frequently about the eighteenth to twentieth day. 2. If the maximum is reached at what appears to be an earlier date, it is important to institute a careful inquiry into the actual date of onset of the illness. 3. If it is clear that the maximum falls markedly outside the limits given above (day 16-24) a diagnosis of typhoid or paratyphoid fever should not be based on a rise in titre of only moderate extent—*i.e.* a 100 or 200 per cent. increase in agglutinin titre. Because experience is not at present sufficient to exclude the possibility that a rise of this extent may be due to other ferbrile conditions. 4. In following out the titration of the patient's serum on several successive occasions it will frequently be found that the maximum has fallen between two dates of observations. And two successive observations at about the same level do not mean that the curve is stationary at this point, but merely that the maximum has occurred between there. Similarly, if the two highest observations are at different levels, it does not follow that the highest titre observed represents the maximum of the agglutinin curve. But it does follow that the maximum has occurred between these points. 5. In inoculated persons among whom mild and atypical attacks of typhoid (or paratyphoid) fever are likely to occur with fever of perhaps only a few days' duration, and with few if any of the usual symptoms, the diagnosis of typhoid or paratyphoid fever must not be rejected without the most careful consideration. As far as experience at present goes, if a regular rise and subsequent fall, even of only 100 or 200 per cent., occurs in the typhoid (or paratyphoid) agglutinin titre of the serum, and its maximum clearly falls between the sixteenth and twenty-fourth day from the onset of illness, the case is likely to be one of typhoid (or paratyphoid) infection.

6. The Heart and Active Service.—H. J. Seeuwen has treated some 60 per cent of the most serious cases of heart trouble in convalescent soldiers by a combination of physical training and electricity. All these men were given daily open-air exercise by Major McKenzie's method, which includes gymnastic training and route marches. The light training includes slow movements of limbs and trunk and some deep breathing exercises; the full training consists of more vigorous movements and of running and jumping. For the route marches there is a light one, a walk at easy pace for about two miles, and the full route march, which is a sharp walk in quick time for from one-half to one hour. The electrical treatment consists of a daily faradization with a light current of long wired coil over the thyroid gland and heart. This treatment is often used on the continent for exophthalmic goiter. It consists in an application with two-inch botton electrodes for three or four minutes on the thyroid, followed by three or four minutes with one electrode over the heart region, the other in the neck. Deep applications of *x*-ray on the thyroid gland may also be very useful, and especially on those men with hypertrophied thyroid (25 per cent. out of the total). Tachycardia, excessive sweating, and nervous uneasiness, are the symptoms which are the most quickly and completely removed. The results obtained after an average of two months' treatment were as follows: Of the 60 men, 14 were quite fit and returned to their unit; four others are fit and will return soon; others are on full physical training and will be fit for return in a short time; over a third, or 35 per cent., will be able to return to the firing line. From 10 to 15 per cent. have to be discharged; the other 50 per cent. have improved and may be able for home service.

7. The Use of Picric Acid in War Surgery.—T. F. Brown treated 3,000 cases during the Gallipoli campaign with picric acid, since learning that this agent is four times more potent than carbolic acid in bactericidal properties. The routine treatment consists in the application to superficial wounds of 1 per cent. picric acid solution applied on thin gauze. The wound is thus left practically exposed to the air. Usually one dressing a day was sufficient. Suppurating sinuses were syringed with 0.5 to 1 per cent. of the solution twice daily, and hydrogen peroxide solution was used every two or three days to remove the débris. Arm and leg baths of a 0.5 per cent. solution for thirty minutes were used for suppurating fractures and crushed tissues, with an occasional bath of hypertonic saline as a change. A 1 per cent. solution was found too strong for the delicate epithelium of new skin. The author believes that his experience justifies the opinion that picric acid solution kills bacteria without corroding effect and prevents suppuration; it stimulates granulation of the tissue; it has marked anodyne properties, eliminating the need of aspirin or morphine in most cases; it saves much time by dispensing with hot fomentations, cotton wool lint, gutta percha tissue, etc. It may be used for the sterilization of the skin in surgical cases. It shortens the convalescent period. The contraindication to its use usually cited are, first, coagulation of the tissue; this with the solutions used is so slight that it is unnoticeable and there is no evidence of retardation in healing. A second contraindication is supposed to be its poisonous effect. In the 3,000 cases treated not one showed any signs of poisoning. A third objection is the discoloration of the skin; this is persistent, but the muscles and subcutaneous tissues apparently do not stain.

British Medical Journal.

September 2, 1916.

1. The Distribution of Typhoid and Paratyphoid Infections Among Enteric Fevers at Mudros. C. J. Martin and W. G. D. Upjohn.
2. Brilliant Green and Telluric Acid in the Isolation of Typhoid Paratyphoid Bacilli. Archibald Leitch.
3. The Local Treatment of Burns on a Naval Hospital Ship. R. J. Willan.
4. On the Extension Treatment of Gunshot Fractures. E. W. Hey Groves.
5. The Mechanism of Saline Dressings. Kenneth Taylor.
6. Recent Outbreaks of Acute Poliomyelitis. A. Gardner Robb.
7. Three Cases of Bubonic Plague Arising in England. A Rendle Short.

1. **The Distribution of Typhoid and Paratyphoid Infections Among Enteric Fevers at Mudros.**—C. J. Martin and W. G. D. Upjohn have tested the serums of 627 patients and 151 normal persons at the large general hospital at Mudros during November and December, 1915. They give the details of the tests with varying degrees of serum dilutions. Of the 627 cases, the total number in which agglutination with one or more of the bacilli of the enteric group was observed was 464. Of these, 213 serums agglutinated *B. paratyphosus* A and gave definite evidence of paratyphoid A infection. For parallel reasons 113 might be regarded as paratyphoid B infections. The determination of the number of typhoid infections is not so simple. Though typhoid agglutinins were found in 138 cases, these were not necessarily typhoid fevers, for all but five had been inoculated. These five exceptions were placed to the credit of typhoid infection. In seven other cases *B. typhosus* was isolated from the blood or excreta either during life or after death, leaving 125 cases in which the serological observations might be interpreted either by previous inoculation or by recent infection. There were in this group a number of cases which subsequently proved to be dysentery, pneumonias, malaria, influenza, or relapsing fever, and also 35 cases of epidemic jaundice, in which observations were made because there was a widespread impression at first that the disease was associated with paratyphoid infection. After eliminative procedures had been applied it was found that the number of cases whose serum agglutinated only *B. typhosus* was 25, or 7 per cent., while 61 per cent. agglutinated paratyphoid A, and 32 per cent. paratyphoid B. If it is assumed that the distribution of typhoid fever during the whole period of the Gallipoli campaign is that which this study shows, the invalidating rate from typhoid fever represents less than one-half per cent. of the total sickness during the period. This result may presumably be attributed to antityphoid inoculation, since conditions were not unfavorable to the spread of enteric disease.

3. **The Local Treatment of Burns on a Naval Hospital Ship.**—R. J. Willan describes the plan of treatment employed in 28 cases of burns occasioned by an explosion on a naval vessel. Of these 28 cases, the burns were septic in 15. Five of the series died, four of these deaths being due to acute sepsis. The keynote in the treatment of burns is the prevention of sepsis. A burn must be regarded and treated with exactly the same care as a fresh operation wound. Further sepsis added to an already septic burn of the fourth degree and upwards, will probably kill the patient. Picric acid as a first dressing has been found to be unrivaled. For an aseptic case, equal parts of vaseline and boric ointment, plentifully spread upon white lint, makes a good, comfortable, and easily removed subsequent dressing. Immediately a burn is known to be septic hot boracic fomentations should be begun. Unless loosely applied a roller bandage put on at the first dressing will cause severe pain and it may lead to gangrene. To prevent this a new outside dressing, which is simple, efficient, comfortable, and quickly applied and changed is used. It is made of a sheet of antiseptic wool (corrosive woodwool or alembroth) with a layer of gauze on either side, folded over the burn. If it is too tight any one near can loosen the tape, which is an easy matter compared to the finding of the actual point of constriction of a too tight roller bandage.

5. **The Mechanism of Saline Dressings.**—Kenneth Taylor points out that, while the use of saline solution for dressing has come into very extensive use in England and France, there has been but little discussion of the theoretical and experimental evidence indicating its use as a dressing for wounds. In discussing what may be expected from the use of a strong saline solution in a wound, he says that by a process of osmosis water is extracted from intact cells, blood vessels, and closed lymph spaces. The same interaction increases the sodium chloride content of the intact cells and those lymph spaces which may be slowly drained. When a strong salt solution is diluted or withheld, a rapid increase of water within the cells is to be anticipated. If continued for a long period, the colloid constituents of cells imbibe water and the basis of edema is established. A small amount of dialyzable albuminous substances will emigrate from the cells, due to the absence of such substances in the dressing solution. This emigration will be unaffected by the sodium chloride concentration of the solution. By a process of diffusion an interchange of sodium chloride and water will occur between the free fluids in the intercellular spaces and cut lymph channels, which are in contact with the dressing solution, resulting in a concentration of the salt in these fluids. The sodium chloride concentration will not affect the rate of diffusion of these substances, nor will an outward current be produced by interchange of sodium chloride and water and thus carry with it the free lymph. The normally brisk reaction of secretion upon which would depend the increase in antibacterial substances may be seriously inhibited by the excess of sodium chloride in the cells. The migration of leucocytes will be checked, the tryptic digestion of sloughs suppressed, and the antibacterial substances so altered as to become inactive. The physiological saline solution is not open to these objections. Hypotonic saline solutions are likewise open to serious objections. The writer has seen hypertonic saline dressing used extensively and has not been convinced that it produces the results claimed for it. The theoretical indications for the use of salt solutions appear to be based on an untenable hypothesis of the structure of the tissues about the wound and an erroneous interpretation of physical and physiological laws. The chief beneficial character held by strong salt solution, aside from the cleansing property possessed by all watery solutions, is their mild antiseptic action.

7. **Three Cases of Bubonic Plague Arising in England.**—A. Rendle Short reports that two certain cases, and one probable, of bubonic plague have been treated at the Bristol Royal Infirmary between July 30 and Aug. 5, 1916. Two of the patients and the father of the third were workers in a rag factory in a poor part of the city. The plague bacilli have been demonstrated in a rat found in the factory and the theories that suggest themselves in regard to the source of infection are three: 1. Infection from rags, though it is said that the rags do not come from abroad. 2. Infection carried by rats escaping from ships entering the port. 3. Deliberate inoculation of city rats by an enemy. If this latter theory should be true other towns may have a visitation of rat plague, with human cases following.

La Riforma Medica.

August 16, 1916.

Kenotoxins.—Ferrannini and Fichera have been studying the fatigue toxins of the frog. They refer to the work of pioneers in this field, notably Ranke, Kronecker, Mosso and numerous others down to the time of Weichardt, who is the chief contemporary authority, and whose technique the authors have closely followed, although they selected the frog or rather one muscle of the frog, the gastrocnemius, the stimulation coming from an induced circuit with automatic closure, and the contractions recorded on a myograph. It is therefore necessary only to tire the muscle progressively and

study the numerous myograms for evidence of fatigue poisoning. In the first experiments no outside toxins are injected. The contraction waves become shorter and shorter with fatigue, but up to the last show perfect regularity, even in the so-called line of exhaustion. If a little kenotoxin is injected as the experiment begins, the influence on the myograms is shown in various ways and the line of exhaustion is reached in 4 instead of 10 minutes. The combined results are stated as follows: The presence of kenotoxin injected subcutaneously reduces notably the amplitude of the muscle contractions and augments considerably the period of latency in the same. It both shortens and renders irregular the curve of muscular fatigue, and depresses notably the excitability, contractility and force of the muscle.

History of the Study of Malaria in Rome.—Marchiafava does not go back beyond his own first studies, published in 1877. He took issue with some of the prevalent theories on the causation of melanemia. In 1879 he published accounts of studies of the blood in the spleen and bone marrow of melanemic children. One year later Laveran discovered the parasite and its power of attacking the red blood globules. For a number of years Laveran was busy with studies and demonstrations of the parasite, but it was not until 1890 that rapid methods were evolved for its prompt recognition for diagnostic ends. However, as far back as 1885 Golgi had studied the plasmodium independently both as to its morphology and its method of causing various types of disease. This scientist was the first to study Roman malaria from this viewpoint. Also, the author and Celli had been making studies along the same line and were the first to term the parasite the plasmodium malariæ. The author had really been studying the parasite since 1883, so that with Celli and Golgi he represented the beginnings of the Italian school of malaria study in distinction with the French school as founded by Laveran. Moreover, the Italians studied native malaria. Because Marchiafava really studied the parasite without knowing its nature, some would give him credit alongside of Laveran for priority, his work antedating that of the latter. However, from 1885 to 1889 notable Italian scientists opposed the author and Golgi in regard to the parasitic nature of malaria. They included Tommasi-Crudeli, Maragliano, and Mosso. In 1889 the author submitted new demonstrations of the parasite and its pathogenicity, and some years later Koch corroborated the authors' finds in connection with his work in Africa. It was now realized that different plasmodia produced different types of malaria. While Laveran is credited with discovering the plasmodium as such, Golgi receives credit for isolating the causes respectively of the tertian and quartan fevers, while the author has an undisputed claim to the discovery of the parasite of the tropical estivoautumnal fever of the Italians. At a later period the author, in addition to the parasite of the quotidian, has identified himself with the demonstration of a tertian type which predominates over all others in importance. He has received full credit for discovering the causes of the fevers of the Roman Campana. His treatise was translated into English by the Sydenham Society and he wrote the article on malaria for Wood's Twentieth Century Practice. Thus for nearly 40 years the author has been the leading Italian authority on Roman malaria.

La Presse Médicale.

August 31, 1916

Infectious Icterus with Febrile Recrudescence.—Garnier states that primary infectious icterus sometimes appears in two stages. Jaundice is at the start accompanied by fever, the latter subsiding; but before the icteric tint disappears fever recurs. It is to this type of disease that Mathieu and Weil append the term infectious icterus with febrile recrudescence. A soldier of 23 was admitted for intense icterus of a week's duration. It had begun with headache, pain in the limbs, diarrhea, and vomiting. He had been invalided for gastric disturbance. The man seemed quite ill, his countenance anxious, respiration rapid, medium febrile temperature, fever blisters on the lips, mahogany colored urine. Next day he was considerably improved, and improvement persisted, save that for a number of days icterus remained unchanged. It then began to vanish, but while still perceptible the temperature began to rise in connection with myalgia. Icterus did not increase, but its disappearance was arrested. The patient perspired profusely and felt prostrated. After six days the second febrile movement reached a crisis. The urine was absolutely free from biliary coloring matter. Fever lasted three days longer and there was a final clearing up of the icterus. There had been 32 days of jaundice, and save for seven consecutive days of apyrexia the patient had had more or less fever, which had been around 40° C., for four consecutive days in the second febrile period. Throughout, the urine was scanty. On one day it was black coffee color. A study of the urine showed that the unknown infection had caused much disturbance of the liver on both febrile periods, more marked, however, on the former. In the febrile recurrence bile pigment may be present in the feces. In a second patient the febrile recurrence came when icterus was reduced to conjunctival tints. The recrudescence may be either benign or severe. Naturally this phase presents the greatest interest. Fever appears, the urine becomes scanty, and a biliary diarrhea is sometimes seen. These occur simultaneously, and food and medication may be excluded as causes. In fact, the milk regimen generally recommended is seen to exert a favorable influence on the condition. The patients often behave like typhoid cases, and some writers have associated the two clinically, but all diagnostic tests have proved the complete absence of typhoid in these cases, 23 of which were tried out on the typhoid theory. In a few cases paratyphoid bacilli were present in the blood, as shown by agglutination tests. Despite this fact the bacterial causation of the disease is regarded as unknown. Whatever it is, it causes a biligenic reaction.

Case of Acute Yellow Atrophy of the Liver Treated by Injections of Sodium Bicarbonate; Recovery.—C. P. Longridge, Royal Army Medical Corps, relates the case of a soldier aged twenty-five who having reported ill at Gallipoli was sent to a hospital in Egypt. The symptoms pointed wholly to epidemic catarrhal jaundice, which was prevalent at that time. In a few days severe symptoms appeared, including syncope and vomiting. Icterus became marked. Liver dullness increased. Received by the rectum glucose injections, with sodium bicarbonate by the mouth. Leucin and tyrosin were present in the urine. Symptoms grew worse and delirium set in. Glucose enemata no longer practicable. Soda injected hypodermically. Patient was now unable to receive food, and urine was almost suppressed. Diagnosis of acute yellow atrophy of the liver made in consultation. The sole dependence was placed on the bicarbonate injections. One week after the patient was admitted to hospital he began to improve, the liver dullness rapidly receding. The man was discharged cured on the thirty-third day.—*Journal of the Royal Army Medical Corps.*

Book Reviews.

POLISH FOR USE IN THE CLINIC. By the Rev. FRANCIS BIMANSKI, Cook County Hospital Chaplain, Chicago: Published by the author, 1076 West Twelfth Street. Price, 5 cents; $2 per hundred.

ITALIAN FOR USE IN THE CLINIC. By the Rev. FRANCIS BIMANSKI, Cook County Hospital Chaplain. Revised edition. Chicago: Published by the author, 1076 West Twelfth Street. Price, 5 cents; $2 per hundred.

THESE are two very practical little phrase books for use in examining Polish or Italian patients. They contain lists of the simplest sort of questions in the fewest words possible, which demand no extended answers, but simply yes or no, numbers being indicated by the fingers and the location of pain or other subjective symptoms being shown by pointing. The pronunciation of the questions (which are in both English and Polish, or Italian) is indicated by a simple phonetic system in following which the physician cannot fail to make his Polish or Italian patient understand. The little pamphlets ought to be of the greatest use in the dispensaries and hospitals of every town where there is a large foreign population.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia and Diagnosis in the Jefferson Medical College, Philadelphia; Assisted by LEIGHTON F. APPLEMAN, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Price, $6.00 per annum. Philadelphia and New York, March 1, 1916.

THIS number of Progressive Medicine contains chapters on: Surgery of the head and neck, by C. H. Frazier; Surgery of the thorax, excluding diseases of the breast, by G. P. Müller; Infectious diseases, including acute rheumatism, croupous pneumonia, and influenzia, by J. Rühral; Diseases of children, by F. M. Crandall; Rhinology and laryngology, by G. B. Wood; and Otology, by T. L. Saunders. This publication is so well known that it is not necessary to do more than draw attention to the current number.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the Year's progress in medicine and surgery, under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume I. GENERAL MEDICINE. Edited by FRANK BILLINGS, M.S., M.D. Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago. Series 1916. Price, $1.50. Chicago: The Year Book Publishers.

AGAIN the Practical Medicine Series comes forward to help the busy practitioner, to gain the newest information in the various realms of medicine. "General Medicine" is a most satisfactory compend of the Year's literature.

MENTALLY DEFICIENT CHILDREN, Their Treatment and Training. By G. E. SHUTTLEWORTH, B.A., M.D., etc., and W. A. POTTS, M.A., M.D., etc. Fourth edition. Price, $2.50 net. Philadelphia: P. Blackiston's Son & Co. 1916.

THE fourth edition of this work is chiefly notable for the changes made necessary by the recent passage of the Mental Deficiency Acts for the British Isles, exclusive of Ireland, and the revision of the Elementary Education Act. A very interesting historical summary fills the first chapter and a rather elaborate explanation of the acts alluded to above and their applications takes up the next two chapters. Then follow the pathology, etiology, diagnosis and prognosis of the various forms of mental deficiency—two excellent chapters. A chapter has been given to the psychopathies of childhood, which is a new departure from the previous editions and which had better have been omitted or made much longer. Thus the description of dementia precox conveys little or no information. The chapter on the medical examination of defective children is good, especially the inclusion of Pasmore's "Flag" chart, but the exclusion of the Binet-Simon tests on the ground that the "space will not permit" does not seem justified. The closing chapters, devoted to the care and training of such children, are very valuable; more might have been said about sterilization, but what is said has the merit of truth. A fairly complete bibliography is appended, the book is well indexed and a number of the American institutions for the feebleminded are listed in an appendix. Altogether the work is a notable addition to the literature of the subject.

CEREBELLAR ABSCESS, Its Etiology, Pathology, Diagnosis, and Treatment, Including Anatomy and Physiology of the Cerebellum. By ISIDORE FRIESNER, M.D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital and Post Graduate Medical School, New York, and ALFRED BRAUN, M.D., F.A.C.S., Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital, Adjunct Professor of Laryngology, New York Polyclinic, Adjunct Otologist, Mt. Sinai Hospital. Price, $2.50 net. New York: Paul B. Hoeber. 1916.

CEREBELLAR abscess, while a fairly common condition, is by no means readily recognized, especially in the early stages. When we consider the heavy mortality without surgical interference, amounting to nearly a 100 per cent., and the fairly good prognosis with operation, the importance of diagnosis becomes obvious. The present monograph on the subject by Drs. Friesner and Braun is excellent, both in its subject matter and style. The book, too, is attractively gotten up, illustrations are numerous, and there are many full-page plates. The first two chapters deal with the anatomy and physiology of the cerebellum. In discussing the physiology there is no attempt to be dogmatic, a clear working knowledge of the fairly well established facts only is presented in a concise way. There is a good chapter on etiology and pathology. The longest and most useful chapter is the one dealing with symptoms which is very complete, describing the methods of eliciting them, and explaining their significance. The book closes with a chapter on prognosis and treatment which is also good. A bibliography, not complete, but very extensive, is appended. There is also a good index, although this is scarcely necessary, the subject matter is so logically arranged. The book as a whole is an excellent one; neurologists and otologists should not be without it, and there is much to interest the general practitioner and the surgeon.

SKIN CANCER. By HENRY H. HAZEN, A.B., M.D., Professor of Dermatology in the medical department of Georgetown University; Professor of Dermatology in the medical department of Howard University; sometimes Assistant in Dermatology in the Johns Hopkins University; member of the American Dermatological Association. With ninety-seven text illustrations, and one colored frontispiece. Price, $4. St. Louis: C. V. Mosby Company. 1916.

A GREAT variety of tumors appear in the skin, and of these the carcinomata are the most important. They vary enormously in morphology and clinical course, from the basal-cell type which sometimes cure themselves to the melanotic tumors which are among the most serious of the neoplasms which appear in the human body. The author of this volume has prepared a very useful book in which much information concerning tumors of the skin can be readily obtained. It is provided with an excellent bibliography, the newer ideas are incorporated, and the only thing to criticize is the reproduction of the photomicrographs, which is very bad. The drawings are satisfactory and the gross photographs are fair. The book ought to furnish a valuable aid for the practitioner of dermatology or the student of dermatological pathology.

THE NATIONAL FORMULARY. Fourth Edition. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from September 1, 1916. Published by the American Pharmaceutical Association, 1916.

THE authoritative formulary, extra to the Pharmacopoeia, containing the preparations of a non-secret character which were commonly prescribed by physicians under incomplete or varying formulæ is in its fourth addition. This edition assumes its place as a legal standard and has been prepared with a view to that position. It is a remarkably exhaustive and accurate compendium of the formulæ set down and reflects great credit on its compilers. The work provides a valuable adjunct to the pharmacopoeia and of course, is a very useful book of reference, considerably more useful to the medical man, indeed, than is the other work of which this is sometimes called a companion.

Society Reports.

THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-third Annual Meeting, Held in Washington, May 9, 10 and 11, 1916.

THE PRESIDENT, DR. JAMES ALEXANDER MILLER OF NEW YORK IN THE CHAIR.

Tuesday, May 9—First Day.

President's Address.—Dr. JAMES ALEXANDER MILLER of New York gave this address on "Some Physiological Effects of Various Atmospheric Conditions." He said that atmospheric environment was an interesting and important factor in many medical problems, in which no group of physicians was more directly interested than were the members of this association, and, moreover, none in this country had contributed more than they had in the advancement of this phase of medical knowledge. It was for this reason, and also as the result of his own recent experience of three years in the work of the New York State Commission on Ventilation, that this topic had been chosen for presentation. It was his purpose to approach the subject from the physiological point of view in the hope that by a consideration of certain fundamental principles a clearer vision might be afforded to the problems involved in the effect which atmospheric conditions exert upon the comfort and efficiency of mankind, as well as the rôle they played in the causation, prevention and treatment of disease. The respiratory function of air focussed the attention of physiologists for generations. Consequently its effect upon the human body was interpreted solely in respiratory terms, and rules of hygiene were formulated upon this basis. Within doors inadequate ventilation was gaged in terms of deficient oxygen, or of excess of carbon dioxide, or later of the presence of certain volatile poisons in the air that was breathed. Out of doors, the general effect in health and disease produced by variations in climate or of its temporary representative, the weather, was also ascribed solely to their influence upon the air they breathed. To the truthful part of this hypothesis they all paid tribute in the joy of the full deep breath and upon a fine crisp morning. Certain substances in the air such as dust, bacteria and odors, were recognized as playing a part in its hygienic properties, but recent investigations appeared to demonstrate that under ordinary conditions they were not factors of sufficient importance to materially effect the health. In general it might be accepted that the chemical or bacterial content of the air within any likely degree of variation was not of material moment either hygienically or physiologically. Researches of the past decade had all led to the appreciation of the physical as opposed to the chemical feature of the air as the important physiological factor. Adequate heat regulation of the body depended largely upon the capacity for proper heat elimination which was accomplished in three principal ways which varied in their relative importance according to varying external conditions. (1) Evaporation of water from lung and skin surfaces. (2) Direct conduction by contact with a cooler medium. (3) Direct radiation to a cooler distant surface. Taking, therefore, these more important conditions together they found that the various factors reduced themselves finally to four, namely, temperature, humidity, barometric pressure and velocity of air movement. Fully as he appreciated the work of men doing for the good of the child, there had been a considerable amount of loose medical thinking upon this subject, and they were sorely in need of more scientific data based upon accurately observed clinical phenomena. Fully as he appreciated their shortcomings, he said he was not entirely in sympathy with the popular denunciation of the ventilating engineers and their artificial systems. He was convinced that by a rational system combination of open windows, a good heating plant and a proper air exhaust system when necessary, that practically any desired condition of indoor air might be obtained. The two chief faults appeared to be too high temperature and too little variation in temperature. In closing Dr. Miller made the suggestion that by breaking up into its component parts the heterogeneous mass of physical and physiological factors now included in the term "fresh air treatment" and studying the effect of each, they might be able to reach a point where the proper atmospheric conditions might be intelligently applied to the suitable case of disease and results obtained which would be far more satisfactory than at present, both from a clinical and scientific point of view.

Some Features in the Control of Typhoid Fever in New York State.—Dr. LINSLY R. WILLIAMS of Albany, N. Y., presented this communication, in which he said that the control of typhoid fever by the sanitary authorities consisted of a study of the source of infection and application of known methods of control. The most frequent sources of infection were the water supply, milk, carriers, and contact. Steady progress in improving the water supplies had caused a constant diminution in the number of cases and deaths from typhoid fever, and water-borne typhoid was now far less common than it was fifteen years ago. The reports of epidemics of typhoid fever of milk-borne origin continued. During the eighteen months ending Dec. 31, 1915, there were 111 cases of typhoid fever with 14 deaths due to milk-borne infection. Carriers played a far more important part than was formerly assumed. Until the past year practically no intensive epidemiological work was done by the New York State Department of Health, but during the past year over 20 carriers of typhoid had been detected and placed under observation and supervision. Numbers of persons still developed typhoid fever as a result of carelessness in the care of a typhoid fever patient at home. The methods of control were obvious. The water supply should be above suspicion—filtration or chlorination when necessary; the milk should be pasteurized efficiently to prevent milk-borne infection; and carriers should be determined and prevented from carrying on any work which brought them in contact with food. Acute cases should have proper care—given hospital care if possible to prevent the risk of infection to other members of the family. All persons exposed in the family should be vaccinated against the disease. All the discharges should be promptly disinfected.

Hydrology in Military Practice.—Dr. GUY HINSDALE of Hot Springs, Va., said that he had recently received a letter from Dr. Margnat of Vichy in which he described the effects of balneological treatment to the troops in the present war. In case the springs belonged to the Government, the soldiers sent for treatment were under the rules in force in military hospitals; but in other cases arrangements were made with the private owners for the use of the establishment as might be required. The mineral spring hospitals received, first, soldiers and sailors in active service; next, soldiers and sailors in non-active service, either invalidated or retired; and finally officials in the colonial or custom house or the forestry service. Cases sent for treatment were subjected to selection by army surgeons and were restricted to those in which ordinary means of treatment had been used during a sufficient length of time without success. They might, therefore, be considered chronic cases. It was interesting to note that bath trains were now used by the armies in the field. These were in use in Austria and Hungary and also in Serbia, doubtless as well in Germany and France. They were provided with a sterilizing equipment, usually a refrigerator car into which steam was introduced. When baths were required, the hot water was obtained from the locomotive. One of these trains had two cars with 30 bath tubs each, two tank cars to supply the water, one car for undressing, four freight cars with clean linen, a sleeping car for the personnel of the train, and two or three cars for the disinfection of clothing. This arrangement permitted 1200 men in the course of 10 hours to take a shower bath and have all their clothing sterilized. Even in the trenches it was possible to have needle shower baths. In the United States, as in England to-day, it would doubtless be possible to arrange for the use of privately owned spas for military purposes if it should ever become necessary.

Hereditary Hemorrhagic Telangiectasia, with Report of Two Families and a Review of those Previously Recorded.—Dr. WALTER R. STEINER of Hartford, Conn., called attention to a syndrome which presented telangiectases associatd with hemorrhages. This was first described by Legg in 1876, and was made a clinical entity by Rendu twenty years later. It was an hereditary affection, attacking both sexes equally, and being transmitted alike by both. Pathologically it had been but little investigated. The cautery was the best method of treatment for the troublesome, bleeding telangiectases. Twenty families had been recorded. An account of two additional families was reported, and in

one of them the syndrome was traced through five generations.

Abscess of the Lung Following Operation on the Tonsils and Upper Air Tract.—Dr. CHARLES W. RICHARDSON of Washington, D. C., said that in previous papers he had called attention to this serious complication. When one considered the nature of the wound left after a complete tonsillectomy, the wonder was not that serious infection took place occasionally, but that such results were comparatively rare. In conversation with workers in this field, he had had narrated to him several cases that had occurred of septic infarct of the lung with resulting abscess which had never been reported, and wherein the condition was never recognized until the resulting pulmonary abscess had formed. The reason why this complication was not more frequently reported was probably two-fold: viz., Firstly, most operators, as workers in other fields of human endeavor, prefer to report their successes, to minimize their untoward results and forget them; secondly, the serious symptoms of pulmonary infection were not always immediate, were frequently indefinite and not recognized, and the patient was discharged by the operator with the tonsillar wound healed. When the pulmonary evidence became more pronounced the internist was called into attendance, and the operator probably never heard of the untoward pulmonary complications. The causation of pulmonary abscess secondary to tonsillectomy was in all probability through embolism or infection of the lung. At the time of operation a large number of veins were opened, and these might remain patulous for several days. Septic clots or septic material might thus be carried into the lungs. After reporting several cases Dr. Richardson said that one of the objects in presenting the paper was for the purpose of again calling to the attention of the profession the fact that the performance of tonsillectomy was not the simple innocent operation that the laity and many of the internists seemed to consider it.

Appendicitis and Pulmonary Tuberculosis.—Dr. HUGH M. KINGHORN of Saranac Lake, N. Y., read this paper. He said that the facts which were presented in this communication were obtained from his cases of pulmonary tuberculosis which were treated at Saranac Lake, N. Y., by the usual open-air method from October, 1905, to December, 1914. The majority of the cases of appendicitis occurring in patients with pulmonary tuberculosis had the usual classical symptoms. During this period he treated 674 cases of well established pulmonary tuberculosis, and all were under climatic treatment at Saranac Lake. Of this number there were 393 males and 281 females. The total number of cases of appendicitis in the 674 patients was 38 5/6 per cent. Of this number, 26 were males and 12 were females. Sex seemed to play an important part, as the disease occurred in males more frequently than in females, and there was as yet no satisfactory explanation for this. Of the 25 cases that underwent operation there were two deaths, 8 per cent. All of the 25 cases seemed to act well during the operation, and there were no deaths on the operating table. The mortality of this series of 38 cases (operative and non-operative cases) was 5.2 per cent. (That was, two deaths in 38 cases.) Of the acute cases that underwent operation there was a mortality of 11.1 per cent. (1 death in 9 cases). Of the interval operations there was a mortality of 6.2 per cent. (1 death in 16 operations).

Wednesday, May 10—Second Day.

VICE-PRESIDENT PHILIP KING BROWN OF SAN FRANCISCO IN THE CHAIR.

The Diagnosis of Pulmonary Tuberculosis Without the Stethoscope.—Dr. H. LONGSTREET TAYLOR of St. Paul, Minn., read this paper. He said that the successful treatment of pulmonary tuberculosis depended primarily upon an early diagnosis. This statement had been made so often and in such a variety of ways that its repetition became trite, and yet the enormous importance of the subject made it necessary to call the attention of the profession to these old axioms again and again, and by repeated blows try to drive the nail home. The morbidity caused by tuberculosis was enormous. If recognized and untreated the morbid process advanced, and constitutional strength became more and more impaired by the progress of the disease until the prognosis was absolutely hopeless. This disease, on account of its insidious onset, deluded its victims into believing that they were not seriously ill, and did not require the services of a physician. In this class of cases, and their name was legion, the profession could in no wise be held responsible for the late diagnosis. Many patients, too, were reluctant to go to a physician lest their fears should be confirmed, and they would leave the consultation room knowing that they were victims of the great white plague. The number of unrecognized cases might be demonstrated in various ways, by autopsies of persons who had died of other diseases, or who had met violent deaths, which showed an active or healed pulmonary tuberculosis in a surprisingly large number of cases. The diagnosis of an incipient case of pulmoanry tuberculosis was an exceedingly difficult one to make if the case was truly an early one. Physical examination of such a case could reveal but little, as the signs were not pronounced and easy of detection until actual destruction of the tissues of the lung had taken place; but given a young adult with vague and indefinite indications pointing to pulmonary tuberculosis, the chances were decidedly in favor of tuberculosis being present, since it was an exceedingly common disease at this age, and the profession should not hesitate to make a tentative diagnosis of pulmonary tuberculosis subject to the result of subsequent tests. The absence of tubercle bacilli from the sputum proved absolutely nothing, and their presence in the sputum showed that an early diagnosis had not been made. It was his personal impression that the profession was too prone to rely upon the laboratory report of the sputum almost entirely in making the diagnosis of pulmonary tuberculosis to the exclusion of the clinical picture presented. Laboratory tests "with the glamour of science and the romance of novelty" could not supplant entirely the study of each individual with the sharpened observation due to long acquaintance with the danger signals thrown out by this enemy while digging himself in and preparing for a long siege, which, unless skillfully combatted, was destined to end in the fall of the individual and his unconditional surrender to the captain of the forces of death. The laboratory had proved itself of immense value to the profession, but, like everything else, was not infallible, and in the question under discussion had too often delayed a positive diagnosis, which should have been made by a careful analysis of the patient's symptoms and a painstaking exclusion of other possible conditions. The diagnosis must often be made in the absence of signs in the chest by the exclusion of other toxemic conditions that might resemble the symptoms of the tuberculosis toxemia. The cases fell into one of the following categories, with neurasthenic onset, with anemic onset, with hemorrhagic onset, onset with fever, the pleuritic onset, the pneumonia onset, the laryngeal onset, etc. The symptoms which should arouse suspicion of the presence of tuberculosis and lead to a thorough study of the case are: they had first and foremost cough, especially on arising in the morning, at which time there might be a few short coughs, with or without any expectoration. At the same time the patient might be conscious of a slight degree of debility, and the fact that he tired more readily than formerly, that he had lost little weight, and that his dyspeptic symptoms had grown more annoying. A slight fever and rapid pulse, with or without chills and sweating at night, pointed unmistakably to the necessity of thoroughly testing the patient for the presence of tuberculosis. The same was true of anemic conditions not otherwise accounted for, and of protracted convalescence from an acute disease. Many cases of tuberculosis masqueraded under the name of influenza. The object of this paper was to emphasize the fact that the profession did not give the proper value to the careful study of the patient's history, and delayed making even a provisional diagnosis until the stethoscope or the microscope revealed the condition. The lesson was that a diagnosis of pulmonary tuberculosis could be made from the patient's history and symptoms, and should be made before the chest was bared for an examination. In this way a man who was not constantly making chest examination, or the man whose hearing was defective, need not hesitate about making a provisional diagnosis of pulmonary tuberculosis. It was far better to suspect a patient of having tuberculosis who was free from it, than to give a clean bill of health to one whose chest was negative but in whose lung tubercles were developing. A period of careful observation and the use of the various tests, especially the auto-intoxication test, would soon remove all doubt.

The Advantages of Special Training in Tuberculosis in Sanatorium Surroundings.—Dr. EDWARD R. BALDWIN of Saranac Lake, N. Y., read this paper. He said that

no one would gainsay the fact that there was a steadily increasing number of physicians who were known, or called themselves, tuberculosis experts or specialists. These were usually modest individuals who generally became ill themselves and who became identified with this field of medicine. These formed by a far greater number, and they usually inhabited health resorts, or became connected with some tuberculosis institution. There had been no great enthusiasm in the past on the part of other physicians to engage in the special work of treating tuberculosis unless they were downright charlatans, like the cancer quacks, or were honest but deluded individuals who believed that they had the right "theory" of treatment or the best remedy if not the only cure. There was now a rapid change taking place owing to the well organized anti-tuberculosis movement and the rapid multiplication of dispensaries, sanatoria, and new health resorts. Public and private sanatoria were being established, and a demand had been created for trained men to take charge of them. The supply of doctors competent and willing to take up this work was being used to the utmost. The specialty of tuberculosis or phthisiotherapy was an accomplished fact. It had already been recognized as such in a few medical schools, and would doubtless be soon by many others. If gastrology, dermatology, or even proctology were entitled to recognition, no one with justice to its importance could deny tuberculosis a place on the curriculum. When an early diagnosis was made an effort was now made to get the patient into a sanatorium, for a while a least, and this was the rational thing to do. Men who lived with the patients, often themselves patients, were much better interpreters of the disease than those who had only the academic attitude to it as teachers. Even though they were most interested and enthusiastic teachers, they could not carry the weight that the man did who had personal experience with the disease or lived among those who had it. In the present undergraduate course in the best medical schools, the average student had nearly all his attention occupied, and it was too much to expect a really advanced course of instruction in tuberculosis. Very much more was being done than formerly, and very much better training for diagnosis and the management of tuberculous patients was now available, yet they did not find that it had brought about any revolution in the care of these patients by the recent graduates. It was not all the faulty or insufficient training that was responsible for this. He suspected that they took but little interest in this disease while they were in college. The disease had no real appeal to them. It appeared from many standpoints that to get a proper perspective of this disease, a special study ought to be made under the most favorable surroundings where an atmoshere of hopefulness prevailed among the physicians as well as the patients. They all knew that there was no longer the excuse for the neglected examination of the sputum, but they also knew that the time had come when the physician was called upon to find the disease before the sputum was positive, and even when there was no sputum. This meant a refinement of technique or of physical examination not yet attained by many. While the late Dr. Trudeau was still living a gentleman from Cleveland, well known for his generosity and interest in medical education, became interested in the subject through his son-in-law, who was at that time at the head of the Cleveland Tuberculosis Institute. This gentleman offered a fund to support a post-graduate school at Saranac Lake for three years, which the trustees of the Trudeau Sanatorium accepted. The experiment would be made to give a combined clinical and laboratory course in the art of diagnosis, treatment by sanatorium methods, and the organization and management of hospitals and sanatoria, both public and private. The first trial would be for six weeks. For those who contemplated city, county, or state institutional work, the Ray Brook Sanatorium would furnish facilities for study. The first session of the "Trudeau School" would be given this spring. If the experiment received encouragement, and was found to be useful to the cause, it would probably become a permanent adjunct of the sanatorium work in the Adirondacks. A Foundation for Research and Teaching to the memory of Dr. Trudeau was now being raised to further this project, and Dr. Trudeau's friends had responded loyally.

The Rôle Played by the Study of Tuberculosis in the Development of Clinical Medicine.—Dr. H. R. M. LANDIS of Philadelphia read this paper. He proposed confining his remarks to those studies which, in all truth, might be said to be epoch making. The first contribution to which he wished to call attention was that by Auenbrugger on "Percussion of the Chest." The "Inventum Novem" was first published in 1761 and forgotten for forty-seven years, when it was translated from the Latin by Corvisart, physician to the first Napoleon in 1808. It was apparent on reading the "Inventum Novum" that the major part of his observations was based on the various manifestations of this disease. Important as Auenbrugger's discovery was it became overshadowed when compared with the immortal work of Laennec. When in 1819 Laennec gave to the world the stethoscope, and his observations on mediate auscultation and the pathological anatomy of diseases of the lungs, he practically created clinical medicine as they knew it to-day. Furthermore "to Laennec will forever belong the honor of having fixed definitely the clinical picture of the disease (tuberculosis), and of having separating it by means of auscultation and his pathological studies from all similar affections of the lungs." In this instance it might be objected that the work on mediate auscultation did not represent a special study of tuberculosis. Strictly speaking, this might be true, but it was equally true that Laennec's observations were based largely on the manifestations of this one disease. The work on Mediate Auscultation should be read, he believed, by every student before his graduation. The late Dr. Austin Flint said:—"Let the student become familiar with all that is now known on this subject, and he will read the writings of Laennec with amazement that there remained so little to be altered or added." Sir William Osler had written:—"By far the ablest and most scientific of American students of the disease (tuberculosis) was Austin Flint, whose contributions to the physical signs and the symptoms were among the most important of his many clinical studies." (Tuberculosis, edited by Klebs, 1909.) To Austin Flint belonged the distinction of making the only addition to Laennec's work which could ill be dispensed with. He referred to his contribution on pitch in percussion and auscultation, a point to which Laennec paid no attention. At the present time they were passing through another revolution, namely, that which related to public sanitation. Much of the work now being done on sanitation had had its incentive in the modern crusade against tuberculosis. Housing reforms, improvements in factory conditions, supervision of the health of workers, school inspection, open air schools, and the crusades against the social diseases, infant mortality, etc., all might be traced, directly or indirectly, to the tuberculosis crusade.

Pulsating Spleen in Mitral and Tricuspid Disease.—Dr. MORRIS MANGES of New York reported this case, and reviewed the literature on this subject. In all the cases the splenic pulsation was arterial and was synchronous with the cardiac systole and increased or diminished with the vigor of the cardiac action.

Thursday, May 11—*Third Day.*

The Problem of Rest or Exercise in the Treatment of Pulmonary Tuberculosis; A Plea for Less Ergophobia.—Dr. CHARLES MINOR of Asheville, N. C., presented this communication, in which he stated that in the treatment of tuberculosis there were no more important measures than rest and exercise. Formerly tuberculosis patients were permitted to over-exercise; to-day there was a tendency to go to the other extreme. Rest was successful because it lessened circulation, and hence toxic absorption; it lessened oxidation and lowered temperature, and so decreased tissue waste; it put the diseased lung at rest, rested the heart, and lessened cough and expectoration. Furthermore, it encouraged weight gaining, and if properly managed helped to set the mind at rest. All these things were admirable, but there came a time when disadvantages showed themselves, and when a too long-continued rest ceased to be of value and became harmful. When the temperature fell so that the afternoon temperature was not over 99.4° F.; when the pulse showed a decrease of toxic absorption; when strength was improving, and when the trouble was less active and we desired to help the compensating function of the healthy portion of the lung by the quiet deep breathing that walking caused; when cough and expectoration were much reduced and we could therefore assume that there was less ulceration and activity in the diseased area; when the patient needed the stimulus of hope and the encouragement of a positive proof of his improvement; when his gain in

weight was marked and without exercise he was apt to produce fat rather than muscle, then exercise should be taken up not only on the theory of Pattison that the patient might undergo an autotuberculin treatment, but to prepare him when he should be restored to resume life in a normal way, and not to be turned, as so many were, into a pulmonary hypochondriac. Exercise might be begun with from one to five minutes, according to the case, and increased from one to five minutes a day and guarded by a carefully kept record of symptoms, fever, and pulse, kept by the patient. Exercise should be stopped or decreased just as would be done if a tuberculin reaction occurred. It was essential that the doctor see the patient at first bi-weekly, and then weekly, and never less than once in two weeks. Temperature was the best guide to detect over-exertion. If the temperature in the afternoon was as high as 99.4° F., the patient could be gotten up in the morning only, then if he progressed properly in the afternoon, and finally all day. With a temperature of 99.6° F., if the patient was restless and high strung it might often be wise to allow him up in a reclining chair for an hour or so in the morning. In cases in which persistent rest in bed failed to reduce the temperature one might at times experiment with getting the patient up, partially for the sake of mental encouragement. Unduly rapid pulse was an indication for rest, but when moderate exercise caused no rise it need not be an absolute indication for rest, but only for the reclining chair. Blood streaked or pink expectoration was an absolute contraindication to exercise, but there were some patients in whom blood streaking was a permanent habit, and in some of these cases walking had been beneficial. Any patient who was losing weight must be kept at chair rest. As to fatigue, a little healthy tire had no significance, but to get really tired was bad, whatever the temperature and pulse might be. The methods of exercise allowed were first the reclining chair and then walking, but he allowed neither a carriage nor an automobile until the patient could walk from one-half to one hour without bad effect. The automobile was easier than the carriage.

A Case of Spontaneous Pneumothorax Without Symptoms.—Dr. DAVID R. LYMAN of Wallingford, Conn., presented this paper. He stated that a case of spontaneous pneumothorax similar to those reported by Dr. Louis Hamman at the meeting of the Climatological Association, in 1914, had come under his observation. He had been so fortunate as to secure radiographic plates of the chest at the time the patient consulted him and four weeks later. At the first examination of this patient there was an apparent absence of breath sounds on the right side, the thorax being apparently normal. The patient had complained of a peculiar pain in the right side three years before. The pain disappeared and the patient did not return until a couple of weeks later, when he returned complaining of a peculiar dragging pain extending from the lower border of the right axilla upward and inward toward the mid-sternum. He had also observed a slight feeling of oppression and suffocation just back of the sternum. His family and personal history were negative. Upon examination an apparently almost complete pneumothorax of the right side was found, with complete loss of breath sounds, hypersonance, and typical coin sound. The heart was only slightly displaced and the left lung was apparently normal. He did not feel sufficiently ill to go to bed, and was only convinced of the seriousness of his condition by the aid of an *x*-ray picture of his chest. At the end of four weeks the *x*-ray examination of the chest showed that the pneumothorax had practically disappeared, save for a slight hypersonance over the base of the right axilla. However, there were signs of a latent tuberculosis. It seemed probable that the trouble three years previously was due to an unsuspected tuberculosis.

Syphilis of the Lung.—Dr. N. K. WOOD of Boston read this paper. He said that there was evidence of sufficient weight to convince the pathologist either that he was overlooking something or calling something by the wrong name. He reviewed the histories of 20 cases in which Wassermann and von Pirquet tests were made. In the cases in which these signs were negative he had radiographs taken of the chest, and the long bones of the legs. From these he was able to select seven cases that showed definite histories of lung impairment and a positive Wassermann and with negative sputum and negative von Pirquet test. To these 20 cases were added four others who did not come up to the requirements that would suggest syphilis, but which were reported because of the marked effect of mixed treatment. The writer analyzed this series of cases and pointed out the evidence which was suggestive of syphilis, such as miscarriages, still-births, early infant deaths, history of chancre, glandular enlargement, Hutchinson's teeth, or badly decayed teeth, skin eruptions, etc. He found in these patients equally strong evidence of disease of the lungs, such as marked dullness, limited excursion, poor respiration, a varying number of moist dry râles, confined more to the bases of the lungs, with a history of cough and expectoration. These cases had been under treatment for a year, simply good hygienic treatment, with tincture of nux vomica and gentian before meals and mixed treatment after meals. The results of treatment had been small gains in weight, improvement in the general physical condition, a diminished tendency to take cold, and an improvement in the chest findings. It seemed very certain that there had been disease of the lungs in these cases, and one must weigh the evidence furnished by the history as to whether it was tuberculosis or syphilis. The treatment of tuberculosis was not given, but these patients improved on tonic and antisyphilitic treatment. When the treatment was stopped they retrograded. While the evidence pointed to the existence of such a condition as syphilis of the lung, the evidence in the writer's opinion was far from conclusive. If there was such a thing as syphilis of the lung it would have to be demonstrated at the autopsy table.

Heliotherapy in Abdominal Tuberculosis.—Dr. J. H. ELLIOTT of Toronto, Canada, read this paper. He said the value of heliotherapy in the treatment of certain forms of so-called surgical tuberculosis had been definitely established and especially satisfactory results had been reported in tuberculous disease of the bones and joints, both in closed cases and those with discharging fistulæ. In the latter there was frequently involvement of the skin as well, at the opening of the fistulous tract. Contributions to this subject had been presented to this Association by Brannan and Hinsdale. Dr. Elliott said he had experience with three types of abdominal tuberculosis which had yielded to heliotherapy. (1) Tuberculous enteritis. (2) Tuberculosis of the ileocecal and appendix region. (3) Tuberculous peritonitis with ascites. Illustrative cases of each group were reported. In summarizing he said that in abdominal tuberculosis, heliotherapy would seem to be a valuable addition to simple rest cure in the open air. Good results could be secured at home and in the hospital. The method was applicable even in large cities which had no special climatic advantages, as demonstrated in a city with 46 per cent. possible sunshine.

Appendicitis as a Complication of Pulmonary Tuberculosis. — Dr. HUGH M. KINGHORN of Saranac Lake, N. Y., presented this communication. He stated that from October, 1905, to December, 1914, out of 674 well-established cases of pulmonary tuberculosis, there were 36 cases of appendicitis, or 5.33 per cent. There was an incidence of appendicitis in the male of 6.1 per cent. and against 4.27 in the female. Of these 36 cases 22 were operated upon and 22 recovered without operation. One death occurred from fulminating appendicitis three days after operation. From his experience the writer believed that acute appendicitis in patients suffering with pulmonary tuberculosis should be treated as it would be treated in a normal healthy person. Even feeble patients stood the operation well under nitrous oxide and oxygen. When the appendicitis was not acute and the patient was feeble the pulmonary disease should be considered. These patients stood operation in the interim well.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held in Washington, D. C., May 11 and 12, 1916.

THE PRESIDENT, DR. JAMES W. JOBLING OF NASHVILLE, IN THE CHAIR.

President's Address: The Relation of Lipoids to Immune Reactions.—DR. JAMES W. JOBLING of Nashville, Tenn., delivered this address, which consisted of a summary to the literature bearing on his subject. He said that according to Meyer and Overton the cell wall was composed chiefly of lipoids, and if this view was ac-

cepted we must concede the possible importance of lipoids in protecting bacteria and the cells of the body against antagonistic substances. Petersen and the writer had shown that bacteria were protected from the action of ferments by the unsaturated fatty-acid compounds present in the cell and that oxiding agents such as iodine, hydrogen peroxide, etc., would destroy this protective action. Treatment of bacteria with thermostabile immune bodies also rendered them more susceptible to the action of ferments, and experiments which were now being conducted by the writer suggested that these substances acted in a manner somewhat similar to that of oxidizing agents. It must be borne in mind that bacteriolysis was almost never obtained with undiluted immune serum, while bacteriolysis *in vivo*, except in the peritoneal cavity had not been demonstrated. Heiler and Rimpau found that lipoid soluble substances were bactericidal. and that a definite relation existed between this action and the lipoid solubility, narcotizing action and the bactericidal action of the substances tested. Frolin found that lipoid-free corpuscles injected into animals produced agglutinins, but no hemolysis, whereas the lipoids produced lysins. Bang and Forsman obtained complement fixation with immune sera, using the lipoids of the homologous cells as antigens. Thiele and Embleton believed that the different results obtained by different investigators with lipoid extracts from fresh tissues were probably due to the fact that proteins were also present. The differences in the results obtained by the various investigators suggested that lipoids in certain combinations might act as antigens, while the pure lipoids had not this property. Stuber, Dewey, Nuzum and others had shown that certain lipoids, chiefly cholesterol, inhibited phagocytosis. Other experiments suggested that the inhibition of Phagocytosis was not due to injury to the cells. Muller, on the other hand, concluded that bacterial lipoids were unimportant in the process of phagocytosis. Stuber believed that the agglutinins were produced as a result of the stimulus afforded by the fats liberated after destruction of the bacteria. He also found that immune serum extracted with ether lost most of its agglutinating power, and that normal serum to which ether extract was added acquired an agglutinating value almost equal to that of the immune serum from which the extracts were obtained. The serum of normal animals that received intravenous injections of extracts of the immune serum also contained strong agglutinins. Graham stated that ether anesthesia did not affect the agglutination titre of sera. The writer reviewed the literature with relation to hemolysins and lipoids and stated that he and Dr. Bull had demonstrated what they believed to be immune lipases in hemolytic sera, but were unable to show that they were essential for hemolysis. After reviewing the literature in reference to the relation of the lipoids to anaphylaxis, the essayist said that it had been known for some time that serum antitrypsin was increased following the recovery from anaphylactic shock. With this in mind Petersen and he had investigated, first, the action of lipoids when given with the intoxicating dose of antigen, and secondly, the influence of increasing the antitryptic power of the serum. They found that increasing the tryptic power of the serum and the addition of soaps to the intoxicating dose enabled the animal to resist several times the amount of the specific protein fatal for the controls, while a smaller dose of the antigens was required when lipoid free proteins were used. They had also shown that the removal of the lipoidal antiferments from the serum permitted the formation of toxic substances which they had termed "serotoxins." These toxic substances were formed through the action of the serum proteases on the serum proteins as soon as the protective lipoidal substances were removed. They found that while there was no loss of nitrogen from bacteria treated in this manner, there was absorption of serum-antiferment from the serum, and accompanying this loss of antiferment power, a proportionate increase in toxicity. Other experiments showed that the lipoid substances had been absorbed by the bacteria, which now became more resistant to such ferments as trypsin. It might be that similar toxic substances were formed *in vivo* in some of the bacteriemias, for instance, anthrax. The writer then discussed complement deviation in reference to the Wassermann reaction and stated that evidence would go to show that alterations in the lipoid content of the serum had an important bearing on the reaction. After reviewing the present status of our knowledge with reference to the Abderhalden reaction, he considered the relation of lipoid solvents to general infections, and brought out a number of factors that tended to explain the constantly manifest influence of the lipoids in the various immunological and physiological balances. These considerations indicated that the fats and lipoids might play an important rôle in at least some of the immunity reactions.

The Inadequacy of the Anaphylatoxin Theory of Anaphylaxis.—Dr. RICHARD WEIL of New York read this paper. The characteristic features of the test-tube reaction were, (1) that it took place not only through the interaction of an immunological couple, namely, antigen and antibody, but of entirely unrelated sera; (2) that the two factors must be in certain definitely limited quantitive relationships; (3) that it was slow and gradual; (4) that it required the presence of complement. He said that in every one of these features it differed from the anaphylactic reaction in the living animal or in the suspended uterus. The crucial test consisted in the fact that it was impossible to produce the anaphylactic reaction in the animal by conditions which duplicated those in the test-tube, namely, the simultaneous intravenous injection of the two factors, antiserum and antigen. According to the physical theory, the reaction was simply an expression of the alteration of cellular equilibrium which resulted when external antigen was brought into contact with cellular antibody. The characteristics of the reaction were all entirely in keeping with this interpretation. The precipitation reaction in the test-tube, which was not accompanied by the chemical destruction of either factor, (1) was immediate; (2) proceeded in the absence of complement; (3) required relatively large amounts of antibody and relatively minute amounts of antigen. In these respects it was perfectly analogous to the anaphylactic reaction. If in place of the visible alteration, expressed as precipitation in the test-tube, interaction of the two factors *in vivo* was supposed to produce an alteration of cellular equilibrium, such as would act as a cellular stimulus, all the requirements of the problem would be satisfied. In view of the fact that precipitin had been demonstrated to be identical with the sensitizing antibody, this explanation of anaphylaxis seemed almost self-evident. This conception obtained the necessity of postulating an intermediate chemical product, namely, anaphylatoxin; such a postulate was not only superfluous, but it was also entirely incompatible with all of the characteristic features of the reaction.

Additional Facts Concerning the Protein Poison.—Dr. VICTOR C. VAUGHN, of Ann Arbor, presented this communication in which he stated that since his last publication his students and he himself had ascertained the following facts: (1) Casein yields a large percentage of the protein poison. (2) The protein poison after the removal of all traces of mineral acid is strongly acid in and of itself. (3) The protein poison did not give the ninhydrin test, but did so after being split up with the acid. (4) The poison gave a skin reaction in all persons. (5) The poison is not without harm when administered by mouth. (6) Animals might be acutely or chronically poisoned by oral administration. (7) In chronic poisoning by feeding, extensive fatty degeneration results. (8) The protein poisons from diverse proteins were not identical. (9) The protein poison from casein combined with certain unbroken proteins. In this combination the acidity of the poison is neutralized and its physiological action diminished. (10) From the tissues of animals killed with protein poisoning, it may be extracted with acidified alcohol, its presence demonstrated, and the amount roughly estimated by the intravenous injection of guinea pigs.

Studies Regarding the Action of Different Blood Sera Upon Various Tissue Substrates.—Dr. OSCAR BERGHAUSEN made this presentation which was a translation of a paper on this subject by Prof. Emil Abderhalden. He stated that every organism, whether of the plant or animal kingdom, split up with the aid of ferments, composite and possibly also simple combinations into products of simpler molecular size. They enabled the cycle of ubstances from plant to animal and from the latter to the former to be accomplished. It seemed quite clear that when composite substances appeared in the blood where they did not belong ferments appeared which changed their character and simultaneously produced products which were taken up by the cells for further utilization. The whole investigation regarding the existence of fer-

ments arose from the idea that every kind of cell consisted of specifically confined units, which were acted upon during anabolism and catabolism by ferments. During normal conditions the cells did not give off their integral parts, but in metabolic disturbances integral cellular substances might appear in the blood. Many new problems were opened by the finding that after parenteral ingestion of proteins and peptones in the blood plasma, ferments appeared in the blood which could split up these substrates. They did not know whether they were dealing with ferments which had just appeared or whether there were always present proteolytic and peptolytic ferments in the blood plasma. It seemed plausible that existing ferments were not inhibited in any way in their action. Everything, however, pointed to the fact that ferments appeared only after and as soon as the blood-foreign material appeared in the blood. Whence they came was not yet determined. Experimentation had been undertaken to bring the ferments in relation with the immune bodies. After discussing the possible relation of the substrate to the antiferment as held by some he pointed out the weakness of their arguments and said that much research was still necessary. They had busied themselves with a series of experiments to determine under what conditions the proteo- and peptolytic ferments reached the optimum of their action. It seemed tangible that during normal conditions cell-specific ferments migrated from the cells to the blood. They were possibly in some way immediately inactivated. The presence of active ferments would in this case point to a disturbance of inactivation. There were many reasons why this view was not probable. The opinion seemed to be unanimous that there was a specificity in ferment action in relation to substrates, but they could not maintain *a priori* that in the list of proteases and peptases specific adaptation toward definite substrates existed. This problem required further examination. The possibility that during definite disturbances in organs ferments were found in the blood which were adapted to definite substrates had caused much activity among investigators. In the course of time from clinics, hospitals and physicians they had received 1,000 specimens of serums with the request to determine the splitting up of this or that organ. Most frequently the question was one regarding the existence of a tumor. All of the examinations might be classified into three groups. In one the clinical diagnosis was known and for these Abderhalden made the examination himself. In the second group he knew the clinical diagnosis; the reaction, however, was carried on by some one who was purposely allowed to remain ignorant of the diagnosis. In the last group the clinical diagnosis was unknown to them. In all cases several organs and tissues were used. There were numerous examples of undoubted specific actions. The quantity of serum in many instances was insufficient for the examination of as many substrates as they wished, so that many of the examinations were not entirely satisfactory. It seemed from this study not impossible that the several varieties of tumors owed their origin to the cessation of function of definite organs. They had commenced in the case of tumor carriers, to look for splitting up of definite organs, such as thyroid, pituitary, thymus, sexual glands, etc. The existing material was still too small to prophesy that research in this direction would be successful. Included in this report were also the results of experiments concerning the production of ferments by parenteral injection of tumor cells which reacted with degnite tumor substrate. It was of much interest that in some isolated cases ferments did not appear. If the serum was found infected, then with regularity no specific action was discernible. If the serum was sterile, then it split up, even after it was kept eight months, that substrate with which it originally reacted. One thing they had learned in their investigations and that was that it paid to investigate the field of pathology with the methods they had used.

The Specific Character of Immunity Reactions.—Dr. E. C. L. Miller of Richmond, Va., said that for many years it had been recognized that immunity reactions were specific. However, when more detailed study was given to some of these reactions, their specific character was less sharply defined. For instance, if a rabbit were repeatedly injected with the blood of a sheep, its serum would react not only to sheep blood but also, to a less extent, to the blood of goats; if injected with horse serum, it would react not only to horse blood but also, to a lesser extent, to the blood of asses and zebras; if injected with human blood the serum would react to the blood of the higher apes. These had been called group reactions and were taken to indicate that the members of the group had somewhere in the past a common ancestor. The blood was not the only tissue that might be used. The cells of any organ if injected into a rabbit would produce a serum that would dissolve such cells. If completely organic specific sera could be prepared they might be of great practical value. Investigators had found that various organs of guinea-pigs, dogs, cats, fowls, turtles, and mice, when injected into rabbits, produced sera hemolytic for sheep corpuscles. In some cases the blood serum of these animals was effective, but in no case would the red corpuscles so act. Strangely enough the organs of sheep and goats produced such hemolysis but very incompletely. Extensive search had been made to find substances that as antigens would produce a common antibody, namely, sheep hemolysin. The essayist reviewed the work of investigators in this search, and said a suggestion looking towards an explanation might be found in some work of Osborne and Wells. They worked with Osborne's pure vegetable proteins and used anaphylaxis for their biological reaction. A review of this work indicated that the specific character of the protein, at least for the anaphylactic reaction and probably also for other biological reactions, depended not on the protein as a whole but on certain parts or qualities or chemical groups in the protein molecule. The reason why biologically related proteins reacted similarly was because they had inherited certain common groups from a common ancestor, but it should cause no surprise that entirely unrelated species occasionally possessed common groups.

Dr. H. Gideon Wells of Chicago said that in all the problems of immunology, specificity was the vital point which could never be overlooked without disaster. In studying the principles of immunology there had been great difficulties because of failure to grasp the essential principles as laid down by Jacques Loeb, namely, that in studying the fundamental principles of biological processes one must reduce the elements involved to the simplest possible, for at the best the reactions were complex and beyond our interpretation. Unfortunately we could not get below the whole protein molecule as one end of our reactions and generally must use the warm blooded mammals for the other side of the equation, although possible work on cell cultures might help us to simplify our materials. The best one could do therefore was to use pure protein, and fortunately there were some proteins that could be obtained in a relatively pure condition, such as non-coagulable ovomucoid of egg-white or alcohol soluble proteins of the grains. Using such isolated proteins, and others, the writer said they had found evidence that, delicate as the specificity of immunological reactions seemed to be, immunological differences did not seem to occur between proteins that could not also be differentiated chemically. The specificity differences of the different proteins seemed to agree with differences in chemical composition, and as yet they had not found finer differences such as might be expected, such as stereoisomeric differences with identical chemical composition. Dr. Osborne and the writer had found in many cases that proteins which were isolated by chemical means could be checked up very nicely as to their individuality by anaphylaxis and other immunological reactions, and immunological methods had been found to be of much help in establishing the chemical identity of unknown proteins.

Dr. John A. Kolmer of Philadelphia said it would be difficult to improve on the excellent résumé presented by Dr. Jobling on the relation of lipoids to immunity. It had been amply proven that toxic substances might be prepared of various animals and vegetable proteins by the method employed by Dr. Vaughan; that likewise toxic substances could be produced in normal and immune sera by the addition of such substances as kaolin and agar capable of producing anaphylaxis-like symptoms and lesions in experimental animals, but that it was not yet clear what relation these observations bore to the mechanism of anaphylaxis, and particularly so in view of the work presented by Dr. Novy within the past few days. Dr. Kolmer said he would like to ask Dr. Vaughan if he was prepared to make any further statement in regard to the relation between his protein poison and the mechanism of anaphylaxis. He would like to know whether Dr. Miller had made careful titrations of the content of antisheep hemolysin in the sera of his rabbits before immunization, as the sera of

a large proportion of these animals contained natural antisheep hemolysin. Dr. Kolmer said that in his opinion "group reactions" in immunity were best explained at the present time according to the views expressed by Dr. Wells in his discussion.

Dr. JOBLING said that, as Dr. Weil had stated, recent work showed that the intoxicating dose in anaphylaxis probably acted first on the cells. In guinea-pigs it caused a contraction of the muscle cells of the bronchi to such a degree that immediate death ensued from asphyxia. In dogs, however, death did not occur for several hours, and the clinical picture was quite different. In the latter case they had observed definite changes in the blood, and they believed that death was probably due to the products of protein cleavage. The ferments, which were greatly increased in amount, were probably liberated as a result of the cell stimulation, and their activity was dependent upon colloidal changes which had taken place when the antigen was brought into contact with the serum. They had observed a definite increase in the higher and lower protein cleavage products in the blood. These they believed were derived from the serum proteins and not from those introduced.

Dr. V. VAUGHAN said he had watched Dr. Novy's experiment with the deepest interest and had observed the appearing and disappearing and reappearing wave of toxicity in serums being incubated with agar and other foreign bodies. He had spent much time trying to measure these waves and to catch the rhythm of the toxicity, but without results. He was not yet ready to abandon the idea that a protein poison was formed in anaphylactic shock. No one could tell whether this was due to a chemical or a physical process, for it was difficult to draw a line between the two. He said that he could conceive that a body so complex as the protein molecule might be dissociated and a poisonous action developed even by high dilution. If so stable a body as sodium chloride could be broken down into its ions by dilution, was it not possible that even more marked alterations might occur in a highly complex molecule. He felt convinced of the fact that the blood contained proteins from which a poisonous group was easily detached.

Dr. WEIL, in closing the discussion, said he was not particularly interested in establishing the universal validity of any of the current theories of anaphylaxis. Attempts of this sort had done more in the past to obscure the truth than to advance it. Time, however, had completely established the truth of the cellular theory, so that in the guinea pig, at all events, it seemed certain that serum changes, with the production of so-called anaphylotoxin, could play no rôle in the typical evolution of shock. It would, however, be just as serious a mistake to assume that the process which took place in the guinea pig must necessarily be universally applicable to the anaphylactic phenomenon throughout the animal kingdom, for it was known with certainty that serum changes of chemical nature accompanied anaphylactic shock in the dog. This fact, however, by no means argued that these changes were productive of the anaphylactic symptoms. It still remained to determine whether serum changes in the dog resulting in the production of some unidentified substance described as anaphylotoxin were simply an accompaniment of anaphylactic shock in that animal, or were actually productive of the symptoms thereof.

The Phenomenon of Leucocytosis and Its Importance as a Diagnostic Sign in Vaccine Treatment.—Dr. JOSEPH HEAD of Philadelphia said that leucocytosis had always been regarded as a symptom of serious inflammatory infection. And yet it had appeared among his patients so frequently as a passing phase of a few days' duration, coming and going without any apparent significance, that he had come to regard a temporary leucocytosis of from 30,000 to 40,000 with considerable complacency. He had taken 54 of his vaccine patients as they came, and had gone over their blood charts with the purpose of getting data on this important subject. Of these 54 cases 33 did not in the course of the treatment give a leucocyte count of over 20,000, but 21 did show transitory leucocyte counts that jumped in some instances from five, six or seven thousand to forty, sixty or one hundred thousand, only in a few days to sink back to four or eight thousand, with no symptoms to speak of or only a slight indisposition. If these observations meant anything at all they certainly meant that a transient high leucocyte count could not be considered of itself an infallible sign of pus or even a semiacute inflammation of a serious nature. Persistence of the leucocytosis accompanied by a falling off of the red cells and hemoglobin would indicate a condition of an entirely different significance.

The Action and Therapeutic Effects of Leucocytic Extract (Archibald).—Dr. W. E. RICHARD SCHOTSTEADT of Fresno, Cal., presented this paper, which was read by W. J. Stone of Toledo, Ohio. He described the work that he had carried on with the leucocytic extract prepared from the blood of normal animals. Subcutaneous injections in normal human beings and in patients suffering from acute infections produced a marked leucocytosis. The leucocyte increase was often 300 per cent., and was highest within ten to twelve hours after the administration. The increase in the neutrophile elements was particularly marked and coincident with it was a less marked increase in the eosinophile cells. Clinically strikingly beneficial results in man had been obtained following its use in acute infections such as furunculosis, pneumonia, bronchitis, and acute tonsillitis. Chronic infections had shown a less striking improvement, though the leucocytic increase had been as marked as in the above cases.

Dr. GEORGE H. ROBINSON of Glenolden, Pa., said that from a clinical standpoint the work of Dr. Head had very important bearings. In mouth infections there were two features that were very important, not only was there a very high eosinophile count, but other conditions as well that were difficult to explain. He had used a bacterial extract unactivated made from the discharges of old sinuses, and he thought this produced what might be called fixation abscesses.

Dr. WILLIAM LINTZ of Brooklyn said he had made experiments in guinea pigs and rats, inoculating them every two hours, and it had been interesting to note the marked polymorphonuclear count that followed as well as the marked leucocytosis. Out of fifteen or eighteen cases of pneumonia in which there was a decided leucocytosis, with but one exception, none were benefitted by the use of the leucocytic extract.

Allergic Skin Reactions as an Index of Immunity.—Dr. JOHN A. KOLMER of Philadelphia said that these experiments were undertaken primarily to determine if the sera of persons and animals reacting positively and negatively to various allergic skin tests contained lytic antibodies for the corresponding living microorganisms and, if so, whether or not these antibodies bore a quantitative relationship to the allergic reactions; secondarily to determine the relationship, if any, among bacteriolytic, agglutinating, and complement-fixing antibodies in the sera of persons and animals reacting variously to allergic skin tests. He remarked that the sera of normal persons possessed a marked bactericidal power for *B. typhosus;* the bacteriolysin content for *B. typhosus* in the sera of normal persons and persons who had typhoid fever or had been immunized with typhoid vaccine was high but bore no relation to the typhoid in skin reactions. The sera of syphilitic persons in the tertiary stages who reacted positively and negatively to the luetin skin test and the sera of normal persons showed no appreciable spirochetal activity for a pure culture of *T. pallidum.* The sera of persons reacting positively and negatively to the intracutaneous injection of a washed polyvalent antigen of diptheria bacilli showed an abscence of bactericidal power for *B. diptheriæ.* The sera of dogs suffering with distemper and also the sera of healthy dogs and dogs immunized with *B. bronchisepticus* and reacting positively and negatively to an intracutaneous allergic reaction were found to be without appreciable bactericidal power for *B. bronchisepticus.* Agglutinins and complement-fixing antibodies in the sera of persons and animals for these various microorganisms bore no relation to the skin reactions. These studies demonstrated that there was no experimental support for the theory that allergic skin reactions might be taken as an index to resistance and immunity in so far as it was possible to determine the presence of antibodies *in vitro.*

(To be continued.)

Long Lives of the Presidents.—A writer in the *Lancet* calls attention to the many instances of longevity among the presidents of the United States, the average age of whom was 69 years, and were it not for the cutting short of the lives of Lincoln, Garfield, and McKinley by assassination at 56, 49, and 58 respectively this average would be even higher. Four of the twenty-four lived to the ages of 80, 83, 85, and 90 years.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

STATE BOARD OF MEDICAL EXAMINERS OF MARYLAND.
June 20, 1916.

(*Concluded from page* 574.)

PATHOLOGY.

1. What are infective granulomata? Mention several and describe one.
2. Briefly discuss teratomata.
3. Describe ingrowing toenail.
4. What are anaerobic bacteria? Classify, and mention an organism belonging to each class.
5. Describe keloid tissue.
6. Define the terms secretion, excretion, transudate, exudate.
7. What is meant by "sensitization"?
8. What are the general characteristics of sarcoma in contrast to carcinoma?
9. Describe the beef tape worm.
10. What are the means used to prove that death has positively occurred? What is rigor mortis?

PRACTICE OF MEDICINE.

1. What diseases are liable to occur in the right inguinal region?
2. Give signs and symptoms of floating kidney.
3. Give causes of malaria and varieties of organisms.
4. Name the eruptive fevers and also give period of incubation in each.
5. What is hemophilia and how treated?
6. Differentiate the terms delusion and hallucination and also define the terms epistaxis, hemoptysis, and hematemesis.
7. Give symptoms of diabetus mellitus and treatment.
8. Name causes of interstitial nephritis and the more common complications.
9. Describe empyema; give diagnosis and treatment.
10. Give differential diagnosis between gout and arthritis deformans.

OBSTETRICS AND GYNECOLOGY.

1. Define a trefoil, horseshoe, succenturiate, and battledore placenta.
2. What is a caput succedaneum and how is it formed?
3. Describe your method of preventing lacerations of the perineum during delivery.
4. What is your treatment in the delivery of twins with heads interlocked?
5. What is the danger of a prolapsed cord and how do you treat it?
6. What is phlegmasia alba dolens, its cause and treatment?
7. How do you diagnose a face from a breech presentation?
8. Why is a face presentation hard to deliver?
9. Give differential diagnosis between a retroflexed gravid uterus, and a pregnancy complicated by ovarian tumor.
10. What is the usual cause of salpingitis? Describe its course and treatment.

SURGERY.

1. Give cause and treatment of chronic suppuration of the middle ear.
2. Give diagnosis, symptoms, and treatment of gonorrheal conjunctivitis.
3. Give signs, symptoms, diagnosis, complications, and treatment of phlebitis.
4. Give symptoms and treatment of Pott's disease.
5. Give the differential diagnosis between fracture of neck of humerus and dislocation of shoulder joint. Outline the treatment of one.
6. What are the causes of ischiorectal abscesses? Give symptoms and treatment.
7. Describe a rodent ulcer. Give the structures in which rodent ulcer mostly develops, and give surgical treatment.
8. If called to a patient with a compound fracture of a leg in the lower third, which had been kicked by a horse in a barnyard, state in detail how you would treat such a case.
9. Give varieties of ileus, and some of the causes of each. Outline treatment.
10. Give the symptoms and physical signs of carcinoma of the breast.

ANSWERS.

PATHOLOGY.

1. *Infective granulomata* are inflammatory new growths due to protozoa, bacteria or parasites. They are found in tuberculosis, lupus, syphilis, leprosy, glanders, and actinomycosis.

The *tubercle* is a mass of new formed connective tissue cells, consisting of three layers: (1) lymphoid cells externally, (2) epitheliod cells, in the middle, and (3) giant cells in the center; the tubercle bacilli may be found in (2) and (3).

2. *Teratomata* are "tumors which have a tendency to the formation not only of irregular cell masses but also of fully formed organs, such as brain, teeth, skin, hair, bone, or secreting glands. Such growths may be due to the development of two germinal areas on one germinal vesicle, giving rise to double monsters, one of which undergoes inclusion in the other—fetal inclusion. They may result from the displacement of totipotential cells—those capable of giving origin to an individual—which become included in the growing organism. These cells may develop early, and grow elaborately, giving rise to inclusions recognizable at birth. They may lie latent and at a subsequent time grow actively as abdominal inclusions, teratomata of the genital glands, and certain mixed tumors. *Dermoid cysts, ovarian dermoids* are the most common of the teratomata. The cyst cavity is lined by squamous epithelium, in which are found sweat and sebaceous glands. Within the cavity is usually a varying amount of fatty material in which are masses of hair. In the wall of the cyst are found masses of bone to which teeth, usually but poorly formed, are attached. In some instances the extremities and genitalia have been seen. Somewhat similar growths may be found in those parts of the body where fetal clefts have united and in the median fissures of the body. There is another type, the *sporadic teratomata*, which grow in regions bearing no relationship to the fissures, to the poles of the body, or to the generative glands, as in the anterior mediastinum and the abdomen. These are probably due to the development of a misplaced totipotential cell. They generally consist of tissue from all three germinal layers. Sometimes the tissues are of adult appearance and of limited growth. More frequently they appear about puberty, grow rapidly, and tend to form secondary tumors."—(McConnell's *Manual of Pathology.*)

3. *Ingrowing toenail.* "This is more accurately described as an overgrowth of the soft tissues along the edge of the nail. It is most frequently met with in the great toe in young adults whose feet perspire freely, who wear ill-fitting shoes, and who cut their toenails carelessly or tear them with their fingers. Where the soft tissues are pressed against the edge of the nail, the skin gives way, and there is the formation of exuberant granulations and of discharge which is sometimes fetid. The affection is a painful one, and may unfit the patient for work."—(Thomson and Miles' *Manual of Surgery.*)

4. *Anaerobic bacteria* are such as either cannot exist in the presence of oxygen or such as find the presence of oxygen injurious to their growth. There are two classes: 1. Obligatory anaerobes, which do not grow except in the almost complete absence of free oxygen; example, the bacillus of tetanus. 2. Facultative anaerobes are those which can thrive in either the presence or the absence of oxygen; example, the bacillus of typhoid.

5. *Keloid tissue* is a tissue of fibrous formation which occurs in scar tissue. It is characterized by somewhat luxuriant growth, and is not confined to the site of the original injury and scar formation. It is generally smooth, and is most often found in negroes.

6. *Secretion* is the process by which certain organs (glands and membranes) separate from the blood certain constituents which are further elaborated and serve some further office in the economy.

Excretion is a similar process by which there are removed from the blood waste materials, and products of no further use to the body, and which if retained would be injurious.

Transudate is a fluid which is found in the interstices of the tissues and which has passed through the walls of the blood vessels. It contains very few cellular elements. A transudate which is the result of inflammation is called an *exudate.*

7. *Sensitization* is the rendering of a cell liable to destruction by a complement, through the action of a specific amboceptor.

8.

SARCOMA.	CARCINOMA.
Origin; entirely mesoblastic (Connective-tissue type).	Epiblastic and hypoblastic (Epithelial-tissue type).
Stroma; intercellular. Rarely forms alveoli.	Vascular connective tissue, which surrounds and forms the walls of the alveoli; these communicate with one another, and contain masses of epithelial cells.
Cells; granulation tissue or embryonic connective-tissue cells; shape and size vary.	Epithelial cells contained within alveoli; shape and size vary.
Intercellular substance; may be present.	Absent, or merely fluid.
Vessels; embryonic in character. They are in direct contact with, or may be formed by, the special cells, slightly modified, of which the tumor is composed.	Well developed; entirely contained within the connective tissue stroma, and supported by the walls of the aveoli. Seldom in contact with the cells.

—(Coplin's *Pathology.*)

9. The *beef tape-worm* or *Tænia saginata* or *Tænia mediocanellata* is from 10 to 30 feet in length, and has several hundred proglottides. It has a rounded or oval-shaped head which measures about 1/10 of an inch, and has four strong and prominent suckers, but no hooklets—whence the term "unarmed tapeworm"; the neck is short and thick and the segments are larger, stronger, and thicker than those of the *Tænia solium.* The best way to distinguish a segment of *Tænia saginata* from that of *Tænia solium* is to count the number of lateral uterine branches.

In the *Tænia saginata*, there are 15 to 30 of them; in the *Tænia solium* there are 5 to 10.—(Hughes' *Practice of Medicine.*)

10. *Phenomena and signs of death*, are: The complete and permanent cessation of circulation and respiration, rigor mortis, loss of body heat, pallor of the body, putrefaction.

For methods of applying the tests, see a good textbook on medical jurisprudence.

Rigor mortis is the condlition of rigidity or contraction into which the muscles of the body pass after death. It begins at a period varying from about 15 minutes to about 6 hours. It usually begins in the muscles of the eye, neck, and jaw; then the muscles of the chest and upper extremity, and last of all those of the abdomen and lower extremity are affected. It passes off in the same order in about 24 hours. It is said to be due to the coagulation of the muscle plasma.

PRACTICE OF MEDICINE.

1. *Diseases liable to occur in the right inguinal region:* Appendicitis, inguinal hernia, psoas abscess, intussusception fibroid tumor, fecal impaction, cancer of cecum or ascending colon, floating kidney, cyst or abscess or broad ligament or ovary, retroperitoneal sarcoma.

2. *Signs and symptoms of floating kidney:* There may be a dragging pain in the loin, which is made worse by exertion; there may be paroxysmal crises of pain accompanied by rigor, vomiting and collapse (Dietl's crises); neurasthenia, and dyspepsia may be present; the kidney may be palpated in the abdominal cavity and may be replaced. There may be no symptoms at all.

3. The *cause of malaria* is the *plasmodium malariæ*, which is inoculated in man by the anopheles mosquito. There are three varieties of parasite: 1. The quartan parasite (*Plasmodium malariæ*); 2. the tertian parasite (*Plasmodium vivax*); and the æstivo-autumnal parasite (*Plasmodium falciparum*).

4. *Eruptive fevers, with period of incubation* (approximate): Typhoid, five to twenty-one- days; typhus, three or four to fourteen days; measles, one to two weeks; German measles, five to twenty days; scarlatina, three to seven days; smallpox, ten to fourteen days; chickenpox, fourteen or fifteen days; erysipelas, three to seven days.

5. *Hemophilia* is a condition characterized by a tendency to severe hemorrhage, sometimes almost uncontrollable, and following any slight injury or abrasion. Heredity is a common factor, and males are most commonly affected, but the disease is transmitted through females. *Treatment* consists in protection from injury or operation; adrenalin, calcium lactate, ergot, ferric chloride, potassium chlorate, ice, tannic acid, fibrin ferment, and other remedies have been suggested; transfusion of blood may be necessary.

6. A *delusion* is a belief in something which has no real existence, but is purely imaginary, and out of which the person cannot be reasoned. An *illusion* is a false or perverted impression, received through one of the senses. An *hallucination* is the same as an illusion, but without any material basis.

If an individual believes himself to be made of glass, and is afraid of being touched lest he be broken, he is suffering from a *delusion.* If the whistling of the wind is mistaken for a voice telling a person to do a certain thing, that would be an *illusion.* If a person fancied he heard a voice when there was nothing at all to be heard, that would be an *hallucination.*

Epistaxis is bleeding from the nose.

Hemoptysis is the spitting of blood.

Hematemesis is the vomiting of blood.

7. The *symptoms of diabetes mellitus* are: Weakness, excessive thirst, frequent urination, and increase in the amount of urine voided, the presence of glucose in the urine. Hyperglycemia is a feature of the disease; pruritus, emaciation, a dry and harsh skin, lost or diminished knee-jerks, coma, and air hunger are often present. The urine also contains acetone, oxybutyric acid, and diacetic acid, sometimes albumin and casts, and an increased output of nitrogen.

The *treatment* is mainly *dietetic.* "The indications are to maintain nutrition, to increase the tolerance for carbohydrates, to lessen hyperglycemia, and to prevent or diminish acidosis. In mild cases (except in childhood and adolescence) the diet may contain the full amount of carbohydrate that can be tolerated without causing glycosuria, but a week of strict (carbohydrate-free) diet should be interposed every four or five weeks. In severe cases with acidosis, the diet should have a low nitrogen content and contain the carbohydrate best tolerated (oatmeal, potato, fruit) in such quantity that the glycosuria is kept at a minimum and the body weight is not reduced. Frequent periods of strict diet must be introduced, however, to lessen the hyperglycemia, and during these periods from ½ to 1 ounce of sodium bicarbonate should be given daily to control the acidosis. In cases requiring rigorous treatment alcohol in moderate amounts, in the form of whiskey, brandy, or white wine, is useful in supplying additional energy and aiding in the digestion of fats. *General hygienic measures* are of great importance, especially the prevention of mental and physical overexertion, worry, and excitement. A moderate amount of regulated exercise is beneficial in mild cases, but considerable rest is absolutely necessary in severe forms of the disease. *Drugs.*—Tonics, like arsenic, iron and strychnine are often useful. Opium proves efficacious in some cases. It is best given in the form of codeine (½ grain three or four times a day). Salicylates have been strongly recommended. Bromides are serviceable in subduing nervous manifestations. Alkaline carbonates and alkaline mineral waters have long enjoyed a reputation. Upon the recognition of the early signs of *coma*, a moderate amount of readily digestible carbohydrate should be added to the diet. Absolute rest should be enforced, saline laxatives and diuretics (theobromine caffeine), should be administered, and large doses (1 to 2 ounces) of sodium bicarbonate should be given daily. Developed coma is rarely relieved by *intravenous* injections of 4 per cent. solution of sodium carbonate (a liter, if possible, and repeated if necessary at end of six hours)."—(Stevens' *Practice of Medicine.*)

8. *The causes of chronic interstitial nephritis* are practically the same as for arteriosclerosis. The disease may be traced to chronic alcoholism, gout, chronic lead poisoning, syphilis, and diabetes. Age is, of course, a factor; so too, are overwork, high living, and worry. *Complications:*—Bronchitis, pleurisy, pneumonia, pericarditis, endocarditis, and other inflammatory conditions, edema, and various hemorrhages.

9. *Empyema* is generally secondary to pneumonia, tuberculosis, scarlet fever, or other exanthem, suppurative inflammations, or traumatism. The pneumococcus, streptococcus, and staphylococcus are the bacteria most frequently found. The condition is diagnosed by finding the symptoms of fluid in the pleural cavity; this is withdrawn by a needle and on examination is found to be pus; a leucocytosis is also present.

The physical signs are those of fluid in the pleural cavity; that side does not move well, the percussion note

is dull, there is absence of breath sounds, vocal fremitus and resonance are diminished. Let alone, an empyema may burst through an intercostal space, usually the fifth. The lung is collapsed in extent according to the amount of pus. The pleura, at first covered with lymph, soon becomes covered with layers of granulation tissue, the deeper part of which is converted into fibrocicatricial tissue, and the lung itself also undergoes some fibroid change. If the pus is let out early the lung and pleura soon expand, but if allowed to go on the infiltration of the lung and the density of the scar tissue covering it hinder expansion. Nature attempts to remedy this in various ways. (1) The other lung expands and pushes the heart over to the opposite side; (2) the chest wall falls in, the intercostal spaces are obliterated, and the spine is curved, with its concavity toward that side; (3) the abdominal viscera are pushed up; and (4) exuberant granulations form on the pleura. If a cavity still remains an operation is necessary.

Symptoms: Fever, sweats, chill, diminished breath sounds and vocal fremitus, impaired mobility of chest, dullness on affected side, heart displaced to opposite side, leucocytosis.

Treatment: Aspiration, drainage, irrigation, resection of ribs (Estlander's operation), or resection of chest wall (Schede's operation). Operation of some sort is the only treatment.

10.

GOUT.	RHEUMATOID ARTHRITIS.
Frequently hereditary.	Not so.
Causes are chiefly dietetic.	Causes chiefly nervous.
Affects males and the better classes most frequently.	Affects females and lower classes most frequently.
Begins in the big toe and extends to other toes; it is unilateral.	Begins in the fingers which point to the ulnar side; develops in symmetric order.
Attacks are periodic.	More steadily progressive.
Deformity due to tophaceous deposits.	Deformity due to exostosis and ankylosis, and more marked.
Uric acid in excess in the blood.	Not so.
Complications (nephritis, arteriosclerosis).	Very rare.

—(Anders' *Practice of Medicine.*)

OBSTETRICS AND GYNECOLOGY.

1. A *trefoil placenta* is a malformation of the placenta in which there are three distinct portions of that organ, more or less intimately united.

A *horseshoe placenta* is a placenta which has a crescentic form, seen in cases of placenta prævia when the placenta is found around the internal os; it is also found in some cases of twin pregnancy where the two placentæ are joined by a strip of placental tissue.

A *succenturiate placenta* is one which, in addition to the usual placenta, has one or more subsidiary lobes.

Battledore placenta is one in which the cord is implanted in the margin instead of in the center.

2. *Caput succedaneum* is an edematous swelling developed on the presenting part in the course of birth. It is formed by the serosanguineous infiltration of the connective tissue of the presenting part and is due to edema in the part which is not compressed by the maternal structures.

3. *To protect the perineum:* The patient should be restrained from bearing down unduly; extension of the head must be retarded, and the central part of the occiput must be allowed to be born first; pressure must be made with the hand between the coccyx and the anus; when the perineum has had time to stretch, extension and expulsion are allowed; after the birth of the head care must be taken to see that the perineum is not torn by the birth of the shoulders.

4. *Management of twin labor complicated by interlocking.* "If there is marked delay in the delivery of the first twin, some form of interlocking should be suspected and under anesthesia the hand should be passed into the uterus and the exact conditions determined. If both twins present by the vertex and the second has become impacted in the neck of the first child, an attempt should be made to push up the second head and deliver the first child with the forceps. Occasionally, the best procedure is to deliver the second head past the first, always remembering that craniotomy on one child in the hope of saving the other may be good obstetrics. If the first child presents by the breech and its body is born while its chin is locked with the chin of its fellow, an attempt should be made to unlock the heads, but if this attempt fails it is usually wise to decapitate the first child, pushing up its head, and then to deliver the second child, finally delivering the head of the first. The reason for the wisdom of this course lies in the fact that with failure of the attempt to dislodge the second child's head, the life of the first child usually ceases during the endeavor to extract the second past it, and the second child's life is much more likely to be saved if the canal is cleared of the first child. If the first child lies transversely, and the second child sits astride with feet in the vagina the best procedure is usually to perform version and extraction upon the first child, although each of these cases presents a problem of its own and must be dealt with individually, some cases justifying cesarean section and some craniotomy."—(Cragin's *Practice of Obstetrics.*)

5. PROLAPSED CORD. *Danger:* Compression causes death of the fetus. *Treatment of prolapsed funis* consists in : (1) Not rupturing the membranes prematurely unless there is some positive indication; (2) postural treatment, in which the woman is placed on her back or on the opposite side to that on which the cord lies, with hips and pelvis elevated, or the knee-chest position may be adopted; (3) reposition of the cord, either manually or with some form of repositor; (4) speedy delivery, by forceps or podalic version.

6. PHLEGMASIA ALBA DOLENS is a form of manifestation of puerperal sepsis in which there is a thrombosis of the iliac or femoral vein. Sometimes it occurs after a uterine phlebitis, in which clots are carried from the uterine sinuses to the hypogastric veins, where they cause obstruction to the blood flow in the crural veins. The trouble may also begin as a crural phlebitis. It is thus due either to cellulitis or to thrombosis. It usually appears about the third or fourth week of the puerperium. *Symptoms:* Irregular chilliness and malaise, pain in leg and abdomen, rigor and swelling of leg, fever, skin is white and tense, and the vein feels hard. *Treatment:* Rest in bed, support patient's strength, relieve pain, and apply lead and opium wash to take down the inflammation.

7.

BREECH.	FACE.
Abdominal palpation will reveal the movable head above, upon which cephalic ballottement may be practised.	Abdominal palpation will show the breech and extremities above.
The anus may be distinguished by the absence of bony ridges, by its small size, and by the sphincteric action.	The mouth may be recognized by its large size, by the presence of the hard bony alveolar ridges, and by the absence of sphincteric action.
There is a discharge of meconium.	No meconium is discharged.
The sharp spinous processes of the sacrum may be felt.	There are no corresponding processes to be detected.
There are no other prominent bony structures to be distinguished.	There is to be noted the presence of the hard orbital borders and the smooth, broad forehead.

—(Dorland's *Obstetrics.*)

8. A *face presentation* is hard to deliver, because, unless the head is fully extended large diameters engage (*e.g.* vertico-mental diameter, of about 4½ inches); further, the face bones do not mould, the membranes rupture early, and the face is a bad dilator.

9.

RETROFLEXED GRAVID UTERUS.	PREGNANCY WITH OVARIAN TUMOR.
Symptoms of incarceration early.	Absent or very late.
Bladder symptoms pronounced.	Absent or inconsiderable.
Tumor symmetric and soft all over.	Usually asymmetric, hard, and tense all over or in places.
No other tumor above the pelvis.	Often can feel pregnant uterus above inlet and to one side.

RETOFLEXED GRAVID UTERUS	PREGNANCY WITH OVARIAN TUMOR
Moving the cervix imparts impulse to the tumor.	The upper tumor (uterus) can be moved independently of tumor.
The fornices are flattened, at least not drawn up.	The fornices are drawn up high, sometimes even above the pubis.
The tumor in the cul-de-sac may contract.	Never.
May distinguish the fetal parts.	Never.

—(De Lee's *Obstetrics.*)

10. Salpingitis. The usual cause is septic infection, or gonorrhea. *Diagnosis:* A dragging sensation in the neighborhood of the affected tube; colicky pain, which is increased on exertion or even on standing; abdominal tenderness; menstrual disorders, as amenorrhea, metrorrhagia, dysmenorrhea, menorrhagia; dyspareunia; there may be septic symptoms and peritonitis; sterility generally ensues. On examination there will be found a fullness in Douglas' pouch and one or both lateral fornices; in these latter will be felt either the tubes, distorted and possibly adherent, or a sausage-shaped tumor, which is very painful; the uterus is retroverted or retroflexed, and may be bound down by adhesions; there may be an intermittent expulsion of pus accompanied and preceded by a burning pelvic pain.

Treatment: Rest in bed, hot vaginal douches, saline purgatives, liquid diet, morphine (if necessary) for pain, removal of pathological conditions and complications; radical operation (salpingectomy, or salpingo-oophorectomy) may be necessary.

SURGERY.

1. *Chronic suppuration of the middle ear* is due to the permanent lodgment of staphylococci in the acutely inflamed middle ear. This is usually brought about by improper (*i.e.*, excessive) treatment of acute otitis media. *Treatment:* "Cotton must never be worn in the discharging ear. The discharge must be mopped out, but if very thick and copious, syringing by means of sterile water or sterile water containing salt (gr. 5-℥ 1) or carbolic acid (1:40), once or twice in 24 hours in bad cases is permissible. After mopping the ear, 10 drops of an antiseptic solution may be instilled. Formalin solution (1:1000-1:2000), carbolic acid solution (1:40), or, if granulations are present, absolute alcohol, may be dropped in and allowed to remain for a few minutes, and then turned out into a towel. This treatment should be continued once or twice a day in very bad cases, and less often when the discharge decreases. If, after several months, improvement does not take place removal of the ossicles under general anesthesia may be necessary."—(*Pocket Cyclopedia*).

2. Gonorrheal Conjunctivitis. *Symptoms:* Swelling and redness of the eyes, the presence of a discharge which soon becomes purulent, the conjunctiva of the lids becomes thickened, the eyelids are edematous, pain is severe, and there is some fever.

Diagnosis is made by the history, the symptoms, and finding the gonococcus in the purulent discharge.

Management: Protect the sound eye. Wash the eye carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped onto the cornea every night and morning. The eyes must be covered with a light, cold wet compress. The patient must be isolated, and all cloths and compresses used must be burned. In adults the irrigation must be frequent, about every half hour or hour.

3. Phlebitis. *Symptoms:* A hard, painful, cord-like swelling forms over the vein. Skin over this is dusky, congested, and edematous. If the vein is superficial there are no other signs. If it is the main deep vein of the limb, massive solid edema occurs, with considerable lymphatic engorgement (white leg). Superficial veins enlarge in order to carry on the collateral circulation. Fever, with rigors, occurs, and is proportioned to the infectivity of the process. Abscesses develop round an infective phlebitis. *Complications:* Cardiac or pulmonary embolism follow the dislodgement of a thrombus. Pyemia results from the disintegration of a septic thrombus. Permanent edema with varicose veins is left in the leg when the deep femoral is blocked. *Treatment:* Rest and elevation in bed for six weeks. Belladonna applications for pain. Excision of the veins in recurrent superficial phlebitis. Incision, removal of clot with proximal ligature in infective phlebitis, *e.g.*, in the juglar vein following acute mastoiditis.—(*Synopsis of Surgery.*)

4. *Pott's disease* is tuberculosis of the spine. The *symptoms* are pain, tenderness on pressure, rigidity of the back, and a sense of weakness, which may usually be recognized by the child's actions. When suppuration occurs, the pus may enter the sheath of the psoas, destroying the muscle, and presenting in the iliac fossa or groin as an iliac or psoas abscess; or it may pass backward through or external to the quadratus lumborum, and point in the loin, when it is known as lumbar abscess. In the cervical region retropharyngeal abscess may occur. Spinal paralysis may come on at any time and myelitis develops in the latter stages. *Treatment:* "Rest in bed, using sand bags as splints, is the first consideration. After the acute symptoms have subsided a Thomas splint, Sayre's plaster cast, or Cocking's felt jacket may be applied to the back and the patient gradually allowed to move about. *To apply the plaster-of-Paris cast,* the patient should be suspended so that the heels are just off the ground. A skin-fitting vest is then applied to the trunk, under which a stomach-pad is inserted, which should be removed after the plaster has become dry. Plaster bandages should now be applied in the usual manner, extending from the level of the axilla to just below the crest of the ilium. When the case is dry, it may be divided down the front and perforated, so that it can be laced up or removed at any time. Abscesses should be opened early and freely, and injections of iodoform emulsion will be found very beneficial. Laminectomy is sometimes advisable."—(*Pocket Cyclopedia.*)

5. In *fracture of the surgical neck of the humerus,* the head of the humerus will be found in the glenoid cavity, but it will not rotate with the shaft; the arm will appear shorter; and crepitus and abnormal mobility will be elicited unless there is impaction.

In *dislocation of the shoulder joint,* the glenoid cavity will be empty, and the head of the bone will be found in an abnormal position; the arm will appear longer; there will be no crepitus, and no abnormal mobility.

Recent dislocation of the shoulder. Kocher's method of reduction is: to flex the forearm, press the elbow to the side, rotate the arm outward. Bring the arm forward and upward to a right angle with the body, then rotate inward, while the elbow is brought down over the body so that the fingers sweep the opposite shoulder.

6. *Ischiorectal abscess. Causes:* Infection of the ischiorectal tissues with pyogenic microorganisms; skin infection; infection from rectum; trauma. *Symptoms:* Severe and throbbing pain in perineum and round anus, great tenderness, edema, redness of skin, fever, and signs of pus formation. *Treatment:* Free incision, opening up every part of the abscess; do not wait for fluctuation. Irrigate and drain.

7. "*Rodent ulcer* is a carcinoma beginning in sebaceous glands. It generally occurs in patients over forty, and is of very slow growth. It begins as a smooth, rounded knob in the skin about the nose, eyelids, orbital angles, or cheeks, slowly increasing in size. In time ulceration occurs. The ulcer has a smooth, depressed base covered with ill-formed granulations, and bounded by a slightly raised, indurated, rolled-over edge. There is little discharge if sepsis is prevented, and little or no pain. The lmpyhatic vessels and glands are not affected, and dissemination does not occur. The ulcer spreads and destroys surrounding structures; even bone is not spared, so that the brain may ultimately be exposed. Microscopically the growth resembles epithelioma, but the cells are never of the 'prickle-cell' type, and no 'cell nests' are found. The cell columns spread more laterally than deeply, and there is less small-celled infiltration around. *Treatment:* Free incision, allowing a margin of ½ inch all around. If the situation or extent do not allow of this, Röntgen rays should be used for ten minutes daily till healing occurs."—(*Aids to Surgery.*)

8. "In the treatment of compound fractures the main object is to render the wound aseptic and to give efficient exit to the discharges. For this purpose the patient should in all cases be anesthetized, the limb shaved, and thoroughly purified, and the wound enlarged and thoroughly washed out with some reliable antiseptic. It may be advisable to excise torn and dirty fragments of skin, muscle, and tendon, especially when dirt has been ground into them. Loose fragments of bone are removed and portions denuded of their periosteum may be taken away lest necrosis should ensue; where fragments retain any considerable connection with the soft parts

they may be left without fear. When a sharp end of one of the fragments is protruding through a small opening in the skin it is first purified thoroughly before attempting its reduction and then replaced, after enlarging the wound in the skin, or a portion sawn off. Hemorrhage is dealt with in the usual way, and the fragments are placed as nearly as possible in their normal position. If the fragments can be brought accurately into position it is well to fix them by some mechanical appliance; but where the ends of the bone are much comminuted the small portions must be arranged in position as well as possible, and no attempt made to wire them. A good-sized drainage tube is inserted, and, if need be, counter-openings are made; the external wound is closed or not, according to circumstances, and dressed and suitable splints are then applied. Under such a régime the majority of cases do well. Immovable apparatus may be used after a time, windows being left in the plaster casing to allow wounds to be dressed." —(Rose and Carless's *Manual of Surgery.*)

9. ILEUS. *Varieties, with causes:* 1. *Acute*, caused by strangulation by bands and through apertures, kinking, volvulus, foreign bodies, and intussusception. 2. *Chronic*, caused by stricture, fecal accumulation, and tumors (either within or outside the bowel). *Treatment of the acute variety:* "The only thing that can give the patient the chance he ought to have is immediate operation. It is advisable to wash out the stomach before the operation, so that intestinal contents may not be vomited and inhaled during operation.

"Three objects are aimed at: (1) To empty the distended bowel above the obstruction; (2) to relieve the obstruction; (3) to treat the strangulated intestine. In cases that are almost moribund, the abdomen should be opened with cocaine or eucaine anesthesia; a distended coil is pulled out and tapped, a Paul's tube being subsequently tied in. The peritoneal cavity is protected with gauze packing during these manipulations. The bowel is stitched to the abdominal wound after the feces and flatus have drained away. No attempt at relief if the obstruction can be made in these cases till a later date, and, of course, a high death-rate must be expected.

"In less severe cases the abdomen should be opened in the mid-line below the umbilicus, and a systematic search made for the cause of the obstruction. The hernial orifices are first examined, then the cecum. If the cecum is distended, the obstruction lies below it; if collapsed, above it. In the former case the sigmoid should next be examined. If collapsed, the colon must then be traced backwards till the obstruction is found. If the cecum is collapsed, the intestine must be pulled out a foot at a time and examined, beginning with the ileum, and replacing it as each part is done with. If the intestine is much distended, several coils may be tapped and emptied, to facilitate the search.

"Bands and adhesions should be divided between ligatures. A volvulus should be untwisted if possible. If it tends to rewind, the mesosigmoid must be stitched to the abdominal wall. If it cannot be untwisted owing to adhesions, or if the mass is gangrenous, it must be resected if the patient can stand so severe an operation. If not, an artificial anus must be made both in the drawn-out loop and in the colon above it.

"Foreign bodies should be pushed back to a healthy part of the intestine, and removed through an incision at the antimesenteric border, which is afterwards stitched up."—(*Aids to Surgery.*)

10. *Carcinoma of the breast:* "Scirrhous carcinoma is usually met with in women between the ages of thirty-five and fifty, and it often begins while the patient is still menstruating regularly. It sometimes occurs in patients below thirty. The most common site is the upper and outer quadrant of the breast, but it may occur in any part of the gland. Sometimes there is more than one nodule in the breast. In its early stages the condition is quite painless, and the existence of the tumor is usually discovered accidentally. In some cases indrawing of the nipple or dimpling of the skin over the breast first attracts attention. It is often noticed that there is a difference in the level of the two nipples, that of the affected breast being at a higher level than the other (Watson Cheyne). As the disease progresses the patient experiences a dull, aching pain, with occasional sharp twinges shooting through toward the shoulder, up into the neck, or down the inner side of the arm. On palpation, a more or less circumscribed and fairly well-defined tumor of stony hardness may be felt in the substance of the breast. Not being encapsulated, it cannot be moved apart from the breast. When firmly pressed against the chest wall with the flat of the hand the tumor becomes more evident, and its stony hardness is fully appreciated. The skin over the growth may for a long time remain free, but, as the disease progresses, it becomes tacked down, and is later dimpled by contraction of the suspensory ligaments of Cooper. When the skin becomes invaded by the tumor it assumes a characteristically coarse and indurated appearance, aptly compared to that of the skin of an orange or to pig's skin. When the tumor is near the center of the breast, it causes retraction of the nipple by dragging on the large ducts. It cannot be too strongly emphasized that the presence of all or any of these symptoms is not necessary for the diagnosis of cancer, and that when there is any doubt the patient should be given the benefit of an exploratory operation." —(Thomson and Miles' *Manual of Surgery.*)

Therapeutic Hints.

Treatment of Eclampsia.—Knipe and Donnelly show excellent results and a lower mortality rate by the use of the following treatment than by any radical operative measures: Lavage of the stomach; 2 oz. of castor oil given through the stomach tube; 20 to 30 minutes' sweat in the sweat cabinet; hypodermic of morphia, ½ gr. is given if convulsions are violent or frequent; hypodermoclysis after the first sweat followed by proctoclysis midway between subsequent sweats; venesection if systolic blood pressure is over 180 and more particularly if the diastolic pressure is high; an initial dose of veratrum viride (10 minims) followed by nitroglycerine 1/100 gr. at four-hour intervals. Puncture of membranes if pregnant or in labor and abstention from any operative interference to hasten delivery, which was found to spontaneously terminate in from eight to ten hours from the institution of treatment.—*American Journal of Obstetrics.*

Easily Procured Hot Compresses.—Elizabeth Robertson suggests to wet the compress with tepid water, then iron it rapidly with a very hot flatiron. Sufficient steam is produced to hold more heat and the hands are protected from wringing out excessively hot cloths.—*American Journal of Nursing.*

Injection Treatment of Hemorrhoids.—A 20 per cent. solution of carbolic acid in equal parts of glycerin and water injected by means of a sterilized needle into the hemorrhoids produces excellent results and removes the necessity for confinement in bed, or an anesthetic, and the risk of stricture or incontinence.

Treatment for Rhus Toxicodendron Poisoning.

℞ Resorcin, grs., xl
Pulverized starch, ʒiv
Zinc oxide, ʒiv
Lanolin, ʒiij
Vaseline, ʒvj

M. Sig.: Apply on sterilized gauze to affected area. —*Medical Summary.*

Exercise on All Fours for the Prevention of Subinvolution and Retroversion.—Beck offers this means as a prevention of these conditions after childbirth, but only to be used when the patient can have the opportunitly to rest for nine days after the delivery. On the ninth day after labor the patient is required to walk five or six yards on her hands and feet with the knees held as rigidly as possible; on the next day the distance is doubled and the exercise is to be carried out both morning and afternoon. The walk is increased gradually each day until discharge from the hospital, and the patient is advised to continue the maximum walk at home for two more weeks. Any abnormal condition, such as a bloody vaginal discharge, contraindicates this exercise.—*American Journal of Obstetrics.*

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A TUBERCULOSIS SURVEY OF AN ALASKA ESKIMO VILLAGE.

USING CHILDREN UNDER THE AGE OF 15 YEARS AS AN INDEX.

BY H. CLAY MICHIE, B.S., M.D.,
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THERE is no disease that has received more attention than tuberculosis, and there is no disease that demands more investigation on account of its high morbidity and mortality rates. It has been said that one-seventh of the total deaths of the world are due to this disease. One-seventh is too low an estimate in this portion of Alaska.

No one knows when or how tuberculosis was introduced into Alaska, but it is most probable that it was brought from Asia with the aboriginal tribes. It is possible to obtain a history of pain in the chest, emaciation, spitting blood, and "a long time sick" in a tribe as far back as memory goes; but as there are no records, except the totem poles, history dates no farther back than the memory of man. These totem poles are records of family deeds and achievements, as killing a certain kind of an animal, etc., and are not health records.

The specific cause of tuberculosis, of course, is known to all professional men, but we know of no specific treatment. When these conditions exist we lay great stress on the predisposing causes to disease and must rely on Nature for the therapy. In both of these respects the Eskimo is unfortunate. He is predisposed to tuberculosis from every aspect, his ancestors have had it and most of his children are now suffering with it. The natives live together in small houses made of mud, logs, grass, or anything they can get, averaging about 350 cubic feet of air space per person. Some of these houses are partly underground as illustrated in Fig. 1, from a drawing of an Eskimo "igloo" of the Yukon Delta. If they live near any trading station they will have a glass window; if not, they will have a small opening over which is stretched a translucent curtain made by sewing together several strips of seal gut after it has been scraped and dried.

Fuel is scarce; in fact, there is not a tree within 50 miles of here, and the Indian must rely upon gathering driftwood from the seashore. As it is so hard to obtain fuel, and he never provides his winter supply of fuel during summer, he exerts every effort to keep within his walls all the heat generated by the small amount of wood consumed. With this in view you will find that every possible opening has been closed and will be kept closed, and that his house is a very small one indeed. The house is usually composed of one room and a storm entrance. Within these the Indian stores everything he has except his means of transportation—kyak, dogs, and sleigh. He dresses principally in furs. These have been poorly tanned and are foul smelling (old urine has been used in the tanning). He sleeps in furs, sometimes upon improvised benches and at other times sitting upright upon the floor with his back against the wall, where he nods all night without undressing. There is no form of artificial ventilation, and there is no natural ventilation if he can prevent it; in fact, some of the Indians will even draw something over the window for fear that "spirits" will see them while they are asleep.

The white man of the United States knows very little about Eskimo food, and may not be in a position to believe a general description of it when he reads it. In fact, to get the proper conception of the Eskimo food, one must see it and smell it. The native lives almost entirely on food obtained from the water, and the villages are located on or near the sea or a stream. In spring and summer they catch fish by seining and with traps. These fish are split from head to tail and hung up to dry, and in some cases are smoked for preservation purposes. They also catch seal (the hair seal), extract the oil by boiling down the fat, and eat the meat. These two articles of food are stored in their houses, the fish in piles or bundles and the seal oil in such vessels as they have. The fish may be cooked with a little water and flour (if they have it), but are usually eaten dry and raw. The seal oil is also eaten raw. At meal time the family sits in a circle upon the floor and the squaw places a vessel of seal oil in the center, convenient to all, and gives each person a fish. They eat the fish straight, and from time to time dip three or four fingers into the seal oil up to their knuckles, then, placing their fingers in their mouths, they suck the oil off. This is repeated until the meal is completed. If any oil is left over, this is saved for another meal. This is about the most complete bath that some of their hands get, and it is not uncommon to see children with their fingers much cleaner looking than the rest of their hands on that account.

Winter offers another kind of food—tomcod fish. This is a fish with white meat, soft and comparatively free from bones. During the tomcod season the natives can be seen daily out on the ice fishing through a hole. They use a hook on a short string and stick. A piece of red flannel or some other article is used as bait. The fish are attracted to the hole by the light and by vibrations created in the water on moving the hook up and down. As they appear at the hole in the ice the native moves the hook up and down, catching the fish by the mouth, side, or anywhere. These are thrown out on the ice and rapidly freeze; are then taken home and stored in the storm shed. They are eaten raw in the frozen state. The native also eats geese, duck, reindeer,

and ptarmigan; in fact, anything obtainable. They are poor providers, and in winter many of them have to rely on the tomcod they catch daily or go hungry. At times they will catch fish or game in summer and bury it in the ground, possibly to prevent access to flies. In winter this partly or completely decomposed mass will be dug up and eaten, sometimes raw and sometimes cooked. They are said to pull off the feathers or scales with their fingers and eat the animal to the viscera.

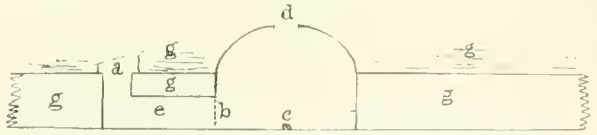

FIG. 1.—Diagram of an Eskimo Igloo of the Yukon Delta, Alaska. *a*, Entrance, covered to keep out rain and snow. *b*, Curtain of fur to prevent draughts. *c*, Fire pit. *d*, Opening in thatched roof, covered with seal gut for light, occasionally opened to let out smoke when too concentrated. *e*, Underground passage way. *g*, Ground.

Water is scarce in the native village, and the native rarely bathes. In winter all water is obtained by melting ice. The only form of bath that they freely indulge in is the "sweat bath," and this is almost entirely confined to the men. At certain times during the year—usually fall, winter, and early spring—the men gather in the kashim just after the sun goes down for the purpose of taking this bath. Each village of any size has a kashim, or council house. This is built of logs, mud, grass, etc., has no windows or doors, has an underground passageway, that opens up into the center of the room, through which the native enters. In the center of the roof there is a small opening covered with seal gut through which the small amount of light enters. Ventilation is exceedingly poor, and the walls are black from smoke. After the men enter for their bath, a smouldering fire is started in the pit through which they have entered and the smoke and heat enter the kashim. The natives are naked and seated or lying down on the benches around the sides of the kashim or upon the floor. The smoke is intense, and they cover their noses and eyes with very fine wood shavings. They must remain in the kashim until the fire is out in the pit, as this is the only means of exit. When the bath is over, the native rubs himself down or, if very hot, will go out and roll in the snow first. He often rubs himself with seal oil before dressing.

From the above insight into the Eskimo environment it is quite conceivable why any communicable disease spreads rapidly among them, why their resistance is low, why they are easy prey for epidemics, and why the odor of their person and shacks is almost unbearable (to the untrained nose).

The United States Bureau of Education has, as one of their duties in Alaska, the medical care of the Eskimo. Their appropriation is small, and they cannot reach many of the natives, and St. Michael is one of the places where no medical attention is furnished. In fact, the nearest doctor is about seven days distant. The smell of these people and their shacks, the filthy condition of their person and clothing, and the presence of head and body lice, make professional attention among them the most disagreeable duty the writer has yet encountered. In spite of the above disagreeable features, a tuberculous survey of the native villages on this portion of St. Michael Island was begun on Feb. 16, 1916, and completed about two months later. This survey consisted in going through every house, noting the size, condition, number, and age of the persons living therein, garbage and sewage disposal, and general sanitary conditions.

There are two villages at St. Michael, one composed largely of "siwashes" and the other of "squaw men." This latter village, although quite unsanitary, is far cleaner than a typical native village. The other village is composed largely of Eskimo, or siwashes, and is more nearly a typical one, but both are considered among the cleanest villages in Alaska. The native village is the one from which the following statistics are taken.

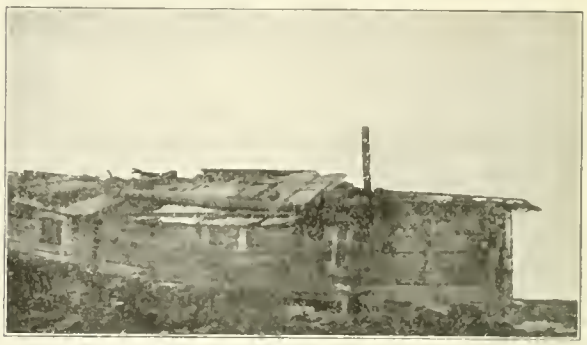

FIG. 2.—Eskimo house, one room; fourteen persons live here.

Without exception a native village is the most unsanitary place the writer has ever seen. The Eskimo depends on the malamute dog for all of his land transportation. These animals are tied outside of the house and given one fish daily for their subsistence. The site around these dogs becomes intensely filthy from urine and feces, but remains frozen until about May of each year. The native eats almost everything that is set before him, so there is little or no waste from that source, but the men urinate just outside of their doors, and the women and children urinate and defecate in such vessels as they have and throw it out of the window or door. The dogs eat the feces and the urine freezes. In spring when the snow melts and leaves all of this solid material, a native village is about the filthiest and most foul-smelling place imaginable.

There are 107 natives in the St. Michael Eskimo village, occupying 27 houses with an average of about 350 cubic feet of air space per person. Of the 107 persons, 46 are children under the age of 15 years. In fact, the absence of persons between the ages of 15 and 25 is very noticeable, and this is also true in the native villages of Sourdough and Stebbins that have recently been visited. Some persons claim this is because of an epidemic in 1900 that killed thousands of natives, and others say that it is a well-known fact among the natives that the sixteenth birthday frequently is a death period, and these people believe that if they can pass this birth-

FIG. 3.—Modern (clean?) village.

day they will grow into manhood. The origin of this belief has evidently come from the exceedingly high death rate about this age from pulmonary tuberculosis. There are 10 other persons who live in the St. Michael village a portion of their time, and many others who visit here from other villages. There is very little difference in size of the several houses, but from one to fourteen persons occupy each. In one house there are eight adults and six children. There is also advanced pulmonary tuberculosis among them, but all live and eat under the same conditions.

Realizing the difficulties of going into the houses of these ignorant, dirty, and superstitious people to make physical examinations, it was thought best to turn to the schools and use these children as an index. It has been said that once we contract tuberculosis, the tuberculous lesion remains, although possibly presenting no symptoms but remaining in a walled off state.

There are two schools at St. Michael, one "The Native School" which native children attend, the other, "The White School" for white children, but which a few other children who have Eskimo blood attend. These latter children live under conditions more nearly approximating those of white people. The cooperation of the several teachers was requested, and the teachers in both schools brought their pupils to the office, where they were examined physically. The von Pirquet tuberculin test was made on each (using Koch's O. T.) and read the following day. An attempt was made to examine the sputum from each child, but was discontinued as unsatisfactory except where the child had a cough.

Of the 46 children in the village, 26 were examined and tabulated as below. A greater number could not be obtained without arousing antagonism, as in some instances the parents were afraid to let their children be examined.

Tuberculosis Survey—Children Native School

Case No.	Age	Temp.	Pulse	Resp.	Chest Measure		Wt., Lbs.	Height	Tuberculin	Sputum	
					Insp.	Expn.				T. B.	M. C.T.*
1	14	98 8	116	18	39.5	30.5	80	56 25	—	—	—
2	5	99 8	120	24	24 2	25	42	41 25	+++		
3	6	99.2	110	19	22	22 7	38 5	44 2	+		
4	6	98	112	20	22	22.5	34 5	40 2	+?		
5	7	99.6	105	22	33 2	23 7	44	42 7	+		
6	7	99.1	104	24	23 7	24 2	44	46	—		
7	7	99 8	132	32	25 5	26 5	53	46 5	+++		
8	5	100	120	28	23 5	24 2	37	40 7	++		
9	8	99 8	72	26	26.5	27	48	45 5	++	—	+
10	10	99	132	22	27	27 7	56	48 5	+?	—	—
11	12	99 3	80	18	28	29 5	75	55	+		
12	11	99 7	104	24	25.2	26	57	51 2	—	—	—
13	7	99 6	66	24	22.5	25 2	48 5	47	+		
14	9	99 6	104	22	25	26 7	54	49 7	—		
15	11	98 2	92	26	26 2	27.2	59	47	+?	—	
16	13	99	96	24	29.5	30	80	54 2	—	—	—
17	8	98	104	32	24 2	25 5	53	46 5	—		
18	5	99 4	104	36	26	26.7	44 5	43	+++	—	+
19	11	99 4	104	24	27 7	28 7	73	53	++	—	—
20	12	100	100	24	27 7	28.7	76	53	+?	—	—
21	10	99 5	98	18	28 7	29.7	62	51 5	+	—	—
22	11	98 6	64	18	26	27 7	61	54 2	+		
23	10	99 4	80	25	28	28 5	63 52	52	+		—
24	13	99 6	80	20				80	++	+	
25	7	99.6	100	20	25 2	25 7	47	47 2	++	+	
26	11	98	90	24			74 5		+		

*T. B.=Tubercle bacillus. M.C.T.=Micrococcus tetragenus

Eight children were examined from the "white school," and the results from this examination were as follows:

This is a small number, and one should not draw the conclusion that these figures represent conditions all over Alaska for children under the age of 15, but it does give an insight into what exists in the schools here.

Tuberculosis Survey Children White School

Case No.	Age	Temp.	Pulse	Resp.	Chest Measure		Weight, Lbs.	Height, In.	Tuberculin	Sputum	
					Insp.	Expn.				T.B.	M.C.T.
27	14.5	99 6	104	24	32	32 5	100	60	+		(a)
28	7	99.4	110	26	24 7	25 5	51	47 5	++		
29	13	98	96	26	29.5	30.2	98	60	—		
30	8	99.2	88	20	25.2	26	60	49	++		
31	10	99.7	96	24	26.5	28	62	54 2	++		
32	6	98	100	20	23	23 2	40	45.5	+?		
33	12	98	80	22	27.7	28.2	85	75.7	+		
34	9	98	100	20	26	26.5	68	52	+?		

(a) No sputum examinations made.

Comparison

	White School, per Cent.	Native School, per Cent.
Positive	62 5	61 53
Negative	12 5	23 05
Suspicious	25.0	15.36

There was occasion to examine 11 adults during this survey, both the sputum and their physical condition. All were positive for tuberculosis. However, all of them asked to be examined on account of pain in their chest, and some on account of hemorrhage.

It is believed that at least one-half of the suspicious cases in the tables above would prove to be positive if several examinations were made. In the above tables, cases are called positive when they presented positive signs with the stethoscope and a positive tuberculin test; are called negative when neither of the above were present, and suspicious when abnormal lung signs were revealed and the tuberculin test was negative or inconclusive.

The following method was found most satisfactory in applying the tuberculin. The jeweler's swivel screw drivers are placed in 95 per cent. alcohol for sterilizing purposes; the left arm is scrubbed with alcohol just below the insertion of the deltoid muscle. The operator seizes the fleshy portion of the under surface of the patient's arm and draws the skin taut, then with a 4½-in. screwdriver, as shown in the accompanying illustration with the swivel in the palm of the hand, rapidly turn the bit in first one direction and then the other until the epidermis is removed and the true skin exposed. This will take about six half turns, make a beautiful scarification, and cause little or no pain. The denuding of two areas is invariably done, the upper used as a control with nothing applied and the tuberculin applied to the lower with a flamed platinum loop. No dressing is used, and the patient reposits the clothing as soon as the tuberculin is dry. The patient returns in 24 hours and a comparison is made of the two lesions. The control shows little or no irritation, only a dry scab. If negative, the lower lesion will resemble the upper; if positive there will be a red papule at the lower lesion surrounded by a hyperemic zone. Depending upon the size of the papule and the hyperemic zone, the table includes one, two, or three plus indicating the degree of positiveness.

Sputum examinations were made in thirteen of the twenty-six cases from the Native School, and the tubercle bacillus was found in three of the thirteen. These three cases had consolidated areas, many rales, cough, and sputum; also presented a phthisical appearance. A careful search was made

for the *Micrococcus tetragenus* in all of the sputums examined, and this organism was found in six of the thirteen. The relation to the tuberculin reaction can be seen on the accompanying chart.

The micrococcus has been spoken of as often being an associate with the tubercle bacillus, and from a limited experience the writer considers a sputum more suspicious when it contains this organism. All professional men know that the finding of even one tubercle bacillus diagnoses the specimen as positive for tuberculosis, but there are many artifacts that unavoidably appear in microscopic specimens, and the writer would not call a specimen positive on finding only one object that appeared to be the tubercle bacillus. It has further been the case in my experience that one will not find only one tubercle bacillus. If this organism is present, and the preparation is properly made, a search for half an hour will reveal a number of them or none at all. However, this may not be the experience of men more experienced in microscopy.

As the tuberculous percentage is high in this

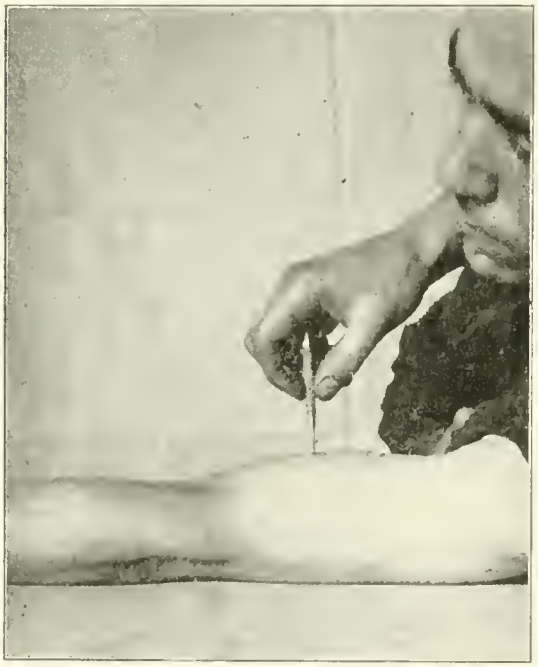

Fig. 4.—Method of administering tuberculin with a swivel screwdriver.

locality, a medical man practising here will necessarily make many sputum examinations. The following is the procedure that has been followed in this laboratory: The patient is instructed to collect what is coughed up and not saliva, and is given a paper sputum cup for this purpose along with a metal frame to hold it. When the specimen is brought in, the paper cup is removed from the frame and opened. Suspicious particles are smeared evenly and thinly on clean glass slides free from scratches, the specimen is dried in the air and passed through an alcohol flame 7 to 10 times, depending upon the thickness of the slide, to fix it. The slide is given a number which corresponds to the sputum cup and the smear outlined with a wax pencil so as to prevent the stain from spreading over the ends of the slide. Four slides are made from each specimen of sputum, and all are given the same number. These slides are placed upon a level rack that has an opening under each slide. More slides are made in a similar manner until all the specimens are ready for staining. Alcohol carbol fuchsin (alcohol 95 per cent., 20; phenol crystals, 8; fuchsin, 4; water, 100) in definite amounts, as indicated upon a glass tube used for the purpose, is placed on each slide. This completely covers the specimen between the parallel pencil marks and does not flow upon the ends of the slide. After each slide is covered, an alcohol flame is passed under the slides until they commence to steam and are left steaming (not boiling) three minutes, care being taken to see that none of the slides becomes dry. Wash with water, commencing with the first slide stained, drain off the excess and decolorize with acid alcohol (hydrochloric acid, 2; alcohol 95 per cent., 98) until there is no red color left; wash and stain three minutes with Loeffler's methylene blue; wash, dry, and examine.

Summary:—1. More than 61.5 per cent. of the Eskimo children under the age of 15 years are tuberculous in one of Alaska's cleanest villages.

2. Their environment is such that tuberculosis must increase among these people.

3. They offer one of the greatest fields for medical missionary work.

4. From a hygienic standpoint their entire system of living is wrong, but will ignorance, superstition, and climatic conditions permit a change?

5. The only source of relief at present seems to be the enactment of the necessary legislation to prevent fur traders from robbing the Eckimo of his small products, and larger medical appropriations to the Bureau of Education for use in Alaska.

THE PRESENT STATUS OF CHRONIC MULTIPLE ARTHRITIS, WITH SPECIAL CONSIDERATION OF INFECTION AS AN ETIOLOGICAL FACTOR.

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In a former paper we spoke of the proliferating or ankylotic type of chronic multiple arthritis in which the rôle of infection is evident; in the present we shall consider the non-ankylotic type in which infection is doubtful.

Degenerative or Non-ankylotic Type of Chronic Multiple Arthritis.—This type, by some designated osteoarthritis, hypertrophic arthritis, is characterized by degenerative joint changes and new bone formation. It occurs chiefly in middle life. There is slight, if any, tendency to ankylosis. It is attended with little muscular wasting.

The prominent primary lesion here is cartilage degeneration. In the proliferative type the cartilage is destroyed by a pannus formation creeping over it and gradually absorbing it, leading to fibrous tissue formation and bony ankylosis. In the degenerative type the cartilage is also destroyed but by a primary necrosis, leaving the ends of the bones free. Friction of the exposed ends leads to condensation—the so-called eburnation. Ankylosis does not occur. We meet here no new cell proliferation as in the other type; in short no inflammatory findings. We have the melting away of certain tissues with excessive new bone formation. Pathologically, a true degenerative process on the one hand with a slow heaping up of new bone on the other. Of the small joints, the distal phalangeal joints are the first to

be attacked in contradistinction to the proliferative type, where the proximomedial joints are first implicated. This clinical onset is striking and bespeaks the strongest possible differentiation of the two types.

Fig. 1.—Degenerative or non-ankylotic type of chronic multiple arthritis. Onset at menopause. Note the enlarged distal joints—Heberden nodes showing well. Note also proximo-medial enlarged joint—a later manifestation of the disease.

The subjects are older and many writers are fond of using the term senile — at present a word of doubtful scientific pathological meaning. This type is exceedingly common at the menopause.

There is a disposition on the part of some to regard the type as primarily due to bacterial infection. At present we have no scientific basis for such a sweeping belief. Its exponents produce no scientific proof. Infection does not appear to explain this type as it does the proliferative. Most of the signs of infection here are wanting. There is an abscence of fever, little or no glandular enlargement, little or no leucocytosis—in short, there are no true inflammatory signs as in the other type. Absorption and apposition here go hand in hand, but the absorption is here due to degenerative changes leaving the bones bare. These are ground into condensed surface formation through friction changes much as rocks are ground through glacier movement. In the proliferative type the cartliage also disappears but disappears through a live fungus-like pannus eating into its very substance, absorbing it and leaving in its place new granular tissue which becomes fibrillated, going on to true bony ankylosis. Here then is the real pathological difference and this alone is enough to stamp the types and explain much of the clinical difference. New bone formation seems to develop secondarily, the result of stimulation of the osteogenetic cells. The acting irritation comes from cartilage loss influenced by trauma and static conditions.

To make the subject clear and to accentuate the striking clinical characteristics arising from the pathology just considered, let me mention the so-called Heberden-node type as perhaps the most classical illustration of the disease under consideration. The distal phalangeal joints are here first involved and as an early sequel to cartilage loss there follows a new bone formation on the distal phalanges. This node contrasts with the spindle-shaped or Haygarth nodosity of the proximomedial phalangeal joints so characteristic of the proliferative type. This degenerative malady advances usually through repeated slightly painful attacks in the vicinity of the node and after the subsidence of these attacks the node is found larger.

The malady, if unchecked, does not remain limited, but gradually extends to the more proximal joints of the hands and to other joints of the body. Sometimes this disease makes its first appearance in one of the large joints as the knee or hip.

The cuts reproduced here well illustrate this type of arthritis. They are after photographs of a private patient, whose condition I have studied very thoroughly.

This disease began at the menopause but intermittently involving the distal phalanges and the patient began to point to the "knobs" on her fingers.

Fig. 2.—Radiogram of hand shown in Fig. 1. Note involvement of distal joints, also proximo-medial joint of little finger—cartilage destruction and new bone formation. Note good condition of remaining joints. Compare with radiagrams of proliferative types shown in a former article, noting especially selective character of each.

After several years the medioproximal joints of the hands became involved together with the tarsal joints of the feet. For the benefit of those practitioners who in similar cases are wont to cut out meat from the diet, I will say that this patient's

diet was during all the developmental period of the malady almost entirely carbohydrate. Meat had early been excluded.

If we study the *x*-ray picture of the hand and foot here produced, we fail to find the wholesale bone destruction so characteristic of advanced cases of the proliferative type. This wholesale destruction in the latter type led to its formerly being called atrophic type—a term now largely given up. I may say here that many confound the terms proliferative and atrophic as applied to the same type—contradictory terms apparently. The explanation lies here: The term atrophic arose in the classification of the early clinicians through finding the large bone destruction in advanced cases; this, together with marked muscular atrophy, made up much of the picture. The word proliferative applies to the early stage of the disease and refers chiefly to the soft tissue cell formation affecting the synovial membrane and capsule—a real increase stamping the type proliferative. The late extensive bone destruction or wholesale bone atrophy or late atrophy term is giving way to a term expressing the early pathological process of proliferation. We may also here refer to the type we are considering as by some still designated hypertrophic from finding excessive new bone formation. This term is still used a great deal but is gradually giving way to the term degenerative or non-ankylotic.

We have shown[1] that new bone formation alone is unreliable as a diagnostic factor since it may go with any form of arthritis where the osteogenetic cells have been exposed to prolonged irritation.

If we revert then to a careful study of the radiogram of the hand as shown in the cut, we do not find the great bone destruction—and the cut represents an advanced case — characteristic of advanced types of the proliferative, ankylosing, or if you please, the atrophic type. The apparent wholesale bone destruction is largely due to new marginal bone formation deepening the joint cavity giving the appearance of bone destruction. This is not unlike the findings often characterizing arthritis urica joints. I called attention to this in a paper[3] read before the American Orthopedic Association showing the actual specimens dissected and well illustrating just what is said here.

I wish to say that while extensive bone destruction is especially common in late stages of the proliferative type of arthritis and condensation and new bone in the degenerative type and in the arthritis urica type, yet extensive bone destruction does sometimes occur in the latter two types. Its explanation may sometimes be found in extensive arteriosclerosis or to a deposit of calcareous salts in the blood-vessels leading to tissue loss, much as a cerebral thrombosis leads to a brain loss.

As already said, this type of arthritis often invades the large joints. We frequently see it affecting the knees, especially of women. Again, the familiar time of onset is at the menopause. Here again we have the primary cartilage loss through degeneration accompanied with formation of new bone. Characterizing this are the subjective symptoms of pain, stiffness, and disability, and the objective signs of grating, irregular swelling, and often evidence of small loose detatched particles. The so-called malum coxæ senile is another form of the malady under consideration. This degenerative type is also very common in domestic animals, especially in old age. Diabetes is not infrequently associated with it.

What Is the Primary Etiology Accounting for This Degenerative Type?—We have spoken of cartilage loss as being primary. Strictly speaking it is secondary. In the sense we use the term is meant that cartilage loss is the first objective sign of the malady. What causes the cartilage to degenerate?

We feel that enough has been said to show that those who would regard true bacterial infection as the basis of this malady are confronted with findings markedly in contrast with those characterizing the proliferative type. The picture is not at all one of infection. All the ear marks of true bacterial infection are wanting. We refer to the true streptococcal infection or of its mutants or variants or to infectious disease proper.

It is unfortunate that many writers on true bacterial arthritic studies still stick to the general title arthritis deformans, making no real differentiation. At this time it bespeaks a lack of knowledge of the subject. Even Rosenow has been justly criticised for his lack of differentiation. His bacterial studies, I am safe in stating, have not yielded in the degenerative type of arthritis now under consideration any of the valuable findings he has given us elsewhere. He is only one of many using the term arthritis deformans in a loose way.

At the basis of the primary etiology there is much pointing to the working of some chemical rather than true infective factor.

As stated, if we study the joint changes we find much reminding us of the joint changes characterizing the arthritis urica or gouty type. There are cartilage loss, eburnation, new-bone formation. In fact findings which characterize that type less the tophaceous deposits of biurate of soda. Many writers recognize in this type a certain relationship with the arthritis urica type, and believe the underlying cause due to a faulty physiology rather than to true infection—a chemical rather than a bacterial factor. It must be admitted that at the present time we do not know just what gout is. We do know, however, that it expresses itself to us through an abnormal prominence of uric-acid findings, while in the degenerative type no such abnormal prominence of uric acid is found. This is a point for physicians to bear in mind.

Axhausen, an active worker in the arthritic field, believes cartilage loss to be the primary factor explaining the changes found in chronic multiple arthritis. We purposely omitted referring to Axhausen's view while considering the proliferative type believing that his findings have a closer relationship with the degenerative type we are now considering. What he says of cartilage loss is of great interest here.

Axhausen[5] contends that from the clinical and macroscopial consideration of chronic multiple arthritis it is impossible to expect a solution of the problem and turns to the histological picture. He places the focus of total anatomical and histological changes in primary cartilaginous necrosis, and holds that the cartilage loss leads, in accordance with laws, to reactive phenomena in the neighborhood which anatomically and histologically make the clinical picture of chronic multiple arthritis. He says the idea that bone necrosis is always identified with infection and sequestration is incorrect, that there is a simple bone necrosis without infection and sequestration playing an important rôle in bone pathology; that from whatever cause—bone transplantation, fracture, bone tumor, or bone syphilis—wherever bony necrosis exists, is established a pow-

erful irritation upon surrounding ossification tissues producing swelling and new-bone formation. He experimented with normal knee joints of dogs and produced circumscribed cartilage necrosis by destroying portions of cartilage varying from the size of a lentil to that of a small bean, and made his examinations after longer and longer periods.

Beneath the cartilage loss he found the medullary tissue changed to fibrous tissue and under the working of this tissue resorption and dissection in progress, also sclerosis of the bone. He also found cystic spaces, synovial villi, and marginal bone osteophytes—in short, all the changes seen in chronic multiple arthritis.

Axhausen reminds us of the fact that cartilage is nourished through diffusion and that the diminished nutrition of advancing years may lead to superficial and even deep cartilage degeneration. He also refers to Weichselbaum's demonstration that a degeneration, even to necrosis of the superficial cartilage cells, belongs to the physiological changes of age. Axhausen believes that if such changes increase and produce a deep car-

Fig. 3.—Right foot of patient whose hand is shown in Fig. 1; degenerative or non-ankylotic arthritis. Note new bone formation (shown by arrows) involving tarsus. Process identical with that shown in hands—cartilage loss and new bone formation.

tilage necrosis, then we have a pronounced picture of chronic multiple arthritis, and says that Weichselbaum, through anatomical relationship, has established in arthitis deformans none other than a high grade of simple senile change; that where nutrition has been interfered with we must recognize many factors—trauma, acute joint inflammation, constitutional general disease, senium. The binding factor in all these cases is cartilage necrosis. Not all of the changes Axhausen describes as resulting from his experiments are found in the degenerative form of arthritis. I refer especially to the fibrous tissue formation.

Von Manteuffel produced artificial sclerosis of the vessels through freezing and congestion, and he claims[8] as a result of his experiments final complete disappearance of the cartilage and of the entire joint with connective tissue ankylosis of the two bones.

The connective tissue formation and ankylosis, as we have said, are not present in the degenerative type now under discussion. We are led to ask how far we can accept the experimental destruction of normal joint cartilage as the equivalent of its loss through disease. Is not the reaction to destruction of normal cartilage through operative procedure quite different from the reaction incident to degenerative conditions? To the pathologist there is a wide difference and we do not believe such experiments will ever give the true picture. At present it is safe to adhere to the pathology of Nichols and Richardson,[9] which we have followed and which is being generally accepted.

Much that we have just considered is placed by the French school of medicine under the term chronic rheumatism of toxic or dyscrasic origin (gouty rheumatism but not true gout), and Ott accepted this in a report to the fifteenth Congress of German Physicians. From the point of treatment he classified it as due to general nutritional disturbance—to an excessive acid production in the system. This variety is well described by Teissier and Roque.[4]

Teissier says it is not true gout, there is no tophus, it is not hereditary as gout, but acquired —an acquired uricemia. He further says that (1) sometimes this uricemia is created by clogging of the skin under the influence of damp cold; (2) sometimes it is the result of prolonged digestive disturbances, and (3) sometimes it is secondary to renal insufficiency. But he admits that this does not explain difference between this and gout, *i.e.* between an hereditary uricemia and an acquired uricemia. The French authors generaly recognize a casual relationship between the type of arthritis under discussion and a series of dyspepsias—the so-called acid dyscrasia.

All signs point to the gastrointestinal tract as playing a large rôle here. The intestinal rôle differs much from the part it plays in the proliferative type. Its rôle there is that of a septic focus, such as foci lodged in the appendix, gall-bladder, etc., while in the degenerative type it appears to be some direct absorption from the tract proper. This is said with full knowledge of the fact that many leading thinkers are placing the real starting point of arthritic urica in the alimentary canal —a probable catarrhal condition of the mucosa of bacterial origin. In the degenerative type of arthritis faulty physiology of the intestinal tract leading to deleterious absorption does seem to play a large rôle. Clinically I have seen over and over again outbreaks of painful joints with increase in size associated with gastrointestinal disturbance characterized by marked indicanuria and faulty acid conditions, the attack subsiding promptly upon correction of the digestive disturbance.

There remains only to be worked out what kind of absorption takes place. Is it some toxin or a true intestinal infection of bacterial origin? If bacterial, we cannot think of it in the same line of bacterial infection which we fully considered under proliferative arthritis. The studies of Adami already referred to are worthy of consideration here.

Elimination in this class of cases also plays an important rôle. We have referred to the frequency of this type of disease in women at the menopause. We know at this time in many women there are great disturbances leading to faulty elimination. The systemic equilibrium is upset. The individual for years has through her twenty-eight-day habit been getting rid of material and now the system must readjust itself. At this stage we often see starting up the joint changes under consideration.

We shall only allude to the vast amount of work done on calcium in connection with this period. The subject is still to be worked out. But the great frequency of this type of disease developing with the menopause is certainly suggestive and must be considered in the treatment of our patients. We are here reminded of Aphorism No. 29 of Hippocrates: "A woman does not take gout unless her menses be stopped." The old fellow may have mistaken Heberden nodes and boggy stiff knees for gout. Many modern physicians do the same thing. The modern physician may be right. Heberden, himself a gout specialist, expressed the view that the node described by him did not mean gout. Charcot taught the same, pointing to the large number in the Salpêtrière—200 out of 400 old women. As stated, many physicians believe that there is some relationship; this I have already brought out. Llewelen Jones regards the node as a senile dystrophy independent of rheumatism or gout. Léri examined 30 patients afflicted with chronic rheumatism, as the term is used by the French, and found that seventeen had Heberden nodes. I may say the belief that the true Heberden node is in some way allied with gout is growing. Supporting this view I may mention Begbie, Hilton Fagge, Lecorshi, Dyce Dukworth, Archibald Garrod.

There is much to show that a node may appear on the distal phalanx, largely due to trauma, and remain in statu quo for many years. But the type we are considering and well illustrated in the cut (Fig. 1) is certainly an entity, and while it is not expressed through deposits of biurate of soda, characteristic of gout proper, there is much showing relationship with an allied condition. Whatever our future studies may disclose as the primary cause of this degenerative type of arthritis, and we believe it will be found to be something besides senility, we feel sure in stating that it stamps a type of its own and has nothing to do with infection in the strict bacterial sense. We have here a clean-cut picture, if not a specific disease entity, a true pathological condition with characteristic showings.

True Infectious Arthritis.—In this, the arthritis of certain well-known infectious diseases, we have a direct cause explaining many cases of arthritis. Let me mention arthritis complicating pneumonia, gonorrhea, typhoid fever. In acute arthritis of this kind it is reasonable to expect that the specific organism of the disease giving rise to the arthritis may be present in the joint. This has often been verified, as in gonorrhea, for example. The onset is usually sudden and the signs are inflammatory in character. It is possible that the activity of the organism may be severe enough to be pus-producing.

Another type of arthritis, however, may complicate these infectious diseases, not so acute, but of a chronic character. It is this latter type that chiefly concerns us in our study of chronic multiple arthritis. The arthritis of gonorrhea well illustrates what I am saying. I can do no better than to quote from Brackett[7] at this time. In his paper on arthritis associated with lesions of the genito-urinary tract Brackett refers to the two types of gonococcal infection: "One usually monarticular, in which there is a direct bacterial invasion of the joint characterized by an arthritis of sudden appearance with evidence of inflammatory involvement; and a second type, polyarticular and of a mildly inflammatory character, slowly damaging the joint from toxic infection. This latter type may develop with an entirely quiescent external urethral condition." You will recall here the writings of the urologists on the part played in multiple arthritis by vesicular foci, writings in number exceeded only by those of our dental confrères. The term toxic infection used by Brackett as the factor of the second type has yet to be cleared up. It may be that this toxic infection will be found to be a mutant or variant of the gonococcus in keeping with the teaching of the transmutationists fully discussed under the heading proliferative arthritis.

If we study the arthritis of all the class of infectious diseases now under discussion, we shall find the dual expression so characteristic of the arthritis of gonorrhea also more or less characteristic of all. It is the second or chronic form of infection that chiefly concerns us here. Both acute and chronic arthritis do not necessarily manifest themselves in the same patient. For example, in gonorrheic arthritis we may meet with the acute form only—the direct bacterial invasion. In the absence of focal points of storage, as the seminal vesicles, for instance, no points of chronic focal infection existed. Again the acute form is wanting and only the polyarticular manifests itself. I believe this is often true in both gonorrhea and syphilis.

We see, then, opening up a rational explanation of a great deal of chronic articular disease. At the present time, excepting tuberculosis, it is difficult to diagnosticate these chronic types and say what organism has been acting. Such types of arthritis are apt to be irregular. At the present we believe their external expression differs materially from either of the main types already fully discussed.

In the infectious forms of chronic multiple arthritis spinal involvement is common; note its frequency following gonorrhea and typhoid fever, for instance. In the proliferative type, where so many of the joints become implicated, the vertebral column usually escapes. In an examination of extensive polyarticular bed-ridden patients affected with the proliferative type, the spinal column generally gives striking evidence of mobility, and usually remains unaffected to the end.

Factors Influencing All Types of Arthritis.—1.—Trauma. This factor is best seen when pain is not severe. The proliferative type is apt to be painful, compelling disuse on the part of the patient and thus escaping external trauma and the spindle-formed nodosities so characteristic of this type develop with great regularity. There is, however, also trauma of the deformity a constantly acting factor in this type causing many irregularities—contractures and dislocations, for example. It is chiefly in the degenerative type, the slightly painful type, where we see the result of external trauma. This is the result of the painless form allowing more use. This is well illustrated, usually by the index and thimble fingers in cases of this degenerative or nonankylotic type. See the little and index finger in Fig. 1.

2.—Static Conditions. Some investigators have gone so far as to put changed static conditions as a chief factor for a great deal of chronic multiple arthritis; their place in chronic multiple arthritis is now well understood. The explanation of certain findings rests upon Wolff's law, that all prolonged alteration of the function of any part of the body, either congenital or acquired, is surely followed by anatomical change. If one leg is shorter

than the other certain joints suffer through anatomical change. If a person is knock-kneed or bow-legged certain changes are set up in the knee joints chiefly. If there is hallux valgus the cartilage of the metatarsophalangeal joint of the big toe suffers. The pathological changes following static changes are apt to be allied with those spoken of while discussing the degenerative type of arthiritis —cartilage loss and new bone formation. The latter is often striking. Lane some years ago was among the first to call attention to these static results. More recently Preiser worked them out with great thoroughness.

Wear and tear, spoken of by McCrae we believe, comes logically under this head. McCrae[8] refers to the weight of the patient as a factor in influencing his own joints; this becomes a marked factor after degeneration begins.

Joint Arthropathies.—We will briefly refer here to certain arthritic conditions complicating certain organic nervous diseases—arthritis of locomotor ataxia and syringomyelia, for example. By some the former is considered as syphilitic joint disease. Such grave trophic changes do not appear to warrant a place in a paper such as this where we endeavor to restrict ourselves to consideration of chronic arthritis proper. We can scarcely think of a Charcot knee as a good example of syphilitic arthritis. It is but one of the very many manifestations of syphilis, but it is not a true arthritis.

Working Classification.—How far then are we in a position to get a mental concept of chronic arthritis? What kind of a classification are we warranted in making? In other words, what does the present status of chronic multiple arthritis teach us as a basis of classification? All sorts of classifications have been made, based on anatomical, pathological, and clinical grounds, and new classifications are constantly being given us. Many of these are erudite at first sight, but upon analysis fall by the wayside, for clinicians are unable to verify and make any practical use of them. At the present time I think it is impossible to classify chronic arthritis except under striking types. The endeavor has been made to do this in this paper. In other words, we have endeavored to fall back to a simple classification, which is in part a classification of some of the older clinicians but one now better understood and more thoroughly worked out and restricted.

1.—Proliferative or Ankylotic Type. We have endeavored to show that this type has well-defined characteristics due to infection of a modified kind. It is a real *disease entity*—the true progressive multiple arthritis, and the diagnosis should always be made. Its clinical expression is clean cut and well defined.

2.—Degenerative or Non-Ankylotic Type. This includes a large class of cases giving striking clinical pictures. This is not so much a disease entity as the former, but a secondary joint condition. The word arthrosis may be found to express this type better than arthritis. While not a distinct disease entity in the proper sense it is, however, a striking clinical type with characteristic manifestations and the diagnosis should readily be made.

3.—True Infectious Arthritis. The arthritis of infectious diseases where the joint organism is rather definitely known and sometimes recovered from the joint. The chronic types here are apt to be irregular. Diagnosis, as a rule, is more difficult, but a careful study of the history and patient often brings out a true etiological diagnosis.

4.—Mixed Types. One type, for example, may be engrafted upon another. The degenerative type may be engrafted upon the proliferative, to a certain extent complicating the picture. Léri brought this out in his discussion of the Heberden node under the head chronic rheumatism. The term chronic rheumatism is a favorite term of the French and with them covers a wide field. It is not uncommon to find evidence of the degenerative type engrafted upon the proliferative, the latter affecting the patient earlier in life and the degenerative engrafted upon this later in life. This fact is in itself a strong argument to show that the etiology of the two types is entirely distinct. Again, all types being influenced through static influences, give many irregular pictures which may or may not come logically under this mixed type heading.

5.—Arthritis Urica Type. This is chiefly characterized by the deposit of biurate of soda.

6.—Tuberculous Type. I give tuberculosis a special head rather than classify it under infectious diseases, since we are familiar with its arthritic forms. I may say that the so-called tuberculous rheumatism or Poncet's disease does not give any external characteristic picture and there is no likelihood that it ever will, since it is not an expression of a tuberculous lesion proper. It is rather an expression of a tuberculous toxemia, at present not fully understood.

The future will doubtless compel us to give special heads to certain other diseases which at present we are compelled to leave under the general infectious type. As the hydra-headed showings of tuberculosis looked upon by clinicians formerly as different diseases cleared up, so the general subject of arthritis is now clearing up. Certain well-known diseases will yield to us as well-defined joint pictures as tuberculosis has already done. This, I believe, will be especially true of syphilis and gonorrhea. So of typhoid fever, pneumonia, and other infectious diseases. I refer to the chronic polyarticular types of these maladies.

The French writers, as the result of deep study of this arthritic subject, have adopted simple classifications. One of Desternes illustrates this: (1) les rheumatismes dits d'infection, (2) les rheumatismes dits dyscrasiques, (3) les rheumatismes dits deformant progresif.

Under the latter, or progressive deforming, Desternes has followed the French school in including many forms that we believe belong in the degenerative type. Differences in etiology and deforming characteristics make for such differentiation. It must always be borne in mind that the French use the term chronic rheumatism for the great general head.

I repeat that it is impossible to follow complex classifications. I have spent many a weary hour trying to comprehend such, only to find that I was chasing some will o' the wisp. The more I study the subject the more I find the classification becoming simple. Simplicity is coming as a result of study of the arthritic problem as it always comes with knowledge of any subject. In simplicity lies strength truth - Simplex sigillum Veri (Matthias Morgan

I especially urge the simple classification under the six heads I have given as a good working practical classification, feeling that at the present time we have no scientific basis for any other. Under one of these six heads I believe all the types of

chronic multiple arthritis can be placed. I have advisedly omitted the so-called traumatic arthritis as not believing it comes within the scope of this paper. Trauma as a factor has been considered.

To place the patient properly I follow in a general way the following rule: When a case of chronic multiple arthritis presents itself to study the patient; to take a careful history; age of patient at onset of the disease and character of onset and nature of progression. Has the onset occurred in the 20's and 30's or 40's and 50's? To note the objective findings. Are there true Haygarth nodosities—the real spindle-shaped joints, or are there bony outgrowths and irregularities, any Heberden nodes for example? If the latter, are they alone or engrafted upon some other condition? Is ankylosis present? To take into consideration the occupation of the patient and note effect of such; to look for any static conditions and result of such. To search for hidden focal sites, especially if our history and examination so far tend to put our patient in the proliferative type—tonsillar, appendicular, tubal, vesicular, or dental foci. Carefully to investigate the gastrointestinal tract, especially if our examination tends to place our patient in the degenerative type. To seek evidence of a former infectious disease and history of same. To look for gouty tophi or other evidences of the gouty diathesis—having a metabolic laboratory test made if the diagnosis is doubtful; to search for tuberculous evidence. To have good *x*-ray plates made. By a process of inclusion and exclusion and careful analysis the patient can be properly placed with as much certainty as the proper placing of a flower through botanical analysis. Such a placing in chronic multiple arthritis is now necessary as so much here depends upon a diagnosis. It is only through an accurate diagnosis that we are directed to the logical course of treatment of our patient.

The chronic rheumatism and uric acid doctor belongs to the past. It is necessary to analyze, properly to exclude, and properly to place the patient. Anything short of this is neglectful and deleterious to the patient, making our treatment empirical rather than scientific.

In concluding these papers, I wish to specially emphasize one observation I have tried to bring out—that after we are able to differentiate the specific type of arthritis belonging to infectious arthritis proper as well as true degenerative arthritis, we shall still have standing out clearly one great type as a distinct disease entity. I refer to the proliferative or ankylotic type—the real progressive type of chronic multiple arthritis. As I have said, its etiological factor will probably be found to be a variant or mutant of the streptococcus group. This belief seems to be the basis of the most approved teaching to-day.

Much of the work upon which the foregoing status is based is due to the facilities for study afforded me by the Montefiore Home and Hospital, New York. The large number of arthritic patients in the institution has enabled me to study clinical types with the aid of the excellent laboratory facilities, both chemical and pathological, together with the very complete *x*-ray department, all of which the directors of the institution have very fully equipped for modern scientific study. And further, I am indebted to the valuable cooperation of Dr. Wachsmann, medical director, and his staff. I wish, also, to thank Dr. S. W. Boorstein, adjunct orthopedic surgeon, for valuable services rendered.

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RAGWEED POLLEN IN THE NASAL SECRETION OF HAY-FEVER CASES.

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The direct relationship of the pollen of certain plants to hay-fever has been established in many ways. First, the commencing and disappearance of the attack with the beginning and ending of the

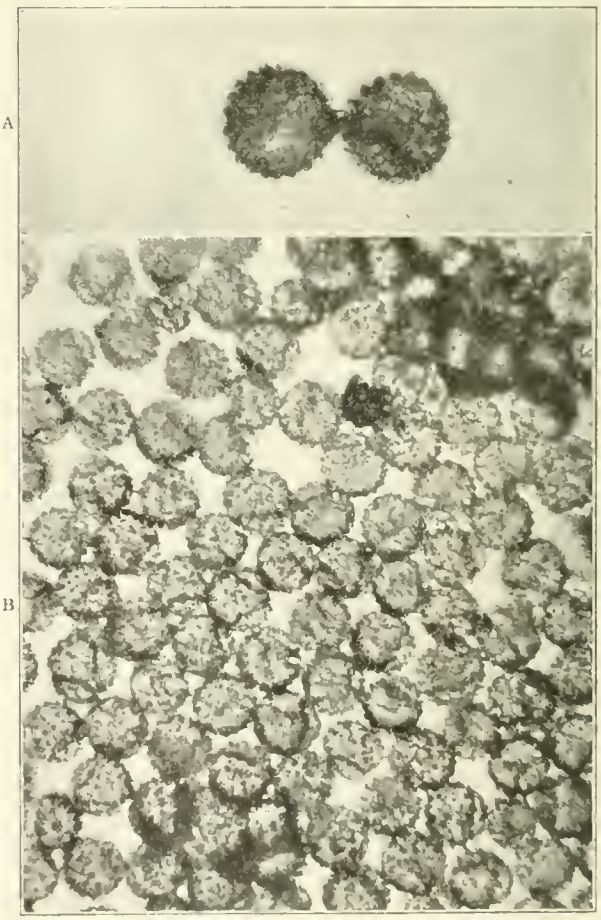

Fig. 1.—Pollen of the ragweed, × 500 diameters. The upper two (A) have a magnification of 1000 diameters. (From the biological laboratory of the American Hay-Fever Prevention Association.)

blooming of these plants. Also the development of the attack when susceptible subjects come within the potential area of the hay-fever plants. Then the confirmation by the biological tests, by means of which an attack may be induced at any season of

the year by applying a few grains of pollen to the nostrils of the subject.[1]

While these have fully established this relationship, the finding of the pollens in the nasal secretions of the patient is an important corroboration.

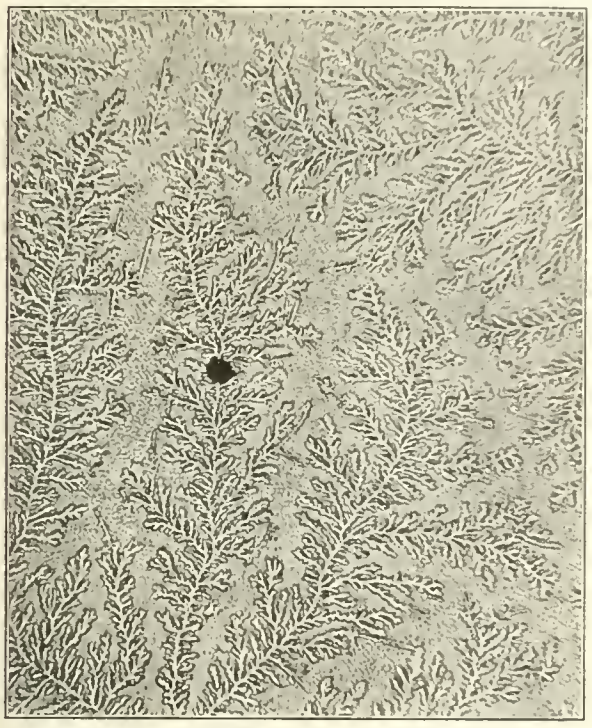

Fig. 2.—Ragweed pollen in hay-fever nasal secretion. The arborescences are salts in the secretion, crystallized in drying. × 250.

and the following report of our biological department will, therefore, be of interest.

On August 12, 1916, F. W., who suffers occasionally from hay-fever, had an attack during the night, this being due to a brisk northwest wind which blew pollen from a large area of ragweed about one-quarter mile distant. Shortly after retiring, his nostrils became obstructed so that he could continue nasal breathing only by propping up his pillows and then only through one nostril.

The following morning, when the patient arose and exercised, the nostrils became free, which was followed by the discharge of a clear, viscid mucus from the nostrils. By previous agreement, this mucus was collected and sent to our biological laboratory for testing. After the discharge of this mucus, which lasted about ten minutes, the patient was practically relieved from any further discomfort, as he left for his office which is in the central portion of the city and farther removed from the potential area of the ragweed pollens.

The mucus was divided into eight parts, each part being separately examined. The secretion was spread on microscope slides and covered with ordinary glass covers, and a drop of iodine solution injected for staining. The microscopic examination showed that there was an average of seven ragweed pollens (*Ambrosia trifida*, the *Ambrosia elatior* being very uncommon in this section) to each division, or a total of 56 pollens in the secretion collected.

The following points are to be noted in this investigation: The direct relation of the pollen to the attack, the number required to cause the reaction described, and the relief afforded by the discharge of the mucus containing the pollen.

[1]Scheppegrell, W.: Hay-Fever and Its Prevention, U. S. Public Health Reports, July 21, 1916.

It has been suggested that the irritation of hay-fever pollen might be due to the development of the germinating tubes of the pollen. In no case was there a germinating tube found among these pollens nor could the pollen be distinguished, even by the high powers, from the ordinary trifida pollen (Fig. A).

After the discharge of the mucus containing the pollen, the patient was relieved from the local irritation and developed no constitutional disturbance.

The pollens in the mucus were usually found single, but occasionally in twos and threes. A group of two magnified 1,000 diameters is shown in the accompanying photomicrograph (Fig. 1, B).

Ragwood pollen is frequently found in the nasal secretion of hay-fever subjects at our biological laboratory (Fig. 2), but this is the first instance in which practically all the pollen of an attack of hay-fever has been collected and examined.

THE SIGNIFICANCE OF INCREASED DUODENAL DILATABILITY.*

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There is a tendency to ascribe all duodenal dilatations to immediate constrictions, to obstructions which are frequently located at the duodenojejunal flexures. There are other factors, however, of duodenal dilatation or, more precisely, increased duodenal

Colon immediately after removal, showing markedly dilated cecum and cephalad colon following incomplete obstruction of rectum.

dilatability which are just as tangible, if not just as comprehensible, which are not resident in the duodenum, but in the terminal ileum.

*From the Laboratory of Experimental Surgery, New York University.

Increased duodenal shadows have been observed röntgenographically in individuals found to have at operations pathologically involved caudad ileums. The ileocecal regions of these individuals are commonly caught in the adhesions which apparently represent the sequelæ of acute appendicitis. The appendix is normal, not often chronically inflamed, but the end of the small gut is partially obstructed. But after this appendix is removed and the neighboring bands restricting the ileum freed, not only do the gastric emptying and the duodenal clearance improve, but the dyspeptic symptoms often disappear at the same time. Clinically, therefore, these postinflammatory bands interfere with the contractions and relaxations of the proximal as well as of the distal ends of the small gut.[1]

The question arises whether any causal relationship can be shown experimentally to exist between this form of incomplete ileac obstruction and apparent overdistensibility of the head of the duodenum.

An analogy, commonly known, is that habitual constipation gives rise, after a period of time, to increased dilatability of the cecum. Although such a cecum has been called "crepitant," large, or dilated, pathologically one is often at a loss to find anything structurally wrong with it. Furthermore, anyone may produce such a hypotonic cecum in normal dogs by tying gauze ligatures about the terminal colon so as to produce incomplete obstruction. When this obstructing band or the habitual constipation is removed, the tone of the head of the large gut improves. (See illustration.) It is logical on the same basis to expect similar disturbances with the beginning of the small intestine from inflammatory interference with the end of the ileum. To determine whether there is such an interrelation of the oral and aboral ends of the small gut, the conditions observed in humans were duplicated as far as possible in dogs. The results of these experiments have been published.[2] From this series it appeared that increased dilatability of the cephalad duodenum followed incomplete obstruction of the terminal ileum. Similar results have since been obtained on cats. (See the table.)

Table Showing Dependence of Tone of Cephalad End of Small Gut Upon Caudad End.

Animal No.	Duration of Obstruction, Days.	Dilatability of Duodenal Loop, c.c.	
		Before Ligating Colon.	After Ligating Colon.
Cat 338	14	2	2.5
Cat 339	4	1.5	2.9
Cat 344	6	1.7	2.15
Cat 324	3	3.33	3.8
	8	3.33	3.7

There appears, therefore, to be some underlying dynamic factor in increased ileac resistance that reduces the tone of the cephalad portion of the small intestine.

From these observations it seems logical, in the presence of a markedly increased duodenal shadow (as depicted by the *x*-ray during gastric emptying), to consider upon inferential grounds at least the possibility of a functionally obstructed terminal ileum.

Another association developed during the same two series of animal experiments; namely, decreased dilatability or increased tone of the oral end of the small intestine and complete obstruction of the aboral end. When the distal ileum became closed by inflammatory reaction or by fecal accumulation, the size of the duodenum decreased. The decrease in the duodenum appeared in both the dog and cat series.

The time element requires especial emphasis. In the experiments the duration of the terminal ileac obstruction was four to nine days. Traumatizing by handling or scratching the terminal ileum produced no immediate change in the tone of the duodenum so far as could be ascertained. In the humans coming under our control the time factor is usually longer. It is illuminative, however, to see that, dynamically, duodenal tone appears to be influenced by the tone of the terminal ileum.

In this light, the increased duodenal bismuth shadow does not exclusively indicate immediate obstruction, but possibly obstruction at some distal point, as in the terminal ileum.

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616 Madison Avenue.

AN INTERMAXILLARY SPLINT.

By GEORGE MORRIS DORRANCE, M.D.,
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No special type of splint is indicated in all fractures of the upper or lower maxilla. This splint is indicated where it is impossible to obtain a swedged intermaxillary or interdental splint. As shown in the cut, it consists of a perforated plate of German silver with perpendicular sides. The sides have an opening in front, the plate being absent there to allow for an over and under bite. It is pliable so that the width between the plates can be made greater or lesser according to the width between the two sides of the jaw.

Application of Splint.—If the lower jaw is fractured, the splint is fitted to the upper maxilla and if too long is cut off. In case of fracture of the upper jaw, the splint is first applied to the lower maxilla. The sides are trimmed down or the edges bent outward, if they press against the swollen

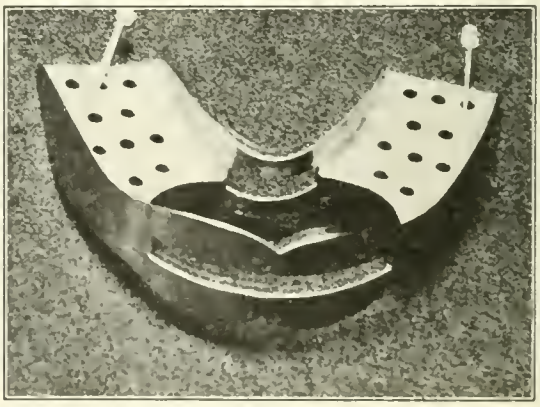

Fig. 1.—Anterior view of splint.

gums. The lower jaw is then pressed up in place to see that it articulates normally. The splint is then removed and dried. Kerr's modeling compound is softened over a flame, being careful not to burn it (it should never be softened in hot water). The

upper and lower grooves of the splint are filled to overflowing.

The plate with its contained compound is heated until the compound is softened. It is tested for heat against the patient's face; if it can be tolerated

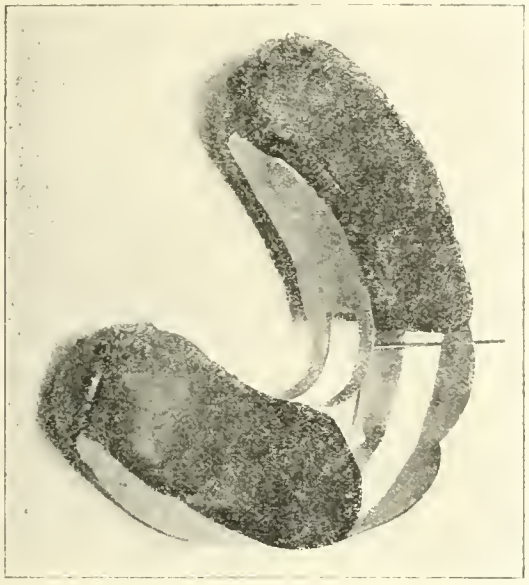

FIG. 2.—Splint filled with compound and ready for application.

against the face it will not burn the mouth. Now dry the mouth by putting in rolls of cotton and swab the teeth with alcohol. (If time permits, a hypodermic of morphine and atrophine, one-half hour before applying the splint, will help to keep the saliva in check.) Now quickly remove the cotton, introduce the splint with the hot compound and press it against the jaw. Then press the lower jaw against the upper, being sure that the normal bite

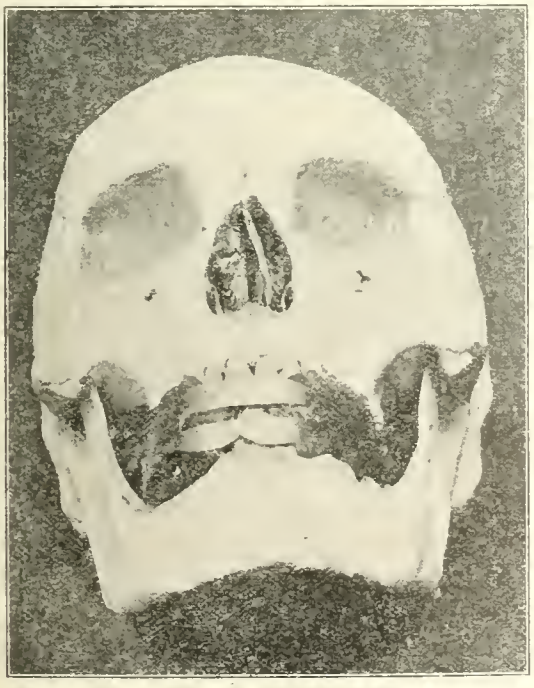

FIG. 3.—Anterior view of splint held in place by compound.

is obtained and with the first finger press the compound around the teeth. Syringe the mouth with cold water to set the compound. A Barton bandage is applied as an added security and to overcome any muscular action. The splint can be easily removed by using warm water and slight traction. The splint may be reapplied as many times as necessary, always using new compound, Kerr's being the best.

The patient is able to obtain liquids through the anterior opening and around the molar teeth. No

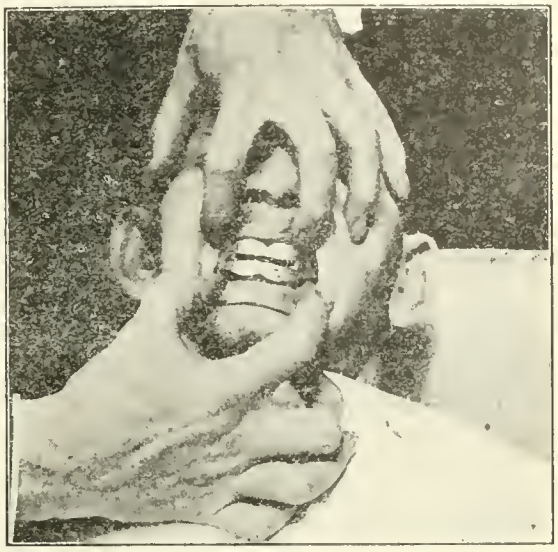

FIG. 4.—Anterior view of splint applied.

hot liquids should be allowed. Wash and syringe the mouth several times a day with permanganate of potassium or a saturated solution of potassium chlorate. Always remember the splint will hold the fragments where you place them, but do not expect it to reduce your fracture. This splint is applicable to all fractures of the jaws within the alignment of the teeth, angle, or ramus. Be sure the normal bite is obtained.

I am indebted to Dr. A. deWitt Gritman for valuable suggestions and to Mr. Dutcher, a student of dentistry in the University of Pennsylvania, for numerous modifications and the making of the first splint.

2025 WALNUT STREET.

AN APPARATUS FOR THE DIRECT AND CONTINUOUS TRANSFUSION OF BLOOD.*

BY ALFRED KAHN, M.D.

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THE transfusion of blood by the syringe method for practical purposes in most cases seems to be more popular within the last few years than the cannula method as practised by Sweet, Crile, and others. The syringe method recently improved by Libman requires the use of a number of syringes. The donor is placed on one side of the operator and the recipient on the other. The blood is drawn from the donor, transferred to an assistant, who injects this blood into the receiver. The syringe is then passed to a third party, who cleans it with salt solution, in order to have it ready again for the operator. Meantime the operator uses a fresh syringe, passing it along the circuit as above described. This method offers a number of disadvantages. Briefly enumerated these are: the number of syringes used, number of assistants required, chances of clotting, chances of infection, special technical knowledge required, thus making it diffi-

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cult for the average surgeon to practise. The method, therefore, has been variously modified. A number of procedures and new instruments have been tried. The most popular of these doubtless is the instrument devised by Unger. This consists

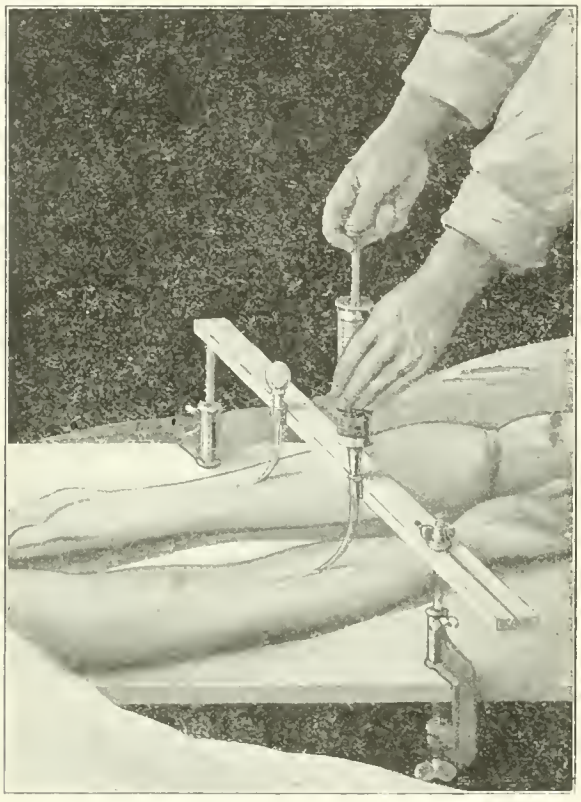

Fig. 1.—Apparatus for direct transfusion.

of a two-way cock arrangement. The blood is first drawn from the donor, the cock is then turned into its second position, and the blood is injected into the receiver. Meantime in this second position a way is left whereby an assistant washes the passage through the needle leading to the donor with salt solution, the idea being to prevent clotting. The cock is then turned back to its first position, the passageway being between the assistant and the receiver is then washed with salt solution while the operator is again drawing away another syringe of blood, preparatory to repeating the cycle. Theoretically this method requires but one syringe. If the transfusion is kept up for any length of time more than one syringe is usually required. The constant injection of salt solution is necessary in order to keep the blood from clotting in the small caliber needle, in the cock passages, and in the rubber tubing by which the needles are attached to the cock. The chances of clotting in the syringe are greatly minimized by constantly spraying the syringe with ether, but in order to keep the clotting from taking place in the needles, rubber tube, and cock passages, the injection of salt solution is constantly necessary. As to whether a man uses one or more syringes to my mind is not a very great factor, as the syringes are cheap, and if they make a clean operation it would be better to use several than to use one.

The idea in the apparatus here described is an endeavor to improve upon the instruments mentioned. The advantages which I desire to mention for this apparatus are that there are no rubber parts, the instrument being entirely of metal, that there are no joints to harbor infection or possible favorable localization for clotting. The instrument is very simple in construction, and it requires no special technical knowledge to use it. It can be operated if necessary by one man.

Description of Apparatus.—The apparatus (Fig. 1) consist of a crossbar or gallows placed upon two upright rods. The crossbar is made fast to one of these upright rods at one end, and at the other end is slotted so that it can be widened or shortened at will, thus graduating it to a table of almost any width. The two vertical rods holding the crossbars are held in two clamps respectively, one at each side so that they can be fastened firmly by hand screws to the table. The gallows is grooved in two places (as shown in Figs. 1 and 3). These grooves are made for a spring slot which closes on the neck of the needle, which I am about to describe. The crossbar can be notched on either side by the slots in several places, thus allowing several needles to be used if desired. The needles illustrated (Fig. 2) are about 6 inches long and are so curved that the point of the needle is nearly at right angles to the head. I have arranged two kinds of needles: one has a sharp point and the other has an olive tip point. The heads of the needles are made with a double collar and a neck between. The caliber of the needle is made just snug enough for the insertion of the tip of a Record syringe at its top or a metal stopper of the same diameter (Fig. 1 illustrates this feature). The needle is held firmly in the slot.

Technique.—The arms of the donor and receiver are placed under the gallows (Fig. 1), their hands being in opposite directions. The arms are made even, the gallows is screwed down to the height desired, the first needle is inserted into the recipient in the direction of the receiver's flow of blood stream (pointed away from the hand). It is then raised at right angles and the neck is pushed into the clamp on the crossbar, where it is held firm, and a metal stopper is pressed into the mouth of the needle (Fig. 1). Another needle is inserted into the vein of the donor pointing toward the hand. It is likewise raised at a right angle and pushed into the slot in the gallows, where it is held firmly. The slipping into the groove in the gallows is done very gently, and the position of the needle is not in the least disturbed. After the head is once snapped

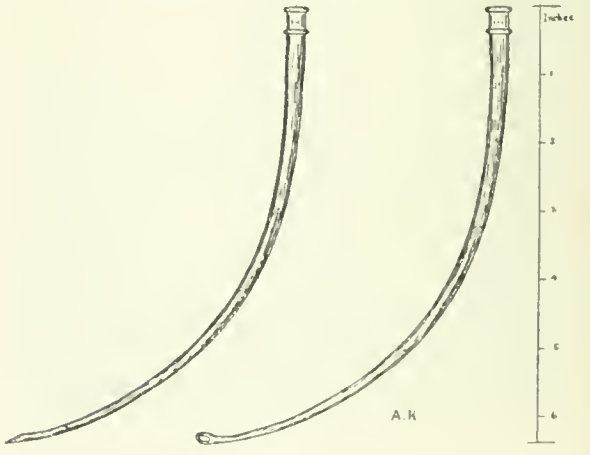

Fig. 2.—Needles used for transfusion.

into its groove the needle is perfectly steady and held firmly, flush with the upper surface of the gallows. The apparatus is now ready for the transfusion. The operator stands at the end of the table on a box or any slight elevation, so that he is above

the gallows. The syringe is inserted into the mouth of the donor's needle, and the blood is withdrawn. The operator then raises the syringe, sets the stopper, places the syringe tip into the mouth of the receiver's needle, and injects the blood into the receiver (Fig. 1). After the blood is injected the syringe is raised out of the mouth of the receiver needle and placed into the mouth of the donor needle, and the cycle is ready to be continued. The operator continues in this cycle until the quantity of blood desired has been withdrawn. The whole procedure is comfortably before him, much more so than the keys of a telephone board are before the eyes of a telephone operator. The syringe is raised and inserted from one opening to the other, and the procedure is very quick. There is no slipping of the needles out of the blood-vessels as the distances are always uniform. Where any quantity of blood is to be withdrawn, I recommend an olive

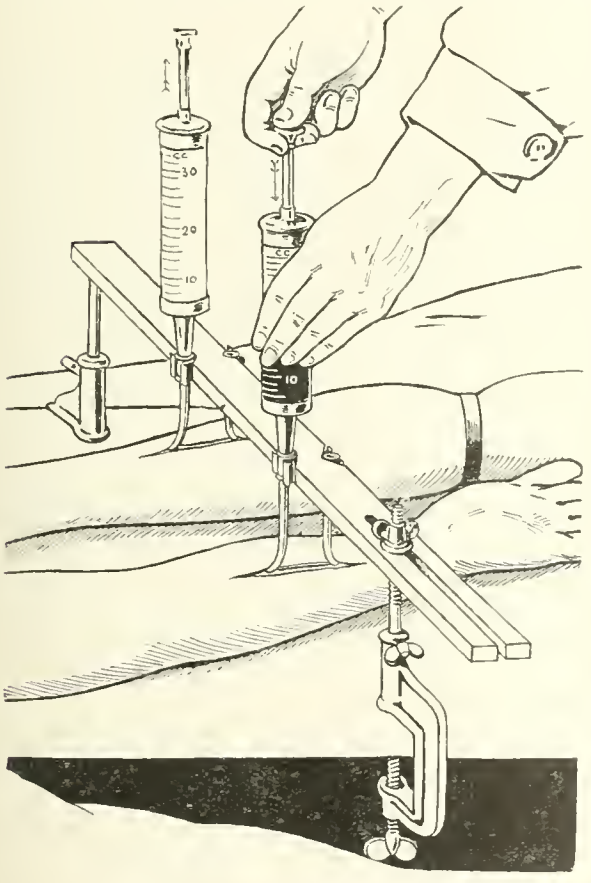

Fig. 3.—Apparatus for continuous transfusion.

tipped needle. In this case a small incision about ½ inch long is made down to the vein, a stab slit is made into the vein, the olive tip is then inserted and, if desired, can be fastened by ligature. The transfusion is then highly satisfactory and can be more easily performed.

Continuous Transfusion.—To do a continuous transfusion the procedure is as follows (Fig. 3): The vein in both donor and receiver is cut down upon by an incision about ½ inch long, the vein is exposed, and the vein is opened. Now instead of using two needles, I use four needles, one needle pointing toward the hand and the other pointing toward the heart, in both recipient and donor. The blood is then withdrawn from the distal end of the donor's vein and injected into the proximal end of the receiver's vein and withdrawn from the distal end of the recipient and injected into the proximal end of donor. The whole procedure is just as comfortably before the eyes of the operator as in the case of direct transfusion; the whole thing can be done by one man. Continuous transfusion is as yet only in an experimental stage.

Recapitulation.—There are no joints, no rubber parts. The whole instrument can be sterilized. The caliber of the needles is larger, clotting is less apt to occur. The procedure is extremely simple and can be carried out by one man.

50 East Forty-second Street.

RECURRENT ACRODERMATOSIS OF WARM COUNTRIES.

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President of the Academy of Medicine of Porto Rico.

We propose to designate by the name of *recurrent acrodermatosis*, an affection which is, by the way, quite variously interpreted, especially from the etiopathogenic point of view, and which may be observed daily in our country.

Before entering on a special study thereof, certain observations relative to the generic idea involving this as well as several other processes very common in warm countries, are indispensable.

In another work[1] we have endeavored to demonstrate that in tropical lymphangiectasies, besides the three stages of evolution noted by classical authors, to wit: (1) Infection and *inflammation* of the lymphatic vessels; (2) obstruction (or vice-versa); and (3) terminal *distention* followed by *secondary* lymphectasia it is necessary to consider one more stage: *primary* lymhphectasia, purely climatic, which, free of all infection or infestation, always preexists, and becomes later the obligatory companion of all tropical lymphangiectasic processes.

Such primary lymphectasia, which, summarily, is nothing more than a special manifestation of the permanent general state produced in the human system by the concurrence of different physical elements that integrate intertropical surroundings, comes as a substitute of that vague and undetermined notion which over a quarter of a century ago was introduced by Corre[2] under the term *lymphatexia*, provided all such matter as is to-day well known to be derived directly from tropical parasitism, is segregated from the former.

This lympectasia is responsible not only for the greater intensity and frequency of lymphangiopathic processes in our zone, but also, and principally, for their recurrent character, and constitutes a permanent state of condition of the inhabitants of warm and damp countries. It requires a certain period of time to establish itself in persons coming from other latitudes, and relief is had and the condition even disappears when the patient, whether belonging to the tropics or not, either goes or returns to extratropical regions.

In many persons, either because of perfect adaptation, or because the different accessory causes stated in the work above cited do not act upon them, such condition persists latent during life, while in numerous other cases, it becomes manifest under various aspects and different localizations by virtue of the concurrent action of those same circumstances. It then constitutes the substratum upon which very often, though not always, infection and infestation occur, giving rise, together

with their accompaniment of inflammation, obstruction, and distention of the lymph vessels, to the respective clinical manifestations of lymphangitis or filariasis.

With respect to the clinical reality of this physiopathological substratum, pure and simple, or in other words, free from infection or infestation, we would again refer the reader to the above-mentioned work, where he will also find ample explanation of the matter. It is enough to state at present that the tropical lymph stasis, pure or hygrothermic, is clinically expressed by means of various forms corresponding to as many different localizations, according to the part of the body where such lymphectasia accentuates itself sufficiently to become evident, when certain circumstances of environment provoke the lymphectasic attack. And thus, at times, it is in the radical, again, in the reticular, and lastly, in the ganglionar sections of the lymphatic apparatus of the extremities, preferably the lower, where, by recurrent outbreaks, simple lymphectasia establishes itself. The different forms ordinarily develop independent of each other, or in other words, two different localizations of the lymphectasic process are not found simultaneously in the same patient, unless as an exception.

A peculiar clinical modality, therefore, corresponds to each localization; and when the lymph stasis occurs in the radicals of the apparatus, there appear from time to time outbreaks of the dermatosis to which the present work refers.

Recurrent acrodermatosis, as frequently observed in Porto Rico, is, without doubt, the clinical expression of primary radical lymphectasia. This relation being constantly unknown, such cutaneous manifestations are often ascribed to uric acid conditions, as well as to syphilis, on account of their symmetrical or bilateral disposition in not a few cases. This error, after all, should not cause surprise, if we consider that patients call on their physician at a very advanced stage of the process of evolution of the dermatosic lesions, the real commencement of which is the varicose enlargement of the original lymphatic capillaries.

In private practice cases of tropical acrodermatosis are innumerable; but we have had occasion to study it specifically, particularly that of the feet, in the infirmaries of the Boys' and Girls' Charity Schools in Santurce, Porto Rico.

The total number of inmates of these schools varies from 400 to 500, and catalogued cases of recurrent dermatosis of the feet number 101, covering 127 attacks from 1907 to 1912 in the Boys', and from 1909 to 1912 in the Girls' infirmaries.

The number of dermatosic outbreaks occurring during the period of unstable hygrothermic conditions, that is, during the months between the two yearly seasons—the dry and cool and the hot and humid—was somewhat more than double the number of those occurring during the two seasons of settled weather conditions—87 against 40. Thus for March, April and May, the total number was 39, and the average 13; for September, October and November, the total number reached 48, and the average 16; while for December, January and February, the total was 18, and the average 6. In June, July and August, the total amounted to 22, and the average to 7. We do not intend to base a general rule on an insufficient number of observations, but believe it is useful to state the facts.

Commonly, when the patient consults his physician, there are seen at the same time: blisters full of serum or sero-pus, a great many of them broken, thus exposing the mucoid layer of Malpighi, which has been perforated in the center; softened and cracked sections of epidermis; and lastly, partly healed lesions alternating with others corresponding to the first stage, that is, papuliform pruriginous elevations, about to become vesicles.

The complaint commences by a violent itching in the regions where later the ostensible manifestations of dermatosis are to develop, specially in the interdigital spaces. This itching causes the patient to scratch, thus contributing to the congestion of the skin and to the rupture of its superficial layers, from which a small quantity of ichorous lymph issues, which, in turn, spreads the irritation and pruritus over the surrounding parts. Shortly afterwards there appear in the neighborhood of the bases of the toes, on the heel and on the side of the foot—the same not being confined exclusively to any of these places — the circumscribed characteristic lesions.

A small, hard, papuliform elevation of the size of a common pinhead or little more, quite painful under pressure, in a few hours becomes a somewhat larger vesicle whose contents, separating the epidermic layers over a certain area, transform the vesicle into a blister. Such blister soon either bursts or is ruptured by the patient, or becomes seropurulent and increases in size until it reaches that of a shirt-button. It finally bursts, disclosing a background that has a central craterlike depression, from which exudate issues for a certain time, although in some instances it dries rapidly.

In order to understand the successive linking of these lesions, we should remember that the lymphatic vessels grow on the level of each papillary layer, from a large central capillary which is joined to neighboring capillaries, thus forming a subpapillary rete. The acrodermatosic lesion begins by the varicose enlargement of these original lymphatic capillaries, which form, as is well known, culs-de-sac in the papillary layer. As a result of the excessive tension of their contents, the purely endothelial walls of the vessels pregressively distend and become thinner until they permit the serosity to reach the intercellular spaces of the mucoid layer, to break the uniting filaments of the cells of this layer; and to separate such cells until lacunar spaces are formed under the granular stratum. The granular layer is loosened in turn and becomes thinner, raising before it the stratum lucidum and the horny layers. It is easy to understand that the epidermis is separated from the papillary layer in two ways: either en masse, if adherence between the Malpighian cells is very firm, or otherwise, if it is weak, the cellular elements becoming separated from each other in order to form circumscribed spaces filled with serosity, and to constitute the vesicles and blisters from the loosening of the epidermic layers. The process is no other than that designated by dermatologists' by the name of *interstitial vesicular infiltration*, to distinguish it from parenchymatous infiltration, in which the small phlyctena is formed, on the contrary, by intracellular edema.

The total evolution of each lesion lasts from five to seven days, and the dermatosic eruption, abandoned to itself or subjected to the sole action of the numberless antiseptic or simply drying applications may be prolonged for weeks and even months; and the troublesome manifestations are very often indefinitely repro-

duced, greatly to the discomfort of the patient.

In some instances, though not often, there is observed a slight lymphangitis which, commencing at one of the lesions does not, as a rule, extend beyond the foot, nor does it become a true attack of lymphangitis of the leg, but is susceptible, nevertheless, of producing a slight fever.

Generally, the attack extends to both feet, one after the other. Sometimes it is simultaneous, obliging the patient to interrupt his daily labor because it is impossible to wear shoes or to walk. This condition may last for many weeks, unless the only efficient means of shortening its duration and of obtaining positive success with local treatment are adopted. Such means should certainly not be irritating antiseptics, as is commonly advised for the sole purpose of combating infectious germs, for although it is true that the same often intervene, they do so during the later stages of the process, and as a complication. The correct treatment consists simply in the enforcement of the dorsal decubitus maintained during such time as the acute period of the lesions may last, and until there are no further new lesions, which continue to appear for a time after the patient is confined to bed, although the latter are scarcer and less violent.

Such simple and efficient treatment having been commenced, the real action of antiseptic topical applications is produced and the involution of the eruption takes place rapidly. The exposed and softened surfaces dry quickly, pain and congestion cease, and finally the lesions heal without leaving any durable signs, the dermatosic attack being thus notably shortened, the patient being permitted to resume his daily occupations.

Dermatosis of the hands presents analogous characteristics, although different from dermatosis of the feet—apart from being less frequent — because of features derived from anatomical conditions which normally distinguish the skin of the upper and lower extremities. The lesions, in an advanced stage, acquire in dermatosis of the hands, an eczematous appearance, damp at times, but dry in many cases. However, during the first evolutive stages, it is identical with dermatosis of the feet, the period of pruriginous congestion being possibly more intensely manifest, and the papuliform elevations more noticeable; for example, it is easy to see a sort of whitish thread formed by these elevations, when they appear in series, furrowing the edges of the attacked fingers.

In dermatosis of the hands, the process extends over a greater surface than in dermatosis of the feet, where we found that it may finally adopt phlyctenular forms of greater size. As occurs in dermatosis of the feet, the affection rarely extends beyond the joints of the hand and the rest of the extremity, unless excessive fineness of the skin or other aggravating circumstances in the patient permit of its extension to the forearm.

As to the rest, dermatosis of the hands has the same recurrent tendencies, at certain times of the year, as that of the feet, and is just as rebellious under treatment. It should be noted that the same benefit may be had by confinement to bed, which, as may be presumed, is difficult to obtain, since it is not easy to convince the patient that a complaint of such nature and localization requires treatment which means to some persons a real sacrifice.

When both dermatosic eruptions coincide—which is not rare—such fact should not be really interpreted as autocontagion, but simply as two almost simultaneous manifestations of the same condition in the same subject, due to analogous general and local causes. And it is then possible to observe relief in the dermatosis of the hands very much sooner, if the patient, on account of the dermatosis of the feet, accepts the sacrifice of confinement to bed.

Apart from the general tonic-restorative treatment, principally on the basis of phosphates and strychnine, local treatment varies according to the stage of the attack.

During the prevesicular stage we have obtained excellent results by applying to the affected parts a solution of picric acid, 12 to 1000. The keratoplastic action of this agent, so efficient in cases of burns, is as efficient in the disease under consideration; to such extent that used in time it not seldom serves to abort, one might say, the dermatosic eruption. We have recently had occasion again to confirm this in the case of a North American, in whom we saw an attack of dermatosis of the hands abort in less than one week, by the sole use of the solution above mentioned.

The first stage having passed, it is then not only unfavorable, but it might possibly be prejudicial to employ this solution. We would then prefer to prescribe a salve of ichthyol, 5 grams, in sterlized vaseline, 30 grams.

Before applying the ointment we would advise that the section be washed, or even better, fomented, for a few minutes, with the following prescription:

Sodium borate.....5 grams
Boric acid.....40 grams
Boiling filtered water.....1 liter
M. Sig.: To be applied twice daily.

During the last stage we prescribe dermatol exclusively, in order to accelerate the drying of the affected surfaces.

In ambulatory treatment we recommend to the patient that he always place between the toes a little absorbent cotton, which should be frequently changed in order thus to aid in preventing irritation of the surrounding surfaces by the exudate.

Before adopting the simple local treatment above stated, we experimented with a number of applications of all kinds in the infirmaries and in private practice, without satisfactory results; on the contrary, in certain cases the state of the lesions was aggravated. We must, however, except the following salve, which appears to us to have been of some benefit in the second stage:

℞
Zinc oxide.....5 grams
Carbolic acid.....50 grams
Lanoline } āā.....15 grams
Vaseline }

Sprinkle on this a good quantity of borated talcum.

In our opinion, from the foregoing study it may be inferred that recurrent acredermatosis of warm countries, although etiologically and pathogenically analogous to other lympectasic manifestations, merely climatic, possesses sufficient anatomoclinical characteristics to entitle it to nosographic personality in the extensive field of tropical pathology.

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TREATMENT OF WOUNDS.

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A WOUND is a sudden solution of the continuity of the soft parts. There are fifteen adjectives describing wounds, which we will not burden the reader to remember, but many of these descriptions have a bearing on the treatment of the injury.

Immediately following this sudden solution of continuity of tissue, we have discoloration, pain, swelling, and hemorrhage.

The element of pain incident to such an injury depends largely upon the location of the wound and the character of the implement with which it was produced. For instance, a steel-jacketed bullet with high velocity may pass through the body unnoticed, the wound being discovered later by the blood trickling down from its opening. Incised wounds made by sharp instruments, as surgeons' knives, cause very much less pain than do lacerated and contused wounds. Wounds of nerve trunks, of the testicle, of the elbow, of the hands and fingers, and of the abdomen are characterized by severe pain. A wound in inflamed tissue, as produced in lancing an abscess, is always attended with great pain. Increased tension and pressure upon the sensory nerve filaments is the explanation of these painful injuries.

In all wounds there is a discharge of fibrin, lymph, and serum from the vessels which must be absorbed by some superimposed sterile gauze dressing. The arrest of hemorrhage and removal of foreign bodies is an important consideration in the first-aid treatment to injured soft parts. If an artery is severed which is too large in caliber for the bleeding to be arrested by torsion, it should be picked up, separated, and ligated. Very often if such vessels are compressed by artery forceps for a short time, they stop bleeding without other treatment. If the wound is just above some bony prominence, direct pressure will often arrest the hemorrhage better than the insertion of sutures or ligatures. Continuous oozing from the wound (as in a large amputation) may be controlled by flushing with hot sterile salt solution, or by fanning the surface briskly while exposed to the air.

A suture often acts as a ligature in arresting hemorrhage; this is particularly true if the suture is of the buttonhole variety. It should be remembered, however, that we often strangulate tissue by tying our sutures too tight in trying to arrest hemorrhage by this method. Adrenalin chloride 1 to 1000 on pledgets of cotton is a useful hemostat; it may also be injected into cavities, as the urethra, or sprayed into the nostrils to arrest bleeding. In venous oozing, elevation and direct pressure are effectual in many cases; if from an artery, the tourniquet or ligature will act better. It is embarrassing to have to open up a wound, as in the scrotum, turn out blood clots, and catch up oozing vessels at the second dressing which should have been attended to at the first.

All chemical and constitutional remedies for the arrest of hemorrhage are obsolete in wounds newly made, but are admissible in hemorrhage from the relaxed uterus and from ulcerated cancerous growths.

The next most important step in the management of wounds, after the hemorrhage has been stopped, is to cleanse them. It depends largely upon the location of the wound as to what method of cleansing should be adopted; if, for instance, it is under the clothing on a clean skin surface partly covered with hair, the adjacent tissues should be shaved to prevent the hair from infecting the wound and keeping its edges separated. If the wound is on the scalp it is best to shave the proximate skin and to lift up the edges of the flap in order to remove any foreign body which might have been forced under the scalp at the time of the accident. While this is the general procedure, it might be occasionally modified for cosmetic purposes if the wound happened to be on the scalp of a female, then under such circumstances strands of hair on either side of the wound might be tied across in order to approximate the edges.

I have had no personal experience with this method.

In lacerated or crushed injuries use hot sterile water or saline solution flushing to wash out foreign particles. A great many surgeons, however, prefer a fifty per cent. solution of peroxide of hydrogen warmed and poured into the wound. The oxidation with the blood boils out many small particles, carrying infection which might not otherwise be detected. As a matter of course, any splinters or other foreign bodies, such as iron filings, etc., should be carefully removed either with forceps or a magnet. Blood-clots and tissue with the life crushed out should be removed at the first dressing while the parts are usually benumbed, rather than wait for decomposition and sloughing before removing them. We may safely assume that most accidental wounds are infected, hence the importance of thoroughly cleaning them at this first dressing; stitches should be loosely applied and drainage in the most dependent portion of the wound provided for, as it is not good surgery to seal accidental wounds hermetically with either collodion or adhesive plaster, unless the absorption of the wound secretions is first provided for. If nerves or tendons have been severed, they should be approximated by sutures whenever it is possible to find the severed ends. If the wound is very extensive and there is likelihood of foreign bodies being driven into sensitive parts it sometimes becomes necessary to cocainize or, in the severe cases, to anesthetize the patient in order thoroughly to cleanse and approximate the parts at the first dressing.

In accidents from toy pistols, giant fire crackers, or garden rakes, or in injuries inflicted around dairies or barns and in any severe laceration and contusion of the extremities, it is considered necessary to give 2,000 units of antitetanic serum as a prophylaxis against tetanus.

In very delicate skin that has been protected by clothing in children and in females, the rough brush scrubbing act has been overdone; in fact, in the case of injuries incident to machinists, miners, railroad men, etc., with oil, grease, and iron dust or rust ground into the tissue, it is almost a physical impossibility to get rid of the foreign matter at the first dressing either by scrubbing or any other process.

A great many such cases are now dressed by saturating a pledget of cotton with spirits of turpentine or gasoline and rubbing off as much of the grease and paint as the turpentine will dissolve; then applying a ½ dilute tincture of iodine with alcohol into the wound after it has been thoroughly flushed with any of the mild antiseptic lotions.

Keeping such wounds dressed several days with a moist half per cent. carbolic solution, or 1 to 10,000 bichloride will prevent infection, and so soften up these calloused hands that what was impossible to wash off at the first dressing is easily scraped off after forty-eight to seventy-two hours' application of these moist antiseptic solutions. In all deep wounds involving large areas or injury to the bone, drainage is advisable, at least for the first twenty-four to forty-eight hours. The ordinary cigarette drain, sterilized gauze, rubber turbing, or ordinary rubber tissue may be used, according to the individual surgeon's experience. Only one certain rule should be observed, namely, the drainage must be in the most dependent portion, even if this requires a counteropening to get it. Dead spaces impossible of obliteration require drainage as do amputations of the breast and thigh and suppurative appendectomies. It should be remembered, however, that all drainage of abdominal wounds predisposes to hernia.

In wounds in the pleural cavity to evacuate pus, free drainage with double rubber tubing and, in most cases, the resection of a rib become necessary in order that the drainage may be complete. In unhygienic surroundings with untrained help to rely upon we should hesitate to close any lacerated or contused wound; under more favorable surroundings and with our individual inspection it is best to close many of them, using drainage in the cases which we would otherwise treat openly. Punctured dissecting wounds should be very rarely closed, and wounds in the palm of the hand and soles of the feet are best treated openly; those in vascular tissue where the skin is loose are perhaps better stitched with silk worm gut. It has been found best in recent wars to seal hermetically without drainage gunshot wounds produced by the steel-jacketed bullet. Whenever it is decided to close a wound, the interrupted silkworm gut suture is preferable on account of being non-irritating, less likely to infection, and absorbing no moisture. Horsehair is used with equal success in closing many external surgical wounds. Some surgeons prefer the continuous suture, others the Michel clamp, while some use the subcuticular stitch for cosmetic purposes. If the zinc oxide plaster is used to approximate wounds, small fenestræ should be cut in the plaster just above the wound to provide for the escape of the oozing or wound secretion, which always follows. The collodion dressing is applicable to superficial wounds about the face where not much oozing is expected. Wounds well sewed are half healed. Tight sutures constrict and produce necrotic tissue. One can hardly tie a suture so slack that the subsequent swelling will not tighten it; the elasticity in the horsehair suture causes it to yield when swelling takes place and it is on this account that it should be more generally used than it is. Fine silk and silkworm gut are usually preferable to the catgut where infection is feared. Any traumatic injury treated by the open method should be covered with 1-10,000 bichloride or some other antiseptic dressing. If the injury is to the leg or foot the patient had better be confined to bed to secure rest, the hand or foot placed upon a Kelly pad and kept moist by applications every three or four hours, or by the continuous hot 1 to 10,000 bichloride solution; if the wound is not infected, on sensitive portions of the skin or in children the solution should be further diluted or weak iodine mixture or boracic acid be substituted for the bichloride.

Physiological rest is important in the treatment of all wounds. Splints to the hand and immovable dressings to the joints are great time-savers in the healing of wounds. Perfect rest means less pain, reaction, and quick repair.

Whenever large raw surfaces are to be treated for a long time, it may become necessary to change to the boracic acid rather than the bichloride or carbolic. After these large raw surfaces are in proper condition, skin grafting hurries healing and prevents scar tissue. Thiersch's or any method the surgeon is accustomed to may be used; usually we inspect or remove the dressing from skin grafting too early, often lifting up the graft with the dressing. In large incised wounds it is just as essential to suture the muscles as it is the tendons and nerves. It may be difficult at times to find the proximal end of the tendon, in which case the wound should be enlarged until it can be found and mended.

Most lacerated contused wounds are better packed and left to granulate than sutured; if, however, they are sutured, a drain should first be put in, the sutures being placed far apart and loosely tied. Elevation and rest must not be overlooked in the treatment of contused wounds as they lessen pain and promote healing.

Lacerated wounds are an exaggeration of the contused wounds, only shock is greater and hemorrhage and pain less.

If an extremity is literally amputated traumatically, it is usually better to secure the blood-vessels so that there can be no more hemorrhage, treat the shock by warmth and stimulation, and leave the amputation for twenty-four or forty-eight hours until reaction has set in. If the leg or arm is hanging only by skin or tendinous attachments, where a scissors amputation will remove the limb, this should be done, but any extensive surgery had better be postponed until reaction takes place; otherwise one may get the credit of having produced a surgical death, when waiting might have saved the patient. We should always remember that hemorrhage must first be controlled before any waiting is resorted to, for hemorrhage is the most common cause of shock; however, nerve blocking with cocaine permits amputation which we otherwise would not attempt.

Punctured wounds should not be probed, if they have opened the chest or peritoneal cavity. A laparotomy should be performed and any injured viscera mended, otherwise you may have a death from shocks, sepsis, or hemorrhage, in abdominal cases.

In punctured wounds from blank cartridges, garden rakes, or barn splinters, the parts should be thoroughly cocainized or the patient given a general anesthetic, the wound opened up by a crucial incision, the foreign bodies, wads, or portion of cloth driven into the soft tissue removed, dilute tincture of iodine with alcohol dropped in, and the part packed with iodoform gauze, leaving the wound to heal by granulations from the bottom. As said before, all such cases should have the additional protection from tetanus by the injection of 2,000 units of antitetanic serum.

Gunshot wounds are usually treated without probing and by the local application of 1 to 10,000 bichloride; bullets may become encysted and do very little harm.

Prevention of infection is far more important than the removing of the bullet, which can be located by the *x*-ray and removed at any future date, provided it gives no serious trouble.

Direct penetrating wounds of the abdomen with lead bullets demand an immediate laparotomy provided a competent surgeon is available, not so much with the view of locating and removing the bullet as of mending the tear in the viscera and checking the hemorrhage. Bullet wounds in the thorax and in the extremities are usually treated expectantly without operation unless infection takes place. If a bullet passes through the chest and lodges in the spinal column, causing pressure upon the cord, immediate extraction should be performed, provided the bullet can be located by the *x*-ray.

All violently infected wounds of extremities should be put at rest at once, the patient being confined to bed; the bowels should be thoroughly opened, and large antiseptic dressings should be applied and be kept constantly moist. The less handling the better. After forty-eight hours of such continuous treatment one will often find the inflammation subsiding or a local abscess formed. Rest, in septic wounds, is more important than in any other variety of injuries.

Conclusions.—Unless wounds are suppurating very freely they are usually dressed too often.

Peroxide of hydrogen injected into cavities and sinuses often carries the infection further into uninvaded tissue. Peroxide is also too strong to apply pure to newly healed tissue.

Sterilized gauze without dusting powder is sufficient protection for any clean surgical wound.

Sterile water, saline solution, or a very mild antiseptic solution should always be given preference over the stronger antiseptics which, in destroying the pus coci, at the same time destroy the new epithelial tissue by which granulating wounds are covered.

There is no better protection against infection than the free application of large sterilized pads or dressings with which they should be abundantly covered.

Absolute physiological rest by a properly applied splint or confinement in bed is a great time saver in the healing of wounds.

Silkworm sutures are much less likely to produce stitch abscesses and should be given the preference over catgut wherever practicable.

Zinc oxide plaster has a wider field of usefulness as a surgical appliance than has been given to it.

In redressing wounds, all materials should be thoroughly softened by warm sterile water before the dressing is removed. Two thousand units antitoxin serum should be given with a local application of equal parts alcohol and tincture iodine at first dressing.

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Medicolegal Notes.

Powers of Boards of Health in Prevention of Epidemics. — The Kentucky Court of Appeals holds that the State Board of Health or a county board has authority to order that school children be vaccinated or excluded from the schools when they believe there is reasonable apprehension of an epidemic, and that the vaccination of the school children is the only means by which it can be prevented. The precise question had not previously come before the Kentucky court, but it has frequently been adjudicated by other courts, and the uniform ruling is that when there is reasonable apprehension of the outbreak of a communicable disease such as smallpox, health boards have authority to take such action. What boards of health shall do to prevent epidemics, and how it shall be done, are matters left to their sound discretion, thought they cannot adopt unreasonable or arbitrary rules or regulations, or, without cause, harass the public unless they have reasonable grounds to believe that the action is necessary to prevent or suppress the disease sought to be controlled. Courts may restrain boards of health if they undertake to exert authority not fairly within the powers conferred by statute or plainly not needed for the purpose of conserving or protecting the health of the people or preventing the outbreak or spread of infectious or contagious diseases. But the discretion lodged in boards of health in the exercise of their powers will not be interfered with unless plainly abused.—Board of Trustee v. McMurtry, 184 S. W. 390.

Malpractice—Diphtheria. — In an action to recover damages for death by diphtheria caused by malpractice, because of the failure to administer antitoxin, it appeared beyond dispute that it is not usual or customary for physicians to cause bacteriological or microscopical examinations of the contents of the throat to be made, except in cases where a membrane is present. There was no evidence to show that there was at any time any membrane present in the throat of the deceased child, and, it appearing without dispute that some cases baffle the most skillful diagnosticians, the case at bar might have been such a case, in which event the defendant could not be held liable for his failure to make a correct diagnosis and consequent failure to properly treat the patient. The law does not require impossibilities, or even the exercise of the very highest degree of skill or the utmost care, but only such reasonable care and skill as is usually possessed by physicians in the same school in the locality. There was no evidence tending to show that the exercise of ordinary care and skill by the defendant would have prevented the child's death. The medical testimony showed conclusively that the result, where antitoxin is not administered in the early stages of diphtheria, is uncertain, and that no one can say in a given case what the result would be if antitoxin were administered. It appeared without dispute that the defendant made a careful and thorough examination of the child more than 24 hours after her illness began, in which he was assisted by another physician, and that, in order to make the examination thorough and complete, the child was given an anesthetic and the cavity of the throat thoroughly explored, and that at that time there was no membrane present, and according to the evidence a microscopic or bacteriological examination was not indicated. It was further undisputed that the defendant examined the child on the evening before her death, and at that time there was no membrane present in the throat. The physicians further agreed that in the absence of a membrane or other symptoms pointing directly to the presence of the disease, antitoxin should not be administered. The other symptoms were not present in the case.—Judgment for the plaintiff was reversed, and judgment was directed for the defendant. —Hrubes v. Faber, Wisconsin Supreme Court, 157 N. W. 519.

Hernia Caused by Electric Shock.—In a railroad employee's action for hernia, alleged to have resulted from an electric shock, expert testimony that it probably resulted from a shock operating upon some weakness in the abdominal wall was admissible, without preliminary showing of such weakness; it being known and testified that such weakness necessarily predisposes to all ruptures. A witness said he saw the plaintiff hanging on the wire for two or three minutes and then, as he said, when the current was turned off, "the static stopped, and Murphy fell off into a safety." The plaintiff stated that shortly after the accident he felt severe pains in the lower part of his stomach, that grew worse, and that finally he noticed a swelling below, which increased until he went to the hospital for operation on June 9. He was injured on Jan. 25, 1913, and worked for the defendant full time, with the exception of two days, until March 17, stopping just before the strike on March 21. He said that he felt the pains in the abdomen about three weeks after the accident, and that the pain was increasing until the time of the operation. The court concludes that the jury was justified in finding that the plaintiff's hernias came from the accident, and that the finding is not against the weight of the evidence.—Murphy v. New York, N. H. & H. R. R. Co., New York Appellate Division, 157 N. Y. Supp. 962.

Examination of Physician.—The New York Appellate Division holds that, in an action for personal injuries, a physician may be asked upon cross-examination in whose interest he made an examination of the plaintiff, to show the interest or bias of the witness, although his answer discloses that an insurance company is defending the action, if not asked for the purpose of prejudicing the jury.—Di. Tomasso v. Syracuse University, 158 N. Y. Supp. 175.

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HEALTH INSURANCE.

SINCE the passage of the Workman's Compensation Act it has been apparent to students of the political situation that it would be only a matter of time before the idea would be extended and there would be adopted a health insurance, or better a sickness Insurance law, not only by the State of New York but also by many of the States of the Union. The time is close at hand for such action by the Legislature of the State of New York. Whatever may be the arguments for or against such a law, we surely shall be subject to the provisions of one before many years have passed. Such being the case, it is the duty of every physician to familiarize himself with the provisions of the bill presented before the Legislature last year, or the one that is to be presented this year, and to study carefully the large amount of information that has been accumulated in the development of this particular phase of governmental paternalism. Our large medical societies have done their full duty in this respect. The Committee on Social Insurance of the American Medical Association presented to the meeting at Detroit in June a voluminous report which covers the whole subject in a thorough and very satisfactory manner; the Committee on Publication of the Medical Society of the State of New York published last February the text of the Mills bill, then before the Legislature, and commented on the special characteristics of this proposed legislation; Warren and Sydenstricker of the United States Public Health Service have published an extensive study of the subject, and the Committee on Legislation of the Medical Society of the County of New York have also considered and reported on the same problem.

The information is thus near at hand. But there is too great danger that the average practising physician will fail to do his full share in bringing about a satisfactory solution of the difficulties which surround the subject. When the Workman's Compensation Act was passed many physicians ignored it entirely, since they had little to do with the cases which were affected by it. A health insurance law, on the contrary, will affect the practice of almost every doctor in the State. His financial future will depend very largely upon the wording and construction of its clauses, and his professional development may be very seriously influenced by it. The Mills bill, which was introduced into the last Legislature, failed of passage, and a commission has been working on the subject this summer. It is not at all certain that a law will be passed this winter, but it is certain that it will advance further this year than it did a year ago.

It is therefore of the highest importance that each physician obtain the available information and, so far as possible, reach a conclusion as to what he thinks are desirable provisions for the law. He should then express those conclusions and discuss them with others, if possible, in such a manner that the Legislature may become aware of the result of the discussions. It is only by such means that a law can be framed which will deal justly with all of the parties to the transaction.

Some of the details which need especially careful consideration are the distribution of patients among physicians, the method of payment of physicians, the issuance of disability certificates, the problem of malingering, the relation to State and municipal health boards, the part to be played by the hospitals in the diagnosis and treatment of patients under the act, the extent to which benefits shall be given and the position of specialists. It is almost impossible to exaggerate the importance of such a law in relation to the medical profession.

There is scarcely a form of medical activity which the law will not touch in some way. Under the wise and intelligent administration of a carefully drawn law there is great possibility for good in improving the quality of medical treatment given to those who benefit by it and in the prevention of disease. "To enact a health insurance law simply as a relief measure without adequate preventive features would be a serious mistake, but with a comprehensive plan for disease prevention there is every reason to believe that it would prove to be a measure of extraordinary value in improving the health and efficiency of the wage-earning population." (Woodward and Warren.) It would be an excellent idea if every medical society of whatever size in this State should set aside one meeting during the coming season for the discussion of this subject. It would be a disgrace to the profession if the passage of this law should find them unprepared to present and maintain their position with their present opportunity to get themselves ready.

THE USE OF HABIT-FORMING DRUGS BY SOLDIERS.

IT has long been known in a general sort of way that drug addictions were comparatively frequent among enlisted men. Without any reflection on their capability for their duties, their potential fighting abilities, or any of the qualities necessary to make them an adequate part of a great war machine, it is usually conceded that many of the privates come from a low stratum of society, and in some cases are actually inferior constitutionally, not to say psychopathically predisposed. Men of this kind, of course, are the natural prey of drugs. They have few or no ethical considerations to restrain

them, consort freely during their leaves of absence with prostitutes and their parasites, a class which furnishes a large percentage of drug users, and chafe under the restrictions of military life to such an extent that it seems necessary for them to have recourse to drugs to help them adjust.

An exhaustive study of the use of habit-forming drugs by soldiers has been made by Capt. Edgar King, M.C., U. S. A. (*Military Surgeon*, September, 1916), whose report, unfortunately, deals with soldiers under sentence only who would naturally be expected to furnish a large percentage of drug users. He finds, as a matter of fact, 4 per cent. admittedly so and 2 per cent more suspected. He believes that among enlisted men not in this class about 1 per cent. are addicts. The majority of them acquired the habit after enlistment. King discusses briefly the well-known fact that the drug addict, in the great majority of cases, is abnormal aside from his habit, and that he takes the drug to enable him to deal adequately with the situation which would otherwise overwhelm him, or to alleviate the mental suffering caused by his failure to succeed in life. Few, if any, he found, acquired the habit through a physician's prescription, although this is the usual lay theory of its inception. The three main ways in which they became familiar with a drug was through prostitutes, through vendors, and through association with addicts, either soldiers or civilians.

It seems that in houses of ill fame the soldier is surrounded by a drug-using atmosphere, and often becomes intimate with a person who is an addict. She talks to him about the drug, saying that it "will make him fit" or "drive away the blues." In some cases she actually suggests that he use it. The second method of acquiring an addiction is through illicit vendors of the drug, who are usually to be found near a large camp. These men naturally indorse the drug in glowing terms to the soldier, suggest that he try it, and even furnish samples free to non-addicts. The third, and the most insidious, source comes from soldiers who have become addicts and spread the use of the drug among their companions. At first, this is often done innocently. The men frequently believe that the drug in question is really a panacea, and before their eyes are opened many more become contaminated. Of course, when the soldier has become a confirmed addict his moral obliquity is such that he has no hesitancy in recruiting new followers of his divinity. Then, too, it is a sort of defense reaction; he takes the drug, he must do no harm, therefore the drug is harmless, therefore he recommends it to others.

Captain King quotes a number of specific examples of soldiers who became addicts to the destruction of their efficiency. He finds that a great many of these were what he calls "potential addicts"; that is, persons who only want an introduction to the drug and fair chances of obtaining it to become addicted. These persons exist, of course, in every class of society, and it is unfortunate that in the army their opportunities of going astray are so plentiful. Perhaps the present report will effect some alteration in this state of affairs.

VINCENT'S DISEASE AND PYORRHEA ALVEOLARIS.

An apparently new malady has existed for months among the Canadian and other British troops in France, which might be described indifferently as a form of Vincent's disease with essential localization in the gums and as an acute form of pyorrhea alveolaris occurring in the young and having no necessary connection with Riggs' disease in the elderly. The two organisms which apparently cause Vincent's angina are known to be capable of exciting an ulceromembranous stomatitis, the throat being spared. On the other hand the *Entameba gingivalis*, alleged to be the cause, or a cause, of pyorrhea alveolaris, is also present as an inconstant find, in marked contrast with the spirillum and fusiform bacillus of Vincent which are constantly present and usually freely present—even in many cases in pure culture.

A preliminary report on this affection was made by Bowman in the *Proceedings of the Royal Society of Medicine*, 1916, Vol. IX, No. 4. The men applied for treatment chiefly for loosened teeth, difficulty in mastication, and in certain cases dysphagia. Vincent's angina of the usual type is regarded as extremely rare, although there is plenty of evidence to show that it is contagious. It has in fact at times been spread by common eating utensils, as secondary syphilis may be, and even by inoculation (biting). In the classical descriptions of Vincent's angina we find sufficient mention of the progression of the disease from the fauces to the gums, which may show either the ulcerating or membranous form of the disease. That this affection may begin in the gums, with or without extension to the throat, is, however, not yet admitted. In the present epidemic the process appears to be localized to the gums—hence the ready confusion with pyorrhea.

The patients who present themselves for treatment of the stomatitis complain much of depression and prostration. Fetor of the breath may even precede the local manifestations and is marked throughout. The gums bleed readily, are injected, retracted, and spongy. Pus may be squeezed from the gum margins. The teeth may be loose or simply tender and unequal to chewing.

Despite the fact that the *Entameba gingivalis* appears to play but a secondary rôle, if any, in the genesis of this affection, a solution containing ipecac gives the best results, whether introduced into the pus pockets beside the teeth or applied to ulcers in outlying zones. But cures are never obtained until Vincent's organisms have disappeared from the mouth. This is best effected by an injection of salvarsan which is a spirillicide. On account of its possible twofold etiology, a mixture of ipecac and arsenic is recommended in chronic cases. This same mixture is of great value in typical Vincent's angina when chronic. A mixture of Fowler's solution and wine of ipecac is kept in stock, as the epidemic of gingivitis shows no sign of subsidence. It would thus appear that the Vincent organisms, if they are not actually a cause of pyorrhea alveolaris, are at least powerful synergists to the entameba in this relationship.

ERYTHEMA MULTIFORME LEADING TO DEATH BY UREMIA.

Clinicians are familiar with a form of symptomatic erythema multiforme due to severe visceral lesions. It is probable that the fatal ending in some of these cases is due to the progress of the underlying disease, in which the cutaneous lesions play a sort of terminal rôle, as in certain cases of septicemia. Quite different is the status when an individual who seems perfectly sound develops first erythema multiforme and then nephritis.

In *La Riforma Medica* for July 10 Arullani reports a case which may be interpreted at the pleasure of the reader. A peasant woman of 30 entered the clinic apparently healthy, save for the existence of a dermatosis of three years' duration. It was seated chiefly on the face and dorsal aspects of the hands and forearms, and was not at all like an eczema or other familiar dermatosis. It was quite free from itching or scratch marks. Aside from the attributes of an erythema, it presented an infiltration to the touch and at times vesiculation. Despite its chronic character the author regarded the condition as an exudative erythema, but he evidently reserved the privilege of changing the diagnosis to eczema, and indeed the latter would doubtless have been the diagnosis of the ordinary dermatologist, despite the absence of itching and scratch effects. In fact, he speaks of its eczematoid character. It appears to have yielded readily to a tarry ointment. The eruption returned, however, soon afterwards without apparent cause in the form of vesicles which itched intensely, the entire process resembling an ordinary eczema. At the same time the general condition was seen to be involved. There was fever and albumin appeared in the urine. Side by side with evidences of nephritis vesicles continued to appear and disappear under desquamation. In a few days oliguria, edema, and uremic phenomena were in evidence and in the course of a fortnight death took place. The disease had resisted all treatment from the start.

In summing up the author concludes that the skin lesion was originally an erythema exudativum commune, evidently multiform to some extent. Its occurrence in a healthy woman is understood to mean that in some way it led to a fatal nephritis. The most plausible view is that it was due to local infection and that the germ or its toxic products were able to set up nephritis in connection with elimination. It is by no means necessary that the local focus be a suppurative one, for pyogenic cocci do not invariably cause suppurative lesions and nephritis due to local infection is not usually a suppurative process.

Luetin in the Diagnosis of Syphilis.

In certain regions where diseases prevail which can give a Wassermann positive in the absence of syphilis the diagnostician naturally turns to luetin to check up the former. Thus in certain countries are found side by side malaria, leprosy, and kala-azar, each of which may have to be excluded in making a diagnosis of syphilis because they too may give a positive Wassermann. A year ago in the Milan Serotherapeutic Institute and Marine Hospital at Taranto Dr. G. G. Conte (*Annali di medicina navale e coloniale*, March-April, 1916), began a comparative study of the two diagnostic reactions, luetin and the Wassermann, the former, as is known, being specific and intradermic. In primary syphilis, 7 cases, the luetin reaction was negative throughout, while in 2 cases the Wassermann was positive. In a second series of more advanced cases all the Wassermann tests were positive and two reacted to luetin. Summing up, the Wassermann was positive more than twice as often as the luetin test. In testing secondary syphilis, in 20 cases, the luetin positives slightly surpassed the Wassermann in frequency; while in six tertiary cases the luetin predominated notably over the Wassermann. These figures speak for themselves, but the material is of course small for generalization. In tardy and tertiary syphilis, especially in involvement of the nervous system, luetin may make the diagnosis after the Wassermann has failed. At the same time in general paralysis the Wassermann often gives 100 per cent. positive. Kafka in 1915 found luetin positive in 100 per cent. of tabetics and 90 per cent. of cerebral syphilitics, while in general paralysis it was positive in but 50 per cent. On account of the trustworthiness of the Wassermann reaction in metasyphilis it is perhaps best to reserve the use of luetin for cases in which the Wassermann is negative. It appears that luetin, however sensitive the reaction, has a slower response than the Wassermann, so that after failure it may be repeated. In very early syphilis, luetin is not likely to succeed when the Wassermann fails, reversing the rule in tertiary syphilis. A luetin reaction may be early or late, may vary much in degree; especially may it be delayed in tertiary syphilis; but, however it occurs, it should be regarded as pathognomonic when positive, although Conte prefers not to call it absolutely pathognomonic.

Trench Fever, Pappataci, and Dengue.

When Prof. C. Martelli of Rome first read of trench fever in a British periodical, he inferred that this affection was nothing more than "three-day fever," which in turn he held to be an abortive or anomalous form of pappataci or of barrack fever. Since this inference he has looked into the subject and finds his original views strongly confirmed. In *Il Policlinico* for July 9, however, Filippini takes some exceptions to Martelli's views. It is admitted that trench fever and three-day fever have much in common (headache, vertigo, pains in the bones and muscles), but such symptoms are found in all acute infections. A study of the fever curves, however, shows dissimilarity, three-day fever usually terminating in perspiration at the end of seventy hours—exceptionally at the end of two or four days. Trench fever, on the other hand, lasts seven or eight days, though often with an intermission at the third day. There is, indeed, a variation in which defervescence comes on the third day, but in which frequent periodical relapses occur, so that we have practically a recurrent, not a three-day fever. In both fevers we note the presence of the same blood changes—lymphocytosis, basophilia. In regard to etiology, there are differences. Three-day fever is evidently due to a virus, a filtrable virus, of which the ultramicroscope gives no information. In trench fever there is some evidence that the virus is associated with the corpuscular portion of the

blood. Filippini associates trench fever with the so-called seven-day fever known in India, which resembles closely the more familiar type of the former, in that it may show during this period a remission. Now this seven-day fever is identified by Castellain and Chalmers as a variety of dengue. The author does not subscribe to this conclusion, however, any more than to that of Martelli.

News of the Week.

Paralysis Decreasing.—The epidemic of poliomyelitis in New York has decreased steadily since the first of October. For the week ending October 8, there were reported only 90 cases, giving a daily average of 15. On that date there were in the hospitals 1,537 patients suffering with the disease. In the other parts of the State and in New Jersey also the same decrease was noted. Federal inspection of interstate travel to and from New York, which was begun last July, was discontinued on October 3, under instructions from Surgeon General Blues of the U. S. Public Health Service.

Red Cross Supplies to Europe.—A motor ambulance, the gift of the Sons of St. George of Wilkesbarre, Penn., was shipped from New York to Serbia recently through the Red Cross, which forwarded also hospital garments and surgical dressings. Two large motor trucks are also on the way to the Belgian Red Cross, and a large ambulance for the French Red Cross is now in New York awaiting shipment. This ambulance is the gift of the Chicago Chapter, which has also recently forwarded a carload of surgical dressings to the American Fund for French Wounded, Paris.

Prize for Artificial Hand.—Through the Société Nationale de Chirurgie of Paris, an anonymous donor has offered a prize of 50,000 francs for a mechanical apparatus best supplying the place of the hand. Competitors must belong to the allied or to neutral nations. They are to present to the society crippled men who have been using the apparatus for at least six months. The society will also experiment with the apparatus on cripples for as long a time as is thought necessary. The apparatus to which the prize is awarded is to remain the property of the inventor. The competition will be closed two years after the end of the war. Competitors are requested to send their apparatus and a description to M. le Secrétaire Général, So-Société nationale de chirurgie, 12 rue de Seine, Paris.

Personals.—Dr. Chevalier Jackson of Pittsburgh, Pa., has been appointed professor of bronchoscopy and esophagoscopy and direct laryngoscopy at the New York Postgraduate Medical School and Hospital and will assume his official duties in November.

Dr. Isaac Levin of New York has resigned as associate in cancer research in the George Cricker Special Research Fund, Columbia Univeristy, to accept an appointment as clinical professor of cancer research in the University and Bellevue Hospital Medical College.

Dr. A. I. Ringer, formerly assistant professor of physiological chemistry at the University of Pennsylvania, has been appointed professor of clinical medicine (diseases of metabolism) at the Fordham University School of Medicine, New York.

Dr. James R. Hayden of New York has resigned the chair of genitourinary diseases in the College of Physicians and Surgeons, Columbia University.

Dr. Timothy Matlack Cheesman, because of ill health, has resigned as a member of the Trustees of Columbia University, an office which he had held since 1904.

Christian Science Sanatorium.—In accordance with the wishes of Mrs. Eddy, who in 1909 proposed that the Christian Scientists should "establish and maintain a Christian Science resort for the so-called sick," the directors of the church have recently accepted a gift of twenty acres of land in Brookline, Mass., and on this will erect buildings as may be necessary. The plan is to have Christian Science treatment given under ideal conditions, and to give as well such instructions in practical methods of caring for those under treatment as may be consistent with Christian Science teachings.

"Healer" Wins Point.—After a four years' fight W. V. Cole of New York, a Christian Science practitioner who was convicted of the illegal practice of medicine, has been granted a new trial by the Court of Appeals. In substance, the court decided that the exception contained in the medical license law, to the effect that its provisions should not prevent the practice of the religious tenets of any church was broad enough to include the methods used by the followers of Christian Science, and, therefore, exempted them from the requirement of passing medical examinations and being admitted to practice as physicians.

New Orleans Death Rate.—The Health Commissioner of New Orleans announces that during the month of September the death rate in the city fell to 13.79 per 1,000, the lowest rate recorded, it is said, in one hundred years.

Ice Cream Starts Epidemic.—An epidemic of typhoid fever is reported in Harrisburg, Pa., 400 cases having occurred in the city and its vicinity. It is thought that ice cream made from contaminated milk has been the main factor in the spread of the disease.

Gifts to Charities.—The will of George H. Schrader of Brooklyn, by which the bulk of his estate, estimated at $2,000,000, is bequeathed to the Caroline Rest, Hartsdale, N. Y., was admitted to probate in Westchester County on October 3. Mr. Schrader was lost at sea while returning to the United States from Iceland, and the probate of his will has been delayed until proof of his death could be obtained.

The Nurse Endorsed.—A recent issue of *School Health News*, a publication of the New York City Department of Education, contains the following extract from an examination paper: *"Question.* Tell why the children and parents should respect the school nurse and follow her advice. *Answer.* Whatever our nurse tells us we should bring the news home and the mother should not say the nurse is crazy, because she is not crazy. She would not have the position if she was in that state."

Unusual Suit.—A physician of New York City has recently filed in the Supreme Court a suit against the New York Telephone Company for $10,000, alleging that because of the failure of the company to list his office telephone in one of the 1915 directories, he suffered damage to this amount.

Gifts to Medical College.—At a meeting of the trustees of Columbia University, New York, on October 2, the following gifts to the College of Physicians and Surgeons were acknowledged: For the fund for surgical research, $5000 from Mr. Clarence H. Mackay; for salaries in the department of pharmacology, $1385 from an anonymous donor; for the medical school removal and rebuild-

ing fund, $1000 from Mr. W. V. King; for salaries in the department of physiology, $1000 from Prof. and Mrs. F. S. Lee. It was also announced that about $7000 had been received for the proposed new building for the recently established dental school connected with the college.

Cornell University Medical College entered its nineteenth session September 27, 1916, with a total of 131 students. An address was made by Dr. Frank Sherman Meara, professor of therapeutics, and the students were also welcomed by the dean of the college, Dr. William Mecklenburg Polk. The enrollment is as follows: For the degree of M.D., first year, 37 (not including students entering the Ithaca division for the first year); second year, 37; third year, 26; fourth year, 25; graduate students, not candidates for the degree, 4; candidates for the degree of Ph.D., 2; making a total of 131.

Harvey Society.—The first of the twelfth course of Harvey Society Lectures will be given on Saturday evening, October 14, at 8.30, in the New York Academy of Medicine, by Prof. J. S. Haldane, of the University of Oxford; title, "The New Physiology."

New York and New England Association of Railway Surgeons.—The twenty-sixth annual session of this association will be held at the Hotel McAlpin, New York, on Wednesday and Thursday, October 18 and 19, under the presidency of Dr. D. H. Lake of Kingston, Pa. Details as to the program, etc., may be obtained from the secretary, Dr. George Chaffee, Little Meadows, Pa.

The Late Dr. Judson.—At a recent meeting of the Council of the New York Academy of Medicine the following minute was adopted:

"Dr. Adoniram Brown Judson, who died on September 20, 1916, was born in Maulmain, Burmah (where his father was stationed as a missionary), on April 7, 1837, graduating from Brown University in 1859. He then attended lectures at Jefferson Medical College. The Civil War breaking out before he had completed his course, he entered the navy as assistant surgeon in 1861, was promoted to passed assistant surgeon in 1864, and to be surgeon in 1866, resigning in 1868. He was given the degree of M.D., 1865, by Jefferson Medical College, and in 1868 a similar degree *ad eundem* by Bellevue Hospital Medical College. After several years spent in work connected with the Health Department of New York City, Dr. Judson devoted himself to orthopedic surgery, and in 1887 assisted in forming the American Orthopedic Association, of which he was vice-president in 1889, and president in 1890. For thirty years he was orthopedic surgeon to the Out-Patient Department of the New York Hospital, resigning in 1908.

"Dr. Judson was a man of lovable personality, prone to see that which was good in every man, and overlooking his failings. He was glad to extend a helping hand to the younger men in his specialty, and if he differed from his confreres on any topic did so in a way that did not give offense. Whatever Dr. Judson started to do he did it with his whole heart and he did it thoroughly. In nothing was this more clearly shown than in his connection with the New York Academy of Medicine. From 1886 until the time of his death Dr. Judson was our statistical secretary, and to his diligence and painstaking accuracy we owe the exact record which we possess of the part which every fellow of the Academy has taken in its activities. While chairman of the Section of Orthopedic Surgery, he had full records made of the transactions of the Section, and saw to it that these were published in full in many journals both in this country and abroad, as well as being filed on the shelves of our own library, and in this and many other ways he made this section one of the most widely known throughout the medical world.

"In his death the New York Academy of Medicine has lost one of its most faithful and conscientious officers, and in acknowledgment of his services the Council of the Academy desire this record of their appreciation to be spread upon the minutes and a copy sent to his family and to the medical press."

Obituary Notes.—Dr. GEORGE B. WILSON, medical director and commandant of the United States Naval Hospital at Chelsea, Mass., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1889, a captain in the United States Navy, and a member of the American Medical Association, the Massachusetts Medical Society, and the Norfolk District Medical Society, died on Oct. 1, from blood poisoning, after a brief illness, aged 53 years.

Dr. BERNARD C. GUDDEN of Oshkosh, Wis., a graduate of Rush Medical College, Chicago, in 1879, and a member of the American Medical Association, the State Medical Society of Wisconsin, and the Winnebago County Medical Society, died suddenly at his home on September 15, aged 59 years.

Dr. HERBERT MARSHALL HOWE, formerly of Philadelphia, a graduate of the Medical Department of the University of Pennsylvania, in 1865, died suddenly at his summer home, Ferry Cliff, R. I., from heart disease, on Oct. 1, aged 72 years.

Dr. DAVID MAGIE of Princeton, N. J., a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1863, and a member of the Medical Society of the State of New York, the Medical Society of New Jersey, the Mercer County Medical Society, and the Association of the Alumni of the College of Physicians and Surgeons, died at his home on October 3, aged 75 years.

Dr. JOSIAH HORNBLOWER of Jersey City, N. J., a graduate of the New York University Medical College, New York, in 1860, and a former member of the New Jersey State Legislature and of the Jersey City Board of Education, died at his home on October 5, aged 80 years.

Obituary.

PROFESSOR VINCENZ CZERNY,

HEIDELBERG.

WITH the death on October 3, at the age of 74 years, of Excellenz Wirklicher Geheimrat Dr. Vincenz Czerny, professor of surgery at the University of Heidelberg and director of the Institut für experimentelle Krebsforschung, there passed one of the most notable figures of that great center of medical practice. He was born in 1842 and was educated at the Universities of Prague and Vienna, receiving the degree of M.D. from the latter in 1866. His work in surgery began under Billroth in Vienna; in 1871 he was called to Freiberg, and in 1877 went to Heidelberg, where he remained until his death, in spite of an invitation in 1894 to return to Vienna to take the chair left vacant by Billroth.

Czerny was one of the few big figures of what has been called the Billroth school, that coterie of German surgeons, composed of Billroth and his

pupils, which was really the advance guard of modern surgery. Until their advent, the French school of surgeons, and even Langenbeck in Germany, had dealt principally with surgery of the extremities, and Billroth was practically the first to undertake surgery of the viscera, the technique of which he and his assistants developed. Among this group Czerny himself was most remarkable for the broad interest which he took in surgery; his scientific work embraced practically all its general and special fields as we have them to-day, covering operations on the larynx and esophagus, resections of the stomach and intestine, gall-bladder surgery, hernia operations, and the whole domain of gynecology. The impression he gave was that of a general practitioner treating his patients by surgical methods; his interest in the welfare of his patients, his anxiety for the well-being of his fellow men, contrasted strikingly with the purely technical viewpoint of the great majority of German surgeons. His desire to alleviate suffering was, indeed, the main reason for his early interest in cancer research. He had seen, he said, during a single year nearly 400 cases of cancer, and he felt that, while the surgical treatment of the disease was constantly improving (he himself had contributed largely to its progress), the ultimate results were discouraging and other means of treatment must be found. To this intense longing for ability to relieve the numerous sufferers who passed through his wards may be ascribed, also, his enthusiastic reception of new methods of treatment as they were suggested. It was a wonderful proof of the energy, versatility, genius, and devotion of the man that at the age of sixty-five, a time when most men feel ready to lay down their burdens, he undertook, in the face of much opposition and many difficulties, the establishment of an institution for the treatment of cancer and research into its cause, carried it through to a successful conclusion, and in 1906 had the satisfaction of opening the Heidelberg Samariterhaus. From that time until the day of his death his time and thought were always at the service of that institution.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE NATIONAL UNION—COMMISSION BEFORE PARLIAMENT—CHEAP DRUGS—STATE GRANT FOR MEDICAL BENEFIT—CHOICE OF DOCTOR—PANELS—DR. HAMILTON.

LONDON, Sept. 9, 1916.

THE National Medical Union has brought before the Commission now sitting at the House of Commons the working of the Health Insurance Acts, urging the repeal of the medical benefit section on the ground that the panel system must be regarded as an admitted failure. This view will hardly be generally accepted, but in support of it the following defects, among others, are laid down: (*a*) Pressure by committees leading to the prescribing of cheap drugs and stock mixtures, with, in addition, what amounts to a pecuniary bribe (the "floating sixpence"). In this way the attempt to keep down the drug bill is sometimes obviously made. (*b*) Perfunctory attention is alleged to be the result of excess of work, seen in congested waiting rooms, and want of time for adequate examination of patients. (*c*) Division of the profession, due to one section of it being established as a state monopoly at the expense of the other. (*d*) The state grant for medical benefit has actually in some cases been extended to unregistered persons and to various quacks.

Further dissatisfaction is felt by insured persons who prefer to choose their own doctor, and as they have to pay the panel doctor as well they feel they are paying twice over. The occupation fees of these persons go to the panel doctors, who are therefore said to have an interest in transferring their liabilities to others, particularly to poor-law, hospital and public institutions.

The profession objects to interference from the outside and the attempts to control medical certification in the working of the Insurance Acts has led to a good deal of friction—in Ireland it amounted to a deadlock at one time. The free choice of a doctor has always been admitted as theoretically a necessity, and Mr. Lloyd George held this as important until the Insurance Commission limited it to men on the panel. Permission to make "own arrangements" was refused by many insurance committees. This brought about a surplus in the medical benefit fund from the contributions levied on insured persons who refused to select a panel doctor. Those sums were distributed among panel doctors but counsel's opinion pronounced such distribution to be illegal, and even declared it to partake of "the nature of a dodge."

Insufficient sanatorium accommodation leads to unsatisfactory results. We have only 300 beds for tuberculous insured persons in the County of London; there is no provision under the Acts for consultations, operations or special treatment or diagnosis. Under the compulsion through the state there has been a wholesale transfer of private patients to the panels—an unsatisfactory consequence to the great majority of the profession. Insurance has not been restricted to those properly entitled to it. The Medical Union is not opposed to National Health Insurance for the necessitous classes, but the Commission of the Faculty indicates grounds on which exception is taken to parts of the existing scheme and administration of the benefit section of the National Health Insurance Acts.

A Knighthood of the Order of St. John of Jerusalem has been conferred on Dr. Hamilton for services rendered during the war. He is a B.A., M.D. (Dublin) and D.P.H. (London). He is author of "The Flora and Fauna of Monmouthshire," and has been in practice in Monmouth for many years.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

POLAR ICE-PACK AND OCEAN CURRENTS AS A MEANS OF SPREAD OF DISEASE.

ST. MICHAEL, ALASKA, Aug. 25, 1916.

IN the year 1912, when the Swiss savant, De Quervain, started to cross the great inland ice-cap of Greenland from the west coast to the eastern shore, in latitude about 70° North, he found the Danish authorities in Jacobshavn were fully awake to the dangers of infection, and he obtained permission to cross this gigantic glacier, which covers the whole of Greenland with an ice barrier almost impassable, only by giving a solemn undertaking that he would kill all the dogs in his expedition before leaving the glacier to enter the village of Augmagsalik, on the east coast.

This precaution was deemed necessary by the Danes because it was feared that the expedition

might be the means of spreading to the villages of the east coast of the island a disease which was prevalent along the western shore, and which had infected nearly all the dogs of the villages in that vicinity. Thus it will be seen that the Danish government, whose methods of caring for the Eskimo inhabitants of its Arctic possessions might be studied with profit, was working to prevent the spread of diseases among the domestic animals of Greenland as well as among the people who inhabit Danish America.

It has occurred to me, after listening to certain discourses by a man who has had many years of experience in the North, on the subject of polar ocean currents, that these currents may possibly be a means of spreading diseases from the Alaskan natives to those of the east coast of Greenland.

It has been pretty well demonstrated, and it is agreed by all who have studied the matter, that the currents from Bering Strait flow across the Polar area into the North Atlantic Ocean. This was proven conclusively by the drift of the Melville-Bryant casks, which were placed on the ice of the Polar pack north of Bering Strait. Several years later a number of them were picked up floating in the North Atlantic. The only difference of opinion on this subject for a number of years has been the particular course taken by these casks in their long journey across the Polar Sea, though the voyage of the Karluk in 1913 has about settled that matter to the satisfaction of all interested.

From my own observations, and from discussing the matter with others who have had even better opportunities than I for observation, I have concluded, as has already been written in these pages, that a large percentage of the native inhabitants of Alaska are suffering with communicable diseases. Tuberculosis especially is very prevalent, and the almost entire lack of sanitary measures, which prevails in Alaska, permits it to spread unchecked. This absence of proper sanitary precautions may be endangering the life of other tribes of dwellers in the far North, as will be seen by a further perusal of this letter.

The natives of the villages of Alaska, as well as the white residents, are in the habit of placing refuse matter, garbage, etc., upon the sea ice in front of their habitations during the long winter and spring months. This ice, carrying tons of garbage and refuse matter from Alaska, floats away to the northward with the breaking away of the ice from the shore in early summer, to become incorporated into the great ice-pack which covers the whole of the Polar area. Thus the disease-laden ice-floes from Alaska, carried by the ocean currents, after a journey of thousands of miles, come grinding along the east coast of Greenland on their way into the North Atlantic. This process has been going on through the ages, and it is the deposit of the solid matter brought across the Polar Ocean by the ice, which has formed the Grand Banks of New Foundland at the point where this stream of ice meets the warm waters of the Gulf Stream.

Is it not likely that these huge rafts of ice, as they come crowding down against the rocky coast of Greenland in the final stages of their long journey across the Arctic seas, may deposit some of their germ-laden filth, from the Alaska villages, on that shore, and thus spread the diseases from our own territory to the practically isolated people of East Greenland? Of course, this ice-pack, drifting south into the North Atlantic, appears to one who sees it to be pure white. It has been covered with snow, which obscured the vast piles of dirt which were visible at the beginning of the journey, so that while this ice appears to be about the purest thing in the whole world, it may conceal unseen dangers, even greater than the evident dangers to navigation, which are so well known and recognized by everyone.

A traveler who has visited many of the native villages on the west coast of Greenland, as well as most of those on the Alaskan shore, told me that to a casual observer it would appear that there is much more tuberculosis among the natives of Alaska than among those of the west coast of Greenland. He stated that while he had never visited the east coast of Greenland, he had heard that the people there are much more subject to tuberculosis than those on the western side of the island, thereby more nearly resembling the Alaskan natives. This, too, in spite of the fact that they are much more isolated, coming but rarely in contact with the civilized world. The reason for this lack of communication with the outside world is the flow of the ice streams down that shore, making navigation very difficult.

It is probable that this journey of refuse matter on the ice from Alaska to Greenland requires a period of from five to seven years, and one might suppose that the hard freezing to which any organisms would necessarily be subjected through successive years, might destroy their viability or virulence so that there would be no danger of infection. It is the opinion of the writer, however, that in view of the high resistance of the bacillus of tuberculosis, of anthrax, of typhoid fever, and of other infections, such organisms incorporated into the ice off the shores of Alaska could follow the ice flowing north through Bering Sea and Strait, the Arctic Ocean, across the Polar area, and thence into the North Atlantic Ocean with their virulence but little or not at all attenuated.

It would be interesting to get an expression of opinion from some the Danish scientists who have studied these matters, as well as some actual statistics regarding the prevalence of tuberculosis and other diseases on the east coast of Greenland as compared with the west coast natives. If it is found on investigtaing this matter that Alaska is a possible source of infection to the natives of this barren Greenland shore, it would be the duty of the United States to take steps toward the prevention of the spread of diseases in this manner.

Not only the natives of the Greenland shore would be endangered by this means, but the health of the inhabitants of Iceland and even Labrador and New Foundland is to be considered; and when it is realized that some of these organisms may not sink to the bottom when the ice melts away, but remain in suspension and be carried with the current of the Gulf Stream to the Scandinavian shore, the matter might have a more far-reaching result than above outlined.

It must be remembered that the last of the Melville-Bryant casks found was one picked up on the shore of a small island just west of Tromso, Norway. It was, in all probability, carried by the ice-pack into the North Atlantic until it was freed upon the melting of the ice on the New Foundland Banks, and then floated with the Gulf Stream to the Norwegian coast.

This theory of the spread of diseases from Alaska to Greenland may appear unusual, but it is at least worthy of thought, and much good might result from a thorough investigation of the matter. In

fact, as Labrador and New Foundland (a Crown Colony of England) as well as the Danish Colonies in America and even the Mainland of Europe, are possibly affected by the carrying of refuse matter from Alaska by ice-floes, the services of an International Commission of scientists from all the countries concerned might do much toward the prevention of the spread of diseases in the lands bordering on the North Atlantic Ocean.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 28, 1916.

1. The Importance of Early Reduction of Fractures with Displacement. William Darrach.
2. The Treatment of Hip Fractures. F. J. Cotton.
3. Certain Facts Concerning the Operative Treatment of Fracture of the Patella. Charles L. Scudder and Richard H. Miller.
4. Some Aspects of the Treatment of Compound Fractures Under Civil and Military Conditions. David Cheever.
5. The Flexed Spica and Wheel Chair in the Treatment of Fracture of the Neck of the Femur. G. A. Moore.
6. Portraits of Florence Nightingale. (Concluded.) Maude E. Seymour Abbott.
7. Restoring the Injured Employee to Work. Francis D Donoghue.
8. Hospitals and Workmen's Insurance. F. J. Cotton.

1. The Importance of Early Reduction of Fractures with Displacement.—William Darrach holds that fractures should be considered in the same emergency class with ruptured ulcer and acute appendicitis, and that hospitals should be so equipped that the *x*-ray plant is available at any hour of the day or night, including Sundays and holidays. He believes that a more exact replacement can be accomplished in the first few hours than if the reduction be delayed, especially if that delay be a matter of days. The percentage of perfect anatomical results will be much higher with early reduction. The ease of reduction to a large extent will vary inversely with the time elapsed since the injury. The additional trauma caused by manipulations during reduction will be reduced. The evil effects of pressure of a displaced fragment on adjacent structures will depend on the duration as well as the amount of that pressure. With a more perfect reduction comes a decrease in the amount of new tissue necessary to repair the injury, which means a lessening of the period of disability and a more complete return of function. Lastly, the amount of pain and discomfort subsequent to the reduction will be lessened.

2. The Treatment of Hip Fractures.—F. J. Cotton says that it is obvious that there are two classes of hip fractures—the trochanteric and the subcapital. There is no question of union in the trochanteric cases; they unite by massive callus, usually promptly. The question is purely one of deformity. There is apt to be an outward rotation easily taken care of, but the real deformity is a coxavara type. With this goes a tendency to adduction contracture, muscle shortening, common to all hip injuries. Any treatment that insures an adequate amount of abduction is suitable for this class. The subcapital breaks, on the other hand, are essentially intracapsular, and therefore have no massive callus. Some are impacted in the beginning, and if they stay impacted they unite by bone slowly. If they start loose or work loose they do not unite by bone and produce cripples. It has been the author's idea to secure to the loose fractures the advantages of impaction; to reimpact those that needed correction, and to fix them all in moderate abduction. This he has done in some thirty cases during the past six years. The method has been of hammer impaction, after reduction, and the application of a plaster spica. His results he considers encouraging since no one has shown any better ones in intracapsular cases.

3. Certain Facts Concerning the Operative Treatment of Fractures of the Patella.—Charles L. Scudder and Richard H. Miller describe the operative treatment of fractures of the patella which has been employed at the Massachusetts General Hospital. This method has consisted in approaching the joint through an ample incision, removing gently all obtainable blood-clot, freshing the bony surfaces of the fracture, approximating the fragments by manual pressure, suturing the capsule and torn fascia with chromic catgut, closing the skin wound, immobilizing the knee for a few weeks, allowing the patient to walk with the knee still immobilized, and using active motion and massage early after operation. This method was studied to see whether it was satisfactory or not and how it could be improved. In a study of twenty-two cases two facts stand out prominently. First, 81 per cent. of the cases have demonstrated bony union of the patella following the use of the absorbable suture combined with digital and suture approximation. This means that there were 19 per cent. of failures in securing bony union and that the fracture was not reduced in 19 per cent. of the cases. The functional disability most evident in this series was a very considerable limitation of flexion of the knee, 39.5 per cent. of the cases having less than full flexion. It would seem from this series that in order to improve the results of the operative treatment of patellar fractures more care must be taken to secure bony union through accurate reduction of the fragments of broken bone and that a more accurate and secure suture must be used to maintain reduction. An encircling suture of kangaroo tendon is most satisfactory. In such cases as need more than manual reduction of the fragments the patellar clamp devised by Dr. Scudder may be employed with gratifying results.

5. The Flexed Spica and Wheeled Chair in the Treatment of Fracture of the Neck of the Femur.—G. A. Moore describes a flexed spica which is a modification of Whitman's method of treatment of hip fractures. Reduction of deformity and apposition of the fragments is maintained by essentially the same means. The chief difference is that instead of the abducted and extended position of the leg it is immobilized in the abducted and flexed position, permitting the patient to assume the sitting posture. Seventeen patients have been treated in this way, fifteen being over fifty years of age and nine over seventy years. The results have shown that maintenance of the leg and body in the same horizontal plane are not essential to union or good functional results This method was devised for old, feeble patients who are able to tolerate some appliance for immobilization, but in whom methods necessitating recumbency seem inadvisable. With the exception of one old lady, upon whom a double cast was applied, all have been in chairs daily throughout convalescence. Strength and general nutrition are maintained by the exercise of pushing themselves about in a wheel-chair, so that when the cast has been removed these patients have been able to use crutches at once.

New York Medical Journal.

September 30, 1916.

1. Injuries of the Chest During War. R. Murray Leslie
2. Extensive Subdural Hemorrhage After Trauma. B Sachs and Charles A. Elsberg.
3. Infantile Paralysis. Herman C. Frauenthal.
4. Afterthoughts of the Epidemic of Infantile Paralysis Beverley Robinson.
5. Pelvic Massage. Ferdinand Herb.
6. Inflammation with Regard to Its Stage. John F. X Jones.
7. Rectal Operations Under Local Anesthesia. J. F. Saphir
8. Treatment of Inebriates. Joseph McIver.
9. Acute Middle Ear Suppuration. John J. O'Brien.
10. The Wake of the Wassermann Test. James Cabell Minor

2. Extensive Subdural Hemorrhage After Trauma.—Charles A. Elsberg reports the case of a man who, after an automobile accident, was unconscious for several hours and then seemed to have suffered little for a

period of nearly two months. The only change observed was in his mental condition, which seemed to have been somewhat altered. He was more talkative and laughed immoderately without cause. He then slipped in getting out of the bath tub and gave his head another hard knock, after which he was unconscious for forty-five minutes. As a result of examination at this time the diagnosis of extensive hemorrhage or abscess was considered probable and the patient was sent to the hospital. The mental condition of the patient was puzzling. He was at first extremely noisy, talkative, and made an effort to be funny. After a few days he became drowsy and the left upper extremity became completely paralyzed, not spastic; the left half of the face was involved, and the lower extremity was paretic. The sensory disturbances were marked in the upper extremity but less so in the lower. As the symptoms increased in severity and the right optic nerve showed numerous small hemorrhages, an exploratory operation was decided upon. A button of bone was removed from the front of the middle of the right motor area and the dura was incised. A large quantity of dark colored fluid escaped. After the fluid had been removed and more bone rongeured away for decompressive purposes, the wound was closed without drainage. The patient recovered from the operation, but his condition was not improved. At a second operation a large osteoplastic flap was turned down in the right frontoparietal region. On incision of the dura the cortex was found to be covered by an organized blood clot 0.5 cm. in thickness, which had evidently compressed the parietal and frontal lobes. This layer of organized tissue was removed, when the brain began to expand and pulsate, and was found covered by newly-formed blood vessels. The dual incision was closed by interrupted sutures and the bone flap returned to place. The patient gradually recovered in every particular. This case is recorded not only because of the unusually satisfactory operative results, but also because the mental symptoms were evidently the result of the involvement of the frontal lobe. None of those who witnessed the operation had ever seen so large a clot removed from a living subject. It is probable that it was produced by oozing since an initial hemorrhage of the size indicated by the clot would have proved instantly fatal.

4. Afterthoughts of the Epidemic of Infantile Paralysis. — Beverley Robinson writes that we are still obliged to confess our ignorance as to the cause of infantile paralysis and to fall back on the time-honored statement that an epidemic influence has prevailed. The proof of this assertion is that cases appear suddenly in widely separated tracts of country; that in some cases children, young men and women, and occasionally adults of a certain age have been attacked; that not infrequently there is no evidence that a possible human carrier of the disease can account for it; that healthy children who are most carefully looked after take the disease and not merely neglected children. No system of quarantine has prevented the disease from attacking persons at a given time. In all these particulars and in others it is closely allied with the grippe. So far as many symptoms are concerned it also resembles the grippe more closely than any other known affection. So far as precautionary measures are concerned there is no reason to change what is rational in the case of both diseases. By intelligent treatment the worst effects of infantile paralysis may be warded off and, in the opinion of the essayist, this intelligent treatment consists in the internal use of ammonium salicylate, supplemented by the local use of carbolated petrolatum introduced into the nares night and morning. The employment of immunized blood serum injected into the spinal canal has been of great service, but should be given only by an expert. Ammonium salicylate has been very valuable in the treatment of grippe and much may be hoped for from its wider use as both a preventive and a curative measure in poliomyelitis.

5. Pelvic Massage.—Ferdinand Herb reviews the history of pelvic massage in gynecological cases and discusses the reasons why it gives brilliant results in the hands of some gynecologists, while others fail entirely to obtain any benefit with this method. Massage should be as useful in removing remnants of inflammatory conditions, improving local circulation, freeing nerves, blood vessels, or organs imbedded or distorted and displaced by cicatricial tissues in the pelvis as it is if such afflictions are near the surface of the body, or where they are easily accessible. The principal reason why pelvic massage is not successful in the hands of some gynecologists is because the length of the fingers falls below a certain measure. The varying length of the fingers of the different physicians will alone explain much of the difference of opinion apparent in the literature on pelvic massage. To provide for definite figures as to the length of fingers necessary for pelvic massage, the writer states that his own middle finger is three and fifteen-sixteenths inches. This is decidedly more than the average length. Dr. Robert Ziegenspeck of Munich, one of Europe's most ardent advocates of pelvic massage, has fingers slightly longer than the writer, while Thure Brandt, who first achieved such remarkable results by the employment of pelvic massage, had much longer fingers than Ziegenspeck. As it is important if justice is to be done to these cases that physicians be trained in pelvic massage in post-graduate schools, it is essential to select from the applicants for tuition only those who have the proper physical as well as scientific qualifications.

7. Rectal Operations Under Local Anesthesia. —J. F. Saphir reports a series of nineteen rectal cases operated on at the Gouverneur Hospital under the local influence of quinine and urea hydrochloride solution, all of whom were relieved of their rectal ailments, without inconvenience either during or after the operation. They were all able to leave the clinic immediately to attend to their usual duties. He does not hold that all rectal cases should be operated upon under local anesthesia, but maintains that about 75 or 80 per cent. of hemorrhoids, external, internal, and thrombotic, rectal polypi, fissura ani, anal ulcers, dermoid cysts, tight or hypertrophied sphincter ani, skin tags, some cases of fistula ani, and some cases of prolapsus ani, can and should be operated on under local anesthesia. The cases reported prove that rectal conditions can be cured under local anesthesia and that the patients need not be confined to bed, a matter of importance from an economic point of view, both to the individual and the hospital. The method is suitable for patients suffering with pulmonary tuberculosis, nephritic, or cardiac diseases.

Journal of the American Medical Association.

September 30, 1916.

1. The Problem of the Chronic Cripple. Russell A. Hibbs.
2. Treatment of Constipation by Conservative Surgical Correction of Retardative Displacements of the Colon. Charles A. L. Reed.
3. Contributions to the Physiology of the Stomach: XXXV. The Newer Intepretation of the Gastric Pain in Chronic Ulcer. Harry Ginsburg, Isidor Tumpowsky, and Walter W. Hamburger.
4. Carbohydrate Restriction in the Medical Treatment of Gastric Hyperacidity and Ulcer. Willard J. Stone.
5. Syphilis as a Probable Factor in Vague Stomach Disorders. Cabot Lull.
6. Syphilis in the Southern Negro. H. L. McNeil.
7. Surgical Aspects of Industrial Accident Insurance: Illustrated from California Experience. Emmet Rixford.

8. Health Insurance in Its Relation to Public Health. I. M. Rubinow.
9. Health Insurance: Its Relation to the National Health. B. S. Warren.
10. Some Bacteriologic Observations on Epidemic Poliomyelitis: Preliminary Report. George Mathers.
11. A Simple Device for Locating Foreign Bodies in Fingers. Roscoe C. Webb.

1. The Problem of the Chronic Cripple.—Russell A. Hibbs says that as the knowledge of the fact that there are a large number of people in every community who need orthopedic care increases, and as methods of treatment are perfected, a large number of men are going to select orthopedic surgery as their specialty. As a result of inquiries of various clinics in different parts of the country, it has been shown that the percentage of patients admitted to the hospital for operation of the total number treated in the dispensary varied from 3 to 10 per cent. The average for the whole number was 10 per cent. Thus the large proportion of orthopedic cases are chronic ones and require on the part of the surgeon a chronic enthusiasm. Such enthusiasm is of slow growth and suggests that the orthopedic surgeon, as compared with the general surgeon, should have a longer period of preparation. It would also seem that if a man's training is only in the hospital, his preparation for the treatment of the 90 per cent. of patients who never enter the hospital is poor. There is a great deal more written about the 10 per cent. who need operations than about the 90 per cent who never enter the hospital, and herein lies a danger to the development of this specialty. There is no question of the importance of the operative work, but the non-operative should not be neglected. With the proper training of the orthopedist comes the question of the best means of applying it to the cripple. There are many communities throughout the country in which such work is new and such places offer wonderful opportunities for men to initiate organizations ideally fitted to the need of the cripple, unhampered by the difficulties of attempting to do the work for the cripple in a small orthopedic department in a general hospital, the spirit and atmosphere of which is not helpful to work of this kind.

2. Treatment of Constipation by Conservative Surgical Correction of Retardative Displacements of the Colon.—Charles A. L. Reed. (See MEDICAL RECORD, July 8, 1916, page 81.)

3. Contributions to the Physiology of the Stomach.—Harry Ginsburg, Isidor Tumpowsky and Walter W. Hamburger. (See MEDICAL RECORD, July 1, 1916, page 33.)

4. Carbohydrate Restriction in the Medical Treatment of Gastric Hyperacidity and Ulcer. — Willard J. Stone. (See MEDICAL RECORD, July 1, 1916, page 34.)

5. Syphilis as a Probable Factor in Vague Stomach Disorders.—Cabot Lull. (See MEDICAL RECORD, July 1, 1916, page 34.)

6. Syphilis in the Southern Negro. — H. L. McNeil. (See MEDICAL RECORD, July 1, 1916, page 34.)

8. Health Insurance in Its Relation to Public Health.—I. M. Rubinow shows that while compulsory health insurance must necessarily be limited to wage workers or salaried persons, voluntary health insurance may be encouraged with advantage among other social groups. He states that the effect of the money benefit is evidently not limited to relieving misery and destitution for the time being, but is even more important in giving a better chance for recovery. The failure to understand the difference between "disability" and "inadvisability to work," has caused many critics to deny the preventive feature of sickness insurance in Germany. It is pointed out that the health conditions in Germany could not have improved because the average amount of sickness disability has increased; as a matter of fact, this indicates an increase in the days of inadvisability to work, or in other words, a very much improved care of the sick. It is obvious that the success of health insurance depends on the effectiveness of medical aid. A system of medical aid which fails to provide for team work, which interferes with any degree of medical organization, either because of considerations of economy or because of conservative clinging to old standards, will utterly fail to make health insurance a powerful fulcrum for lifting general health conditions. Whether medical aid under health insurance will accomplish all that it is capable of depends on such details as availability of consultant and specialist; arrangements for hospital care; additional care for convalescents, and a liberal provision for drugs, appliances, etc. It must be admitted that a capitation system of payment for the medical profession, whether small or large, has in it inherent tendencies for slipshod careless medical work, and neglect of those patients who need aid more frequently. The writer points out that good sickness statistics are not an automatic result of health insurance, and that they cannot be perfected without the willing co-operation of the medical profession.

9. Health Insurance: Its Relation to National Health.—B. S. Warren suggests that it would seem feasible under our form of government to provide a system of health insurance for interstate employees by federal law and for intrastate employees by state law. To be adequate as a public health measure, a health insurance system should provide for: (1) Adequate cash and medical benefits to all wage earners in times of sickness and death. (2) The distribution of the cost of sickness among the groups responsible for conditions causing disease, viz., the employer, the employee and the public. (3) The stimulation of the co-operative efforts for disease prevention on the part of the responsible groups named above and the linking of their efforts with existing health agencies. (4) The correlation of the work of all agencies working for the relief and prevention of disease. Such a law, if enacted by the federal and state legislative bodies, would have two distinct relations to the national health. It would operate as a relief measure by providing relief for all cases of sickness in this group and thereby would have a decided effect in improving the health of the people. It would operate as a preventive measure by fixing a definite price for each day lost on account of sickness and by providing a financial incentive to those paying this price by preventing sickness; it would start a movement for preventing disease, just as certainly as the workmen's compensation laws have brought about the nation-wide "safety first" movement. Properly coordinated with existing health agencies, the machinery would be ready at hand for advising and directing this movement with respect to disease prevention. In view of the experience in both Europe and America, it would seem best to place the administration of the medical benefits directly under governmental agencies, and to insert a provision that no cash benefits be paid except on the certificate of medical officers of the national or state health departments acting as medical referees under the regulations of the central governing boards. Such medical officers should be selected under civil service methods, and appointments should be based on a knowledge of preventive as well as clinical medicine.

10. Some Bacteriological Observations on Epidemic Poliomyelitis: Preliminary Report. — George Mathers has made cultures from the brain and cord of fatal cases of poliomyelitis. In seven or eight cases thus far examined bacterial growth developed in aerobic ascites dextrose broth and agar cultures after eighteen hours,

while in the anaerobic cultures made according to the technique of Flexner and Noguchi, a definite growth usually did not appear until after from three to seven days, and then often very scantily. In six of the seven instances a pure culture of a gram-positive micrococcus was obtained. In one instance the culture gave also a gram-negative bacillus. On blood agar plates the organism grows in small dry colonies, which produce a faint green halo and a slight degree of hemolysis. Cultures from the heart blood and from the cerebrospinal fluid after death thus far have not yielded this micrococcus, but it has been obtained from the mesenteric lymphnodes. The organism is of low virulence for rabbits, but when injected intravenously in large doses lesions of the central nervous system are produced, with paralysis which may resemble that of infantile paralysis, especially as it affects the extremities. Intracerebral injection of the organism soon after isolation has produced paralysis in the monkey. The author thinks that in view of the accepted facts in regard to the virus of epidemic poliomyelitis it would seem most reasonable to regard the micrococcus described as a secondary invader, but that further work is necessary before its significance can be fully understood.

The Lancet.

September 9, 1916.

1. An Address on the Analysis of Living Matter Through Its Relations to Poisons. A. R. Cushny.
2. Contributions to the Study of Shell Shock. Being an Account of Certain Disorders of Speech, with Special Reference to Their Causation and Their Relations to Malingering. Charles S. Myers.
3. The Effect of Trench Warfare on Renal Function. J. W. McLeod.
4. The Diagnostic Value of Tubercle of the Choroid. Sidney Stephenson.
5. Trench Pyrexias: Their Prevention and Treatment. Basil Hughes.
6. On the Dressing of Septic Gunshot Wounds. W. B. Davy.
7. The Schiah Pilgrimage and the Sanitary Defences of Mesopotamia and the Turco-Persian Frontier. (Concluded.) F. G. Clemow.

2. Contributions to the Study of Shell Shock.—Charles S. Myers gives an account of certain disorders of speech, with special reference to their causation and their relation to malingering. The principal disturbances of speech which he has encountered may be grouped under three heads—aphonia, dysarthria and mutism. This is the order of frequency in which, from our experience of functional disorders in times of peace, such disturbances of speech might be expected to occur. In the class of cases occurring in war the order has been exactly reversed. Dumbness is by far the commonest disorder of speech, occurring in about 10 per cent. of all cases of shock which have come under his notice. He has met with affections of articulation, stuttering or jerky speech, only in about 3 per cent.; while loss of voice, as the result of shock, is of somewhat rarer occurrence. In about one-third of the cases of mutism caused by shock various predisposing affections may be demonstrated, such as nervousness, fits, stuttering, wounds, or exposure to the enemy's gas. These disorders of speech are not immediately due to physical causes, but are the result of a functional inhibition, arising primarily from disorder in the personality; they are not due to some fixed idea of paralysis. These functional disorders are apt occasionally to simulate malingering just as at other times they simulate organic lesions. About 75 per cent. of the cases of mutism improve rapidly while the remainder are slower in making a recovery. In the treatment of these patients, psychotherapeutic measures, that is, suggestion, persuasion, and encouragement, have been employed with success.

3. The Effect of Trench Warfare on Renal Function.—J. W. McLeod has made a study of over 4,000 British and French troops with reference to the effect of warware on renal function, with the hope that some reason might be found for the frequency with which acute nephritis has been observed during the present war. He concludes that exposure alone probably has nothing to do with the causation of a number of cases of nephritis observed in France, especially the milder ones, and that if it has a part in the etiology of the severer ones it will be similar to that exhibited in many infectious diseases, namely, that of setting up a defective circulation in an organ so as to render it less capable of resisting infection. The majority of the transitory albuminurias so common among the troops can be classed with the so-called "fatigue" albuminuria. There exists, especially among the British troops, an excess of cases of symptomless albuminuria, apart from those just mentioned, which cannot be classified as chronic nephritis. Diet appears to be the most likely explanation of this excess of transitory albuminuria and mild nephritis, and may also contribute toward the development of the more severe cases. It has been shown that the average soldier is consuming an amount of protein food in excess of his requirements, and is therefore throwing an undue strain on his excretory organs. This statement is confirmed by the numerous cases of gingivitis coming under observation, which probably indicate that the men are suffering from a restriction of fresh vegetables, which is usual and inevitable for troops in the front line. The resistance of the kidney, in common with other organs, is lowered by a slightly scorbutic condition, and gives out when, in addition to this, it is required to make an excessive metabolic effort, owing to a high protein diet, or is exposed to bacterial intoxication, either by direct invasion or by the establishment of an infective focus in some other part of the body.

4. The Diagnostic Value of Tubercle of the Choroid.—Sidney Stephenson thinks there is a tendency in modern times to overlook the general diagnostic value of tubercle of the choroid. He reports three cases which have come under his notice within a few months in which an acute tuberculosis was diagnosed as such by the discovery of tubercle of the choroid. In one the diagnosis was made from an apical pneumonia; in another, from a pneumococcal peritonitis, and in a third, from typhoid fever. The finding of these three cases within so short a time lends truth to the statement that acute tubercle of the choroid is by no means an uncommon manifestation if looked for in the right places and in the right way. A more frequent ophthalmoscopic examination of children in hospitals would prove a great aid in diagnosis.

5. Trench Pyrexias: Their Prevention and Treatment.—Basil Hughes writes that during August, 1915, and the succeeding months, "pyrexia" was of common occurence among officers and men living in the trenches. The diagnosis given in these cases was pyrexia, not yet diagnosed. A noticeable feature during the later months of the year was the rapid spread of this pyrexia when once started. With regard to its causation there are the following facts: (1) The occurrence of the disease was greatest during the time that conditions in the trenches were worst. (2) On getting back to clean huts in the rest billets, where the men could get a bath, a clean change of underclothing, and could have their uniforms and blankets disinfected, the number of cases fell immediately. (3) On coming away from trenches for a month to a place where personal hygiene could be thoroughly carried out it was a simple matter to eradicate it. There is, therefore, strong presumptive evidence that this is a louse-borne disease, for whenever it was possible to carry out measures for the eradication of lice the number of cases invariably fell

to a minimum. A possible explanation might be found in the trench rat, which lives largely on decomposing organic matter. The first step in prevention of the conditions seems to be eradication of the vermin. The drugs which have proved effective when the disease has established itself are quinine and sodium salicylate, administered after an initial purge.

Le Progrès Médical.

September 5, 1916.

Ocular Lesions Due to Tear-Producing Gas. — Gremeaux describes the symptoms and treatment of these cases as follows: When brought in wounded the eyes show photophobia and lacrymation and the lids are swollen and reddened, as a result of rubbing. The conjunctiva is injected finely, giving it a pinkish tint. Shortly after exposure to the irritating gases the cornea shows at its periphery a very fine exfoliation of the epithelial layer; this phenomenon is present even in the milder cases. There is an absence of secretion in the lower cul-de-sac. After a stationary period of several days the condition slowly recedes, although some lacrymation and photophobia may persist for three or four weeks. If, however, the eyes were already the seat of an infection of the lacrymal passages the erosion of the corneal margin is more marked. The application of an occlusive bandage also emphasizes the conjunctival reaction to the smoke and favors infection, corneal ulceration, etc. Treatment consists in irrigation of the eyes with oxycyanide of mercury 1-6000, the instillation of atropine 1-200 up to full dilatation, and the instillation of 1 per cent. zinc solution. An occlusive bandage should, of course, be omitted. Instead, poultices of potato flour are recommended. A very loose dressing, sufficient to exclude light, will serve when poulticing is discontinued. No cocaine should be used. During nine months the author treated 47 ambulance cases, of which 28 were mild, 2 aggravated, as result of preceding infection of tear passages, 3 aggravated by wearing an occlusive bandage. There were 14 clean recoveries. The duration of exposure to the gas appears to make no difference.

Phlegmons Produced by Injection of Gasolene.—Dillenseger in a recently published thesis (Lyons) gives an account of two of these cases and cites a number of others. The subject is a new one, the first report coming in 1915. The production of these phlegmons is classed as a criminal procedure, as it is a matter of simulation to avoid military duty or to secure a pension. The question of diagnosis is all important. A section through one of these phlegmons much resembles a section through a carbuncle. The pus which exudes is, of course, sterile. Decoloration of bromine water by the gasolene in the pus is the chemical test. Pyrexia is practically absent. But despite all these resources for diagnosis it is probable that in certain cases the artificial nature of the condition is overlooked.

La Presse Médicale.

September 7, 1916.

Cure of Hard Edema Due to Trauma and Phlebitis.—Denis reports cures of this affection as a result of hypodermic injections of eau de Breuil, of which he has now made some 2,000. This water is known to be pure and sterile, and not one abscess resulted from the treatment. It can be drunk very freely for weeks without inconvenience. There was no definite relationship between the amount of water used and the duration of treatment. The water may be classed as of a sodium bicarbonate-ferruginous type. The water is drunk as well as injected, but cannot be pushed in hypertensives or in those with weakened circulation. These military cases seem to be more amenable to treatment than simple hard edema in civil practice. The treatment is extremely simple, as the water may be injected directly from the bottles. The usual quantity injected is 0.40 c.c. and the rest of the bottle is drunk. In the cases treated there was no other form of treatment used—neither massage nor rest. The location of these hard edemas, notably about the ankles, makes radiography of service, for the reduction in size of the soft parts is readily apparent.

Treatment of Typhus with Colloidal Metals.—Bouyges saw typhus in Serbia, having cared for 150 patients. Some plan became necessary for the routine treatment and from analogy the colloidal metals seemed worthy of a try-out since typhus is clearly a sepsis. Further intravenous injections of colloidal silver have seemed to do good work in typhoid. An intravenous injection of 10 c.c. causes no typical results save that of a sense of subjective improvement. Objectively some of the patients showed favorable modification of the disease. If a chill developed it was brief. Colloidal gold, however, provoked a reaction comparable with a severe malarial crisis and is not to be thought of as a remedy. Colloidal silver in the absence of a serum is perhaps the only known remedy which exerts any favorable influence on the disease. In so-called recurrent typhus both metals seem to give results, especially colloidal gold, which should be begun cautiously in small doses.

La Presse Médicale.

September 11, 1916.

Periodical Vomiting with Acetonemia Versus Appendicitis.—Marfan does not believe that these two conditions have any necessary connection. The former is a disease of early life and seldom occurs after the age of ten years. The crises of vomiting appear to have the effect of ridding the body of some catabolic product which acts on the vomiting center. These emetizing substances may be the result of defective formation of fatty acids by the liver. Intermediate products of the Ketone series are formed as a consequence of insufficiency of the latter. The entire process is analogous to chloroform poisoning. There is a marked predisposition, the children being of the neuro-arthritic type and a diet rich in fat may be a contributory cause. The author now relates twenty-one cases in which each patient had submitted to appendectomy before developing the crises of vomiting with acetonemia. As the appendicitis was usually of a mild course the possibility of error of diagnosis at once suggests itself. That is the "appendicitis" for which appendectomy had been done was in reality the earlier crises of the vomiting with acetonemia, and removal of the appendix was naturally without effect on the course of the disease. Ordinarily differential diagnosis is easy, but it may be difficult and even impossible. In the crises of vomiting the region of the appendix should always be palpated, but the physician may neglect this precaution. In acute appendicitis there is considerable fever. In the same affection acetonemia may happen to be present as a result of inanition, due to the disease. There is usually meteorism with appendicitis, while a flat or concave belly is the rule with cyclical vomiting (the latter may simulate meningitis). Tenderness, hyperesthesia and muscular defence are never present. But even the most careful research for appendicitis may give equivocal results, as very slight rigidity and doubtful pressure pain, while acetonemia may be a precocious and notable feature. A possibility which should be borne in mind is that of a coincidence of the two diseases in one subject.

Le Caducée.

September 15, 1916.

An Ocular Compressor for the Oculocardiac Reflex.—Roubinovitch describes the now well-known Aschner phenomenon in which compression of the eye can be made to cause changes in the cardiac rhythm. In the normal individual there results a slowing of the heart beat of from four to ten pulsations, while in many pathological states the rhythm is distinctly altered; bradycardia or acceleration may be produced. Hitherto the clinician has made compression with his fingers, or, rather, an assistant compresses the bulb while the clinician investigates the rhythm of the heart. At times three persons are required to make the test. Hence the need for some mechanical device which will replace the individual. Such would have to be absolutely painless, supple, regular, measurable, durable and aseptic. The base of the author's device is an ordinary spectacle frame with frontal, nasal and ocular attachments in which coaptation is accurate. Pressure on the eye is effected by an automatic mechanism which admits of perfect control, so that any degree of compression may be obtained, and afterward maintained by a spring device. Through the use of this compressor all the results of digital compression have been verified. In epileptics the reflex is expressed in the great majority of cases by an acceleration of the pulse rate.

Simulation of Deafmutism for Five Months.—Berruyer reports a case of apparent deafmutism in a young soldier, said to have been due to a great shell explosion. In consultation the man seemed to be an absolute deaf mute. Before the explosion his speech and hearing were normal. He was at once told that he would recover. Several days of closest watching showed no evidence of simulation. The patient was then placed in a state of semi-narcosis with chloroform, and in this condition conversed without difficulty. A dressing was applied to his throat for the psychic effect. Afterward he admitted recovery but showed no normal delight over his apparent good fortune. His former physician was consulted and stated that he had treated the man for six weeks by reeducation and had left the hospital perfectly cured. The writer leaves us in some doubt as to whether the original attack was simulated, but doubtless it was genuine, as he was under the charge of a competent neurologist. After this experience he must have thought of deliberate malingering in order to keep out of the fighting line, for recovery from shell shock of this type within the army zone is notably tedious and uncertain.

Le Bulletin Médical.

September 5, 1916.

On Refusal by Soldiers of Operations Recognized as Necessary.—Janicot relates that this question was first started in connection with certain electrotherapeutic procedures, but is seen to apply to many surgical operations which have been formulated under three heads by the Direction of the Sanitary Service: (1) Refusal to submit to a legal prophylactic prescription like vaccination; (2) refusal of a nonbloody intervention, and (3) refusal of a bloody intervention. It is recognized that some surgeons are naturally timorous and hesitate to go ahead with measures which they feel are heroic. Others are not timid or hesitating, but doubt their right. These attitudes on the part of the profession tend to invalidate routine procedure, and it is happening more and more that necessary measures are withheld. Some soldiers even refuse to allow their stiffened joints to be mobilized. Others object to the extraction of small sequestra of bone which alone prevent the healing of fistulæ. Others, again, will not consent to the removal of projectiles from the tissues, although they may be causing them inconvenience. Those badly injured never refuse treatment, but the slightly injured think things may go worse for them. Sometimes they distrust the ability of the surgeon on duty or fear that they will be interned in hospital until the end of the war. Various learned bodies have rendered opinions. The Medico-Legal Society states that refusal is not a positive fact in law, such, for example, as is deliberate mutilation. A wounded soldier cannot obtain positive assurance as to the outcome of a given procedure. The doctor cannot even guarantee that the patient may not be worse off, or that he may not even die after the intervention. A debate by the War Council with a defense of the right to refuse would be sure to bring out differences of opinion. Who would then decide the matter? Not the judges, who would be unable to decide which views were correct. Nor could an expert or technichian be able to decide as he is not above criticism. Another opinion was rendered by the Commission of Public Hygiene of the Chamber of Deputies, as follows: If the wounded is rendered unfit for medical service and if operation can diminish his infirmity the benefit which thereby accrues will have to be charged against his pension claim. If the treatment or operation refused could make the disabled man fit to resume military service, he shall by no means be maintained in a hospital, but put to some work in the rear, in accordance with his disability without leave of absence. At the close of the war he should be mustered out, but should not receive a full pension. Any gratification sought would have charged against it the benefit he should have derived from the operation. Professor Hartmann, representing a Subcommission of the Superior Consulting Commission, makes the following report: Refusal to be vaccinated against smallpox, typhoid, etc., is a breach of discipline and punishable, because these officers are backed by the laws. Refusal to be treated for syphilis is a breach of discipline and the man must be penalized. Those ill with nervous disturbances comprise many malingerers and must submit to diagnostic tests of all kinds. All nonbloody interventions must be submitted to, including hydrotherapy and electrotherapy. Retentive apparatus must always be worn when necessary. In all such cases narrated above the soldier has an expert opinion, which does away with prejudice toward the regimental surgeon. On the other hand, a soldier can protest against the removal of an eye, testicle, hand (even a thumb), but everything must be done formally and in writing. If the operation refused is nonmutilating, the reasons for refusal must be asked and the injured must be informed as to the effect of nonsubmission on his pension. But if it is decided that recovery is practically certain the soldier may be forcibly operated on for the common good. Such a step is carefully determined in advance by a medicolegal commission. Absolute refusal to submit to treatment in the face of all these precautions must be regarded as a breach of military discipline.

Night Terrors.—Williams regards night terrors as analogous to the phobias of older persons and quotes a number of cases in which the symptoms could be traced to definite incidents in the child's experience or to injudicious education or treatment. He advises not exactly a psychoanalysis after the method of Freud, but a careful interrogation designed to lay bare the root of fear. If this is successfully attained no further treatment may be necessary, but in some cases the child benefits by a sympathetic explanation of the symptoms, a process of re-education, and exercises in mental concentration.—*Edinburgh Medical Journal.*

Book Reviews.

THE PATHOLOGY OF TUMORS. By E. H. KETTLE, M.D., B.S., Lond., assistant pathologist, St. Mary's Hospital; assistant lecturer on pathology, St. Mary's Hospital Medical School; formerly pathologist to the Cancer Hospital, Brompton. With 126 illustrations. Price, $3. New York: Paul B. Hoeber. 1916.

THERE has been in English no very satisfactory book of moderate size on the subject of the microscopical structure of tumors, since the excellent volume published by Powell White some years ago is concerned rather with the general biology of tumors than with their histological details. This volume of tumor pathology, however, covers the field very well. There is no pretense that it is an exhaustive reference work on cancer; it is intended rather as a student's text, not only useful to the beginner in tumor pathology, but also of great interest and value, to the surgeon who wishes to fit himself for the intelligent practice of his trade in that phase which has now become of such importance, the operative treatment of tumors. Unfortunately, at the present time the surgeon regards anatomy as of much more importance than pathology, so that he is more apt to operate on a tumor from an anatomical point of view than from a pathological, with the result that the statistics of operative surgery on malignant tumors show that the accomplishments of many individuals and hospitals are not as yet commensurate with our knowledge of the nature and metastatic distribution of tumors. There is still, even in the large cities, too much partial surgery of malignant growths, with the inevitable result of early and inoperable recurrence. The first part of this book gives a very good review of the general biology of tumors, full credit being given to the recent admirable work of the Imperial Cancer Research Fund in London. In his discussion of the value of frozen section diagnosis, the author, in his anxiety over a possible error by the pathologist, seems to lose sight of the fact that it is better for the patient to undergo an extensive operation for the removal of a benign growth than an incomplete operation for the removal of a malignant one. In the first case, the patient has had possibly a serious operation, but still remains a useful member of society; in the second, death is inevitable. There are many growths which it is impossible to diagnose from their gross appearance, and we can get the best results in the treatment of carcinoma only by frozen section diagnosis in the operating room, the pathologist being allowed to state from what portion of the material he desires a specimen, for very few surgeons have sufficient laboratory knowledge to enable them to select material suitable for microscopical examination. In the chapter on the classification of tumors, the author shows his self-control by refusing to add a new classification to those already in existence. Part III, devoted to special pathology, is a little too compact; one wishes that the author had seen fit to furnish more details. Bibliographical references have been omitted entirely, which is a matter of regret, also, because of the limitations which it places upon the use of the book; but presumably space did not permit the inclusion of what would have made the book more valuable. The illustrations are exceedingly good, and color has been used very effectively to bring out certain points. The index, also, is very satisfactory. Altogether the volume can be highly commended both to the students and to the practitioner of surgery as the best text in English on the subject.

BEING WELL-BORN, An Introduction to Eugenics. By MICHAEL F. GUYER, Ph.D., Professor of Zoology, The University of Wisconsin. Childhood and Youth Series. Edited by M. V. O'SHEA, Professor of Education, The University of Wisconsin. Price, $1.00 net. Indianapolis: The Bobbs-Merrill Company, 1916.

HEREDITY and the part it plays as a direct influence and factor in our lives is still a mooted question among the philosophers of the varied sciences. Professor Guyer has given us a book that is more than a compend and less than a complete text-book on the subject of heredity, environment and eugenics, and the interrelation of each to the other. To those not well acquainted with his topics, the book is somewhat confusing and even for those with a reading knowledge of his material there is a demand for very careful, intelligent study of his text due to the difficult subject matter. Since there is so much yet to be learned on this subject the author naturally has matters very much his own way. He quotes Professor Pearson as stating that statistics show that heredity is five or ten times as important as environment in the development of the individual. The book is intensely interesting and is an evidence that the author is thoroughly conversant with his subject as far as research has opened up this bewildering, but fascinating study.

MAKERS OF MODERN MEDICINE. By JAMES J. WALSH, M.D., Ph.D., LL.D., Litt.D. (Georgetown); Sc.D. (Notre Dame); L.H.D. (Catholic University) Professor of Physiological Psychology at the Cathedral College, New York; Sometime Dean and Professor of the History of Medicine and of Nervous Diseases at Fordham University School of Medicine; Member of the French, German and Italian Societies for the History of Medicine, N. Y. Hist. Soc., N. Y. Acad. Med., A. M. A., A. A. A. S., etc. Catholic University Edition. Enlarged by the addition of the life of Virchow. Price $2.00 net. New York: Fordham University Press, 1915.

THIS is the third edition of this work since its first appearance ten years ago, which is an indication that perhaps in due course of time a knowledge of the value of the study of medical history may be appreciated by students of medicine. Dr. Walsh offers a most delightful book containing the biographies of fourteen men who through original research have advanced by enormous strides the knowledge of medicine during the nineteenth century. He begins with Morgagni, father of pathology, and concludes with Virchow, father of cellular pathology, who is the one maker of modern medicine whom Dr. Walsh knew personally and intimately during a year spent in his laboratory in Berlin some twenty years ago. There is also included the Irish school of medicine represented by Graves, Stokes, and Corrigan. The presentation of the biographies is full of vital spirit and an impression is given that the author has not only a profound respect and admiration for these men, but a love for the work which he has so admirably written.

MONOGRAPHS OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. No. 6, January 31, 1916. TORULA INFECTION IN MAN. A Group of Cases. Characterized by Chronic Lesions of the Central Nervous System, with Clinical Symptoms Suggestive of Cerebral Tumor, Produced by an Organism Belonging to the Torula Group (Torula Histolytica, N. sp.) By JAMES L. STODDARD, M.D. and ELLIOTT C. CUTLER, M.D. New York, 1916.

THIS work is founded on the study of two cases of cerebral pseudotumor and is devoted largely to a comparison of torula infection with blastomycosis and coccidiosis. As a result the last named can be definitely excluded, as can also a majority of cases originally reported as blastomycosis. On the other hand, in certain cases reported under the latter head, the solution of tissue and production of gelatinous material in the brain, there was a marked resemblance to one of the authors. The second case, on the contrary, is still anomalous in its relationships.

THE DIAGNOSIS AND TREATMENT OF HEART DISEASE. Practical Points for Students and Practitioners. By E. M. BROCKBANK, M.D. (Vict.), F.R.C.P., Hon. Physician, Royal Infirmary, Manchester; Clinical Lecturer on Diseases of the Heart, Dean of Clinical Instruction, University of Manchester. Second Edition. With illustrations. Price, $1.25. New York: Paul B. Hoeber, 1916.

THIS is a concisely and clearly phrased small reference book for the use of students dealing with the elements of cardiac auscultation. In the second edition numerous additions and alterations have been made.

AIDS TO BACTERIOLOGY. By C. G. MOORE, M.A. (Cantab.) F.I.C. Captain 1st London Sanitary Company, Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance, and WILLIAM PARTRIDGE, F.I.C. Joint Public Analyst for the County of Dorset. Third Edition. Price, $1.25 net. New York: William Wood and Company, 1916.

THIS is a third edition which has been thoroughly revised and considerably enlarged. It is a valuable little book dealing with bacteriology from various standpoints in a concise yet lucid manner. The question of the treatment of septic wounds is discussed and the relative merits of the methods in vogue at the war fronts are debated.

Society Reports.

THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-sixth Annual Session, Held at Scranton, Pa., September 18, 19, 20, and 21, 1916.

(Special Report to the MEDICAL RECORD.)

Tuesday, September 19—First Day.

THE PRESIDENT, DR. JOHN B. MCALISTER OF HARRISBURG, IN THE CHAIR.

THE Society met in General Session in the Ball Room of the Hotel Casey, and was opened with prayer by Rt. Rev. M. J. Hoban, Bishop of Scranton.

The Business Features of the Medical Society of the State of Pennsylvania. — Dr. CHARLES A. E. CODMAN called attention in his presidental address to the lack of influence in medical legislation exercised by the Medical Society of the State of Pennsylvania as evidenced in the passage of the Workmen's Compensation Act in its present form. To overcome this lack of influence it was suggested that meetings of the Committee on Public Health and Legislation be held in conjunction with similar committees of other medical organizations, and that there be also the co-operation of the State Department of Health and the Bureau of Medical Education and Licensure. Dr. Codman regarded as a matter of much importance the effort in the so-called Health Industrial Insurance Act to be introduced at the next session of the Legislature to secure legislation covering cases not provided for under the Workmen's Compensation Act. This effort he believed would result in the State Department of Health assuming the entire care of such patients. He further suggested the advisability of the Pharmaceutical Association and the combined medical profession uniting in an effort to secure legislation covering the disputed points in the Harrison Act. The plan of perfecting the organization of the State Society along lines similar to those of the American Medical Association, and of making the salary of the secretary-editor such that would allow him to devote his entire time to the work of the society, was suggested. Further suggestions included the establishment of an endowment fund; the practice of economies in the matter of fewer committees; the use of the one letterhead for the whole society; the appointment of a committee on archives which should prepare a history of the society for its coming seventy-fifth anniversary; the maintenance of the medical defense, medical benevolence funds, and the establishment of a unit of physicians and surgeons in each county toward national preparedness.

The society adopted the following recommendations contained in the address of President Dr. Charles A. E. Codman: The endowment fund at once voted $1,200 per year for this purpose; uniform society stationery, and the creation of a committee on archives. The suggestion regarding medical instruction of the laity was approved and referred to the committee on health and public instruction.

Election of Officers.—The following were elected: *President-Elect*, Dr. Samuel G. Dixon, Harrisburg; *Vice-President*, Dr. John B. Corser, Scranton; *Secretary-Editor*, Dr. Cyrus Lee Stevens, Athens; *Assistant Secretary*, Dr. Clarence P. Franklin, Philadelphia; *Treasurer*, Dr. George W. Wagoner, Johnstown. The place of the next meeting will be Pittsburgh.

The organization of a section on pediatrics was authorized by the trustees.

The legislative program to be favored by the society included bills for the regulation of the sale of alcohol and drugs under State supervision; for the amplification of the Harrison Act; amendments to the Workmen's Compensation Act; for a Milk Hygiene Law to safeguard the milk supply at the source by State inspection.

A Criminal Epileptic, with Consideration of Epilepsy as a Medicolegal Problem.—Dr. N. S. YAWGER of Philadelphia said that medicolegally the mental manifestations of epilepsy were divided into two groups: (1) Paroxysms in which the individual is not insane, but in which he may be irresponsible (*a*) irresistible impulses or impulsive acts; (*b*) the state of automatism; (2) paroxysms in which the individual is insane; these may be (*a*) acting under the domination of an insane delusion; (*b*) in a maniacal epileptic outbreak. The fact that epileptics are highly dangerous, despite long intervals of lucidity, made it desirable that the insane epileptic be committed by court procedure rather than by certificate. Report was made of a patient who had after six jail detentions been placed in a State hospital. The attacks in this case had been for the most part but momentary.

Dr. HUGH E. MEREDITH of Danville said that the mental condition in epilepsy was dependent largely upon the onset of the attacks. Long continuance of the seizures resulted in epileptic dementia. He did not believe that punishment should be meted to the epileptic mentally defective and irresponsible. Institutions for the insane were not in his opinion the proper places for the detention of these people. The various classes of epilepsy should rather be cared for in an institution in which special treatment might be received.

Dr. WILLIAM H. CARMALT of New Haven said that in the endeavor to meet legally the matter of the care of epileptics Connecticut had established for them a farm where, if needed, they might be kept for life. In his State also a fine of $50 was imposed upon a clergyman or justice of the peace performing the marriage ceremony for epileptics and the feeble-minded. So far, however, this legislation had been only a moderate deterrent.

The Care of the Indigent Insane. — Dr. CHARLES W. BURR of Philadelphia declared his personal conviction that State care of the indigent insane was the only efficient method of solving this problem, and he urged that the physicians of Pennsylvania use every effort to secure such legislation. Such State care, he believed, should be adopted as a permanent policy by the commonwealth, a certain proportion of the income of the State being appropriated to the care of the insane. In outlining a feasible working plan, he said there should be the appointment of a central board which should be responsible for the expenditure of all moneys. This board should be entirely separate from the Board of Charities. Each local hospital should have its own board of managers, to be appointed, however, by the central board. To the medical member of the central board should be referred the question of prolonged hospital treatment of a given case. Separate hospitals should be established for acute and chronic patients. Only by a study of the acutely insane could in Dr. Burr's opinion the cause of insanity be determined. Hospitals for this class of the insane should have highly efficient research workers. Such hospitals should be small and preferably in large cities. Hospitals for the cases of chronic insanity should also be small, but situated in the country and in combination with farms, thus giving opportunity for work which was often of great advantage to chronic patients.

Dr. CHARLES H. FRAZIER of Philadelphia endorsed Dr. Burr's plea for State care of the insane and referred to the work of the Public Charities Association in the interest of the State's dependent people. A survey made by this association had shown that in many instances county institutions caring for the insane were merely adjuncts to almshouses. The discreditable argument that it was cheaper to care for the insane in county hospitals could as well include the statement that it was cheaper to care for these people in the almshouse than in the county hospital. The statement that the rate of recovery was higher in county institutions was, in the words of Mr. Sydney Smith, more uncertain than statistics. He urged that the State Society, through its appropriate committees be prepared to introduce in the next Legislature the measures proposed by Dr. Burr, and that the county societies so familiarize themselves with the present conditions in the care of the insane that they may adequately instruct their representatives in Congress. Conditions prevailing in some of the institutions he declared to be actually inhuman, and called for immediate corrective legislation. A proposition made by the Public Charities Association in co-operation with the society's committee for the promotion of more efficient laws for the insane was submitted. Dr. Frazier referred to a resolution adopted by the State Board of Charities almost twenty years ago recommended that the State establish within reasonable time an institution for the care of all insane not cared for in private hospitals, and thought a "reasonable time" had elapsed.

Dr. OWEN COPP of Philadelphia, superintendent of the Pennsylvania Hospital for the Insane, said that the State alone could be reasonably expected to adequately provide for the medical treatment and scientific study

of the insane and mentally defective. The so-called economy of county institutions he regarded as delusive, in that the saving was obtained at the cost of appropriate medical attention and facilities for care and prophylaxis. In New York, Massachusetts, and in other states, experience had demonstrated the wisdom of the principle of state care of the insane. He believed that the colony idea in the care of the insane would eventually surpass the claims made by the advocate of the county asylum. He cited the case of a daughter of a syphilitic father who had died in a hospital for the insane. The patient presented the early stages of juvenile paresis. The mother and five brothers and sisters, upon examination, were also found to be infected. The case demonstrated the value of the medical and scientific spirit in the care of the insane, the neglect of which in this problem would prove a menace to mental health and racial soundness.

Dr. JOHN A. LICHTY of Pittsburgh said that of the nineteen to twenty thousand indigent insane in the State probably ten or eleven thousand were cared for in State institutions, the rest in county and municipal hospitals. The number of alcoholics found in county hospitals and frequently discharged as cured he thought was a factor in the claim that the county hospitals gave a higher rate of recovery. Just as by the State tuberculosis movement it had been possible to combat and in a measure prevent tuberculosis, there was needed a State organization for the care of the insane which would provide facilities for the treatment and prevention of insanity.

The Workmen's Compensation Law.—Dr. WILLIAM L. ESTES of South Bethlehem, chairman of the Board of Trustees, at the request of the board for suggestions for amendments to the act, submitted the following: (1) Define major operation as used in the wording of the act. (2) Extend the period of direct payment for treating the injured workman to thirty days. (3) Increase the limit of payment for "reasonable surgical, medical, and hospital services." A definition of "major operation" recommended by Dr. Francis D. Patterson at the request of the board for a definition Dr. Estes thought would in all probability be adopted by the Commission Board. In Dr. Estes' opinion the only efficient remedy of the present business error in the matter of proper fees, which apparently was the crux of the difficulty, was thorough organization through the county medical societies in demanding from insurance companies the same rate of remuneration which each physician is entitled to and accustomed to receive for similar services in his own community. It was to be remembered, however, that some of the clauses of the act were but tentative and that any claims by physicians should be made in a dignified manner; that while the law was primarily for the benefit of the workman, so far as possible without detriment to himself, the physician should assist in this work. To be borne in mind, also, was the probable enactment of a general social insurance law. It was in his opinion the physician's right to be consulted in the framing of such laws, and it behooved him to be on the alert for self-protection and for the common good.

Wednesday, September 20—Second Day.

FIRST VICE-PRESIDENT, DR. J. TORRANCE RUGH OF PHILADELPHIA, IN THE CHAIR.

What Can Be Done to Improve the Milk Supply in Pennsylvania?—Dr. L. A. KLEIN of Philadelphia presented this paper, in which he said that during 1911, 1912 and 1913 about one-fifth of the 190,000 dairy farms in Pennsylvania had been visited by inspectors of the State Live Stock Sanitary Board and classified as excellent, a small number; 30 to 40 per cent.; fair, 50 to 58 per cent., and bad, 8 to 15 per cent. Three groups were involved in any method of improvement, viz., the producers and distributors, the health officials and the consumers. The producers had found in recent years that many of the methods of improvement recommended for sanitary reasons were also good economically because they increased production, maintained the health of the cows, facilitated the work and prevented loss due to spoiled milk. Duplication of inspection by various authorities had not met with the producer's approval. Furthermore, he could not see why he should incur extra expense without a corresponding increase in the price realized for the sale of his product. The position of the distributor was similar to that of the producer. The economic conditions affecting the production of milk had driven many farmers out of the business. Shortcomings of regulation by local health boards were the great variation in regulations imposed, lack of scientific knowledge of the subject by such boards and the difficulty of getting qualified inspectors. Consumers were, as a rule, not sufficiently interested in the quality of milk furnished them. Comparatively few wealthy people bought certified milk. This indifference on the part of the consumer had made it possible for the careless producer to thrive. As reform measures there should be a uniform system of inspection in charge of the State, including grading and classifying of milk.

Dr. T. B. APPEL of Lancaster said that the milk supply of Lancaster was derived from 276 dairies and supplied to the consumers by 55 dealers. The Board of Health of Lancaster, as a member of which he had had experience, had divided the dealers into three classes: (1) Those who produced and marketed their own product; (2) those who marketed not only their own product, but who also bought new milk from other farmers, who did not have any milk routes, and (3) those who ran milk routes in town and had nothing to do with production. In addition, they had one large milk company which bought not only from their county, but also beyond its borders. The milk was examined at least once every two months by the city bacteriologist as to its physical characteristics and number of bacteria present. The average rating of repeated examinations considered with the annual dairy inspection brought out very markedly that the best milk and the best kept dairies were those belonging to those dealers who marketed their own product, while the poorest records were those of the dealers who simply had a milk route. Their attempts at grading and labeling milk had been violently opposed by the dairymen, and the public had not been educated sufficiently to be a factor in the case. It had to be admitted that with a proper number of qualified inspectors under the control of a central authority and governed by definite standards an ideal result would be obtained, provided always that the public could be sufficiently educated to support the project, but the inspection had to be continuous in character. He believed, however, that the Bureau of Health should control all food and milk questions rather than the State Live Stock Sanitary Board.

Dr. H. F. SMYTH of Wayne said that it was a matter in which he was very much interested and he would say that he lived in Radnor Township, to which Dr. Klein had referred. They had been classifying milk men in their community and they had found it working out very successfully. They employed a trained veternarian, who made a splendid dairy inspector. All their dairy scoring was done by this inspector. He had gone out with him a number of times and he did splendid work. They attempted to do as little policing as possible. All their efforts were on the educational line, and they had succeeded remarkably well. They had succeeded in getting the public with them largely. They published the scores of their dairies every three months in the local papers. They started first with simply publishing the better classes, but now they published the names of all classes. Their bacteriological tests were made by the State Live Stock Sanitary Board in Philadelphia. Their inspector worked in harmony with the laboratory. They preferred, though, to have their own inspection so they could have their own regulation.

Dr. G. B. HOLTZAPPLE of York said that very much the same conditions existed in York as in Lancaster. In addition to inspection it would be well to lay emphasis upon systematic instruction of both the producer and the distributor. If the State would supply printed matter which would explain to the farmers just how to improve their product and which could be preserved and consulted and studied, it would do much good. It would be looked upon by the farmers and distributors as authoritative. Articles were printed in the public press every now and then, telling how to improve the condition of the milk. He did not think the farmers would take to that nearly as well as if the State inspectors would supply literature so that they might glean what they ought to know, because it would be authoritative and there would be no question as to that.

Dr. W. S. GIMPER of Harrisburg said that in the paper by Dr. Klein it had been pointed out that 15 per cent. of the dairies examined were in the "bad class"; they could more properly be classed as horrible. Classifying these dairies as bad meant that all conditions were such that they could not comply with even the most moderate sanitary requirements, and that the milk pro-

duced and handled on the premises should be regarded as unwholesome. The dairies of the bad class comprised the most serious phase of the milk improvement problem. The owners were not amenable to suggestion or moral coercion; nothing but the heavy hand of the law would bring them to a realization of their crimes against public health. They were not only a constant menace to health, but were also a detriment to the entire dairy industry. Much time and effort had been spent in an attempt to educate this class of dairymen, with practically no good results. The improvement in methods to which Dr. Klein referred as "encouraging" had not been found among the "bad" dairies, but in those which were classed as fair and more largely those in the good class. This type of dairyman was usually ready and willing to make any reasonable changes which would tend to improve the quality of his products. Embarrassing regulations had, he believed, retarded rather than assisted improvement. A sudden increase of milk-borne diseases would stir a local board of health to activity, and drastic regulations which were far more esthetic than practical were adopted. The dairyman realized the hopelessness of complying with such regulations at the price he received for milk, consequently did nothing. Numerous investigations clearly showed that a large amount of milk was now being produced at a loss, and, if there was to be a general improvement in the milk supply it would involve an increase in cost of production which had to be borne by the consumer.

Dr. C. H. Miner of Wilkes-barre said that they, in Luzerne and Lackawanna Counties, got a large proportion of their milk from other parts of the State. What annoyed him was that a large part of the good milk from the farms in northeast Pennsylvania, along the route of the Lehigh Valley, went into New York City. It required certain standards, and all that good milk went in refrigerator cars to New York City. All that not inspected was shipped to Wilkes-Barre without refrigeration. The public health committee, through the co-operation of the State Live Stock Sanitary Board, had presented a resolution which would be voted on by the house of delegates.

Dr. J. B. Carrell of Hatboro said that he had been in the milk business himself. Unfortunately, he had happened to have a farm, and he had been up against the milk proposition, and he could say candidly that he would not give the product of the chickens scurrying around the farm for the product of twenty cows. That was an absolute fact. The idea of any farmer trying to produce hygienic or sanitary milk for 3½ to 4 cents a quart was out of the question. His suggestion was that to overcome the difficulty the city in which the milk was distributed should act as distributor, and it would be carefully considered and provision should be made for the farmer or the producer of the milk to see that he got an honest and fair price for his milk.

Carriers.—Dr. H. J. Benz of Pittsburgh presented this paper, in which he said that if the carrier was found and excluded from school one of the problems of school infection would be solved. The carrier, except in diphtheria, was most difficult of detection, but in most cases a careful history and examination of those who had been absent from school would reveal the presence of infection. In respect to whooping cough all those with doubtful coughs should be excluded. In culturing for diphtheria in Pittsburgh schools the greatest number of positives were obtained in October and November. In school contacts 1.5 per cent. gave positive cultures; in home contacts this percentage was 3.4. Antitoxin has no effect on the life of the diphtheria bacillus. The various methods of disinfection of the throat in carriers were good only for their effect on the surface; if the tonsils were infected they should be removed.

Dr. B. F. Royer of Harrisburg stated that the system in use in Pittsburgh was well worthy of the attention of any who were actively engaged in medical school work. Dr. Benz had pointed out that in many of these chronic nasal and tonsilar carriers you got the germs of diphtheria. He might well have pointed out that the child recovering from scarlet fever having nasal discharge was apt to be a carrier of diphtheria or of scarlet fever. Public health authorities had long ceased to be much disturbed about the late desquamation in scarlet fever. Any child that had an extensive shedding of skin from any of the soaps used in the homes would have further flaking of that skin which would run over many weeks. He doubted if the attention of the profession had been sufficiently called to that point. The late shedding of the skin was perhaps not at all contagious, and he doubted whether it was at all so after thirty days. He would like to urge that medical men should not release from quarantine cases that had a discharging nose or running ears until they had been carefully studied.

The Significance of Hunger Pain.—Dr. J. W. Luther of Palmerton read this paper, in which he stated that in regard to hunger pain he was inclined to agree with Einhorn, who stated that Moynihan's symptom complex might occur with or without ulcer, and favored the theory that hunger pain was caused by a spasm of the pylorus induced by hyperchlorhydria, which was often associated with hypersecretion, and which was in a large percentage of cases complicated by a justopyloric ulcer. The causes of hypersecretion and hyperchlorhydria were too numerous to mention, nor did they directly apply to his paper. When "hunger pain and food relief" occurred with a painful pressure point and occult or microscopic blood in the feces, the roentgenological examination showed gastric hypermobility and a shortened duodenal cap and possibly also when Einhorn's string test, if used, was positive, a diagnosis of duodenal ulcer might be made, though many authorities claimed that even then it could not be accurate, and that a diagnosis of the position of the ulcer by the lateness of the onset of pain was impossible.

Dr. William H. Howell of Altoona said that hunger pain signified duodenal ulcer. This symptom meant corroborative evidence of such disease. It was not pathognomic, by any means, but helped to confirm one's suspicions. The *x*-rays and a careful and thorough history of the case were essential to a diagnosis. The symptom should never be drawn from the patient, but should be volunteered by him.

Dr. J. B. McAlister of Harrisburg said that as hunger pain was most commonly encountered in cases of duodenal ulcer it was a most valued symptom in the diagnosis of that disease. Yet pain which closely resembled it was often present when a patient was suffering from other affections. Hunger pain was not an accompaniment of any definite chemical state of the stomach. As a rule, hyperacidity was high, but even low degrees had been found. Hunger pain might be a symptom of acid gastritis, and was also found in catarrhal gastritis; also present in gastrectoptosis, enteroptosis, or nephroptosis. In hyperorexia, or parorexia, the sensation of hunger might become so intense as to amount to actual pain. Physicians were warned against making a diagnosis of gastric neurosis because a patient happened to be a neurasthenic. The patient might present the appearance and symptoms of a neurasthenic, and yet harbor a gastric ulcer or carcinoma.

Dr. J. A. Lichty of Pittsburgh said that he fully agreed that the etiological interpretation of this symptom was not clear, and thought the interpretation Luther had given was probably the correct one. There was one point which he did not believe he could agree with Dr. Luther upon, and that was that it was due to a hyperchlorhydria. Pylorospasm could be caused by other conditions than hyperchlorhydria. Mr. Moynihan's expression of some ten years ago that hunger pain was duodenal ulcer could certainly not be substantiated.

Dr. Ernest Laplace of Philadelphia said he thought that by common consent the pain described as hunger pain was usually contraction of the pylorus. We realized the intimate nervous connection, cerebrospinal and sympathetic of the nerves supplying the stomach. It was not to be wondered at that any irritation near by or at a distance resulted in spasm. He knew that, surgically speaking, he had almost never failed to find some sort of a lesion around the stomach, or even down as far as the rectum, when there had been hunger pain persistent.

Dr. Herbert B. Gibby of Wilkes-Barre said that there was no doubt that the most prominent symptom in ulcer was hunger pain. He could not agree with most of the former speakers that pains of this character meant only a duodenal ulcer. It might mean also a gastric ulcer.

Facts and Fallacies Concerning Electrotherapeutics.—Dr. W. L. Clark of Philadelphia read this paper, in which he said that progress in the use of electricity in therapeutics had been retarded by the ancient teaching that electricity was purely psychic in its action, the absence of teaching of the subject in the majority of medical schools and the prejudice which had arisen on account of the association of electricity with irregular practice. He would urge upon superenthusiastic electrotherapeutic advocates the necessity of being guarded in their claims and that teaching in electrotherapeutics

be established in all medical schools on the same plane as laboratories devoted to other subjects. Electricity, though always the same force, when modified with knowledge, intelligence, and skill, might be made to produce different effects, and it was upon this principle that the whole superstructure of electrotherapeutics rested. The effects produced by electricity might be classified as mechanical, chemical thermic, actinic, and psychic. Some of the future possibilities of electricity in therapeautis were the abstraction of metallic poisons from the body by ionization, safe local and general anesthesia, with loss of consciousness and relaxation, and relief of pain and the production of sleep, thus lessening the need of opiates.

Dr. H. C. Westervelt of Pittsburgh stated that there was no question among those who knew electrotherapeutics as to where the fault lay. The wealth of literature, unfortunately, did not exist in such form that the average general practitioner could avail himself of it. It was a special literature. Theologians stated that you could read anything into the Bible and read anything out of the Bible. It was the same with electrotherapeutics. There was an amount of definte knowledge which was readily available. The difficulty was that electricity was used by ignorant people. The practitioner came to these meetings, listened to the demonstrators of electrical apparatus, went home and tried it, and was disappointed and disgusted time after time until he lost all patience. It was up to the medical colleges to teach electrotherapy.

Dr. J. Torrance Rugh of Philadelphia said that the trouble was with the profession. He wanted to say that the trouble lay partially with the electrotherapeutists themselves, as had been shown more especially from the standpoint of reflexes. Electrotherapeutists spoke of curing cerebrospinal meningitis. How did they know they were doing it? They couldn't tell, because there were abortive cases of it. There were all forms of infection in between, and to make unguarded statements such as he heard from some of the electrotherapeutists was unwise. There was need for such an article as Dr. Clark had just given and for what he was doing to educate the medical profession. He thought there should be an educational propaganda for the general profession.

Dr. G. G. Davis of Philadelphia said that general medicine and surgery had occupied almost the complete field of our medical school teaching. The consequence was that the specialties were relegated to the background. We should bring them out and isolate them. Our graduates know about certain minute points in general medicine and surgery, but almost nothing about the common affections placed in the specialties. There was no reason why we should not have a chair of electrical therapeutics in the same way that we had of the other specialties.

Diabetic Gangrene.—Drs. John H. Jopson and E. H. Goodman of Philadelphia presented this paper, in which it was stated that judging from the favorable result of the treatment of diabetes by the Allen method was perhaps not too much to hope that, with careful consideration of every case of uncomplicated diabetes, diabetic gangrene might be prevented. They believed that diabetic gangrene was only a manifestation of an infection on the basis of lowered tissue resistance plus arteriosclerosis in most cases. There was, however, no specific organism of diabetic gangrene. The rational treatment of diabetic gangrene should be dietetic and local. Should the condition progress in spite of the strict observance of Allen's dietetic method, together with proper local measures, then the indications for amputation had to be considered. These indications were extension of the local process, with signs of septicemia and high glycosuria; or extension of the local process with signs of septicemia in the presence of acidosis. However, in the presence of septicemia even with low glycosuria, or sugar free urine, operation might be indicated. A high percentage of glycosuria in no way contraindicated operation, although it was better to reduce the urinary sugar if possible. When the local and general conditions became grave, operation should not be deferred. Their experience had shown that fasting should give place to free feeding some time before operation. They favored the use of alkalies in large enough dose to render the urine alkaline before operation and preferred to administer the bicarbonate of soda by mouth and by proctolysis. Water was given freely before operation and operation might be performed under local anesthesia. Ether and chloroform were contraindicated with patients having glycosuria.

Dr. M. Behrend of Philadelphia said that it had been his experience that results of operation after the Allen treatment had been far superior to any other form of treatment. There was another form of gangrene in diabetes. It was an insidious form of localized gangrene which occurred around the extensor tendons of the toes. It was a very grave symptom, and the prognosis in all these cases had to be very guarded indeed. Death resulted whether operation was performed or not.

Dr. Jopson said in closing that those who had the most experience would get a little hazy in regard to dietetic treatment before and after operation. His own experience was that patients prepared for operation with low fat-protein diet, in accordance with Councilman, stood operation well. He found that a patient put on starvation treatment in an attempt to get rid of the sugar developed acidosis and coma, from which she did not recover. Certain cases had convinced him that we had to feed cases until convalescence was established and the wound was healed. There was a certain amount of exhaustion which went with starvation, and we should feed until local reaction had been established.

Thursday, Sept. 21—Third Day.

Internal Secretions and Their Relation to Nervous Disorders.—Dr. Seymour DeWitt Ludlum of Philadelphia in this paper said that a study of nervous cases by their physiological symptoms pointed toward etiological factors which, considered with the morphology of the patient and with Abderhalden's reactions done on the blood serum for internal secretions, gave quite definite conceptions of backwardness, some forms of insanity, neurasthenia, dystrophies, etc.

Fecal Incontinence.—Dr. Samuel Goodwin Gant of New York divided the cause of fecal incontinence into nonoperative (brain and cord diseases, ulcerative proctitis, rectal cancer, injuries to the sphincters, etc.) and surgical groups. He believed the condition would become rare when surgeons acquired the ability to properly treat fistula-in-ano and ceased divulsing the sphincter rapidly with the finger and mechanical dilators and discarded Whitehead's operation for hemorrhoids. He had treated 25 patients for partial or complete incontinence caused by this latter operation. Non-operative treatment for fecal incontinence Dr. Gant regarded as useless in the majority of cases. A routine technique in surgical treatment was out of the question; the operation which would re-establish sphincteric control should be selected. The writer's operation, performed under local anesthesia, and in ten minutes, was fully described. Of 17 cases operated upon by this method fecal incontinence had been completely relieved in 9; diminished in 5; slightly reduced in 2, and no benefit had been observed in one. In cases in which the incontinence was the result of Whitehead's operation, or laceration of the sphincter from stretching by the fingers or instruments, cauterization was substituted for plastic operation.

Dr. Ira G. Shoemaker of Reading had seen pitiable cases of fecal incontinence resulting from lack of care in operations for fistula. With involvement of both sphincters he believed the best results were to be obtained by the use of elastic ligature. Although not advocated by the majority of men doing rectal work, he had used the method successfully many times. The ligature cutting through the tissues produced an irritation which formed a good base and promoted healing. The ligature adapted itself to the fibres of the muscle in the way of least resistance, which was squarely across. The muscle was severed or the ligature might be allowed to finish the operation. A case of purely psychic fecal incontinence which had been under his care was cured by suggestive means and placebos.

The Cooperation of Physician and Surgeon in the After-Treatment of Patients Operated Upon for Diseases of the Gastrointestinal Tract.—Drs. Edward H. Goodman and John Speese of Philadelphia presented this paper, which was read by Dr. Speese. In their opinion this cooperation should begin immediately after the operation. Even greater co-operation, they believed, indicated in cases surgical from the first in which the physician was consulted, but in which later the surgeon assumed entire charge. The medical attendant to whom a hospital patient returned from the hospital should be fully informed by the hospital physician of all facts relative to his condition. They condemned the routine prescription of diets employed in hospitals, regardless of the gastrointestinal conditions of the patients. The advice of the internist in a surgical case should be followed only with the sanction of the surgeon, and the mode

of living of such patients should be directed for from six to twelve months subsequent to operation. Lack of prolonged postoperative medical treatment, the authors observed, was given by Hamburger and Leach as a cause of absence of relief in operations for gastric and duodenal ulcer.

Dr. JOHN A. LICHTY of Pittsburgh believed that the co-operation recommended by Drs. Goodman and Speese should be not only postoperative, but operative and preoperative. While there might be opportunity for meddling on the part of the internist, some surgeons there were so dogmatic that cooperation was impossible. These two types, however, were not found in the ranks of reasonable men.

The Clinical Interpretation of the Wassermann Test.—Drs. JOHN A. LICHTY of Pittsburgh and JAMES H. WHITCRAFT of Wilkinsburg presented this paper, citing eight cases illustrative of a few points in the interpretation of the Wassermann test and calling attention to the fact that in only one of the cases had the patient any suspicion of his condition. This fact they had also found to obtain in many cases. The following summary was given of their cases: "(1) The Wassermann test, while not absolutely certain, is the most valuable laboratory aid in the diagnosis of syphilis. (2) A negative test in suspected cases should be repeated before the suspicion is dropped, often after a provocative dose of salvarsan. (3) A negative reaction may be due to previous treatment, which has not been curative. (4) The influence of specific treatment upon clinical manifestations of syphilis tends to show the reliability of the Wasermann test. (5) The existence of a positive Wassermann should not be construed to mean that syphilis is the only condition present requiring treatment."

Modern Diagnosis and Results, Clinically, Serologically, and Sociologically of Syphilis, Treated with Salvarsan and Its Substitutes.—Dr. B. A. THOMAS of Philadelphia presented a study of 510 patients in his private and hospital practice, and emphasized the importance of the heroic treatment of syphilis in its early stages. In the early diagnosis of suspicious sores he regarded the dark field illuminator indispensable. Among the conclusions drawn from his study the following points were noted: "(1) The treatment of syphilis remains empirical. (2) The ultimate proof of cure rests rather upon complete freedom of symptoms for a generation or more. (3) The Wassermann reaction furnishes the best control of treatment and is the most reliable index of cure subsequent to proper treatment. (4) The sheet anchor in the treatment of syphilis is salvarsan, neosalvarsan, or one of their substitutes. It is of paramount importance, however, that the injections of arsenobenzol, in the beginning, be administered as early as possible and intensively in full doses commensurate with the physiological tolerance of the patient. (6) Serologically, judged upon a three-month to a five-year duration, syphilis in the chancre stage, if diagnosed early, may be cured by two injections of salvarsan or neosalvarsan; if diagnosis be made before the advent of a positive Wassermann one dose of either of these drugs *may* be sufficient. (6) Secondary syphilis seems to do just as well without as with mercury, provided enough salvarsan or neosalvarsan be given to produce a negative Wassermann. (7) The best substitute for salvarsan and neosalvarsan is the Polyclinic preparation of arsenobenzol. (8) Sociologically, since only 10 per cent. of syphilitics return for hospital treatment until discharged cured, a problem is presented urgently demanding cooperation on the part of civil authorities and health boards for the control and treatment of this disease, not, however, to be realized until all hospitals receiving State aid are compelled to maintain evening dispensaries with paid attendants for the proper treatment, and admission when necessary, of venereal patients."

The Treatment of Syphilis by Salvarsan Controlled by the Wassermann Reaction.—Dr. JOHN D. WILSON of Scranton presented this report, based upon the study of 112 cases of syphilis seen in private practice in the last five years. His experience with these cases led him to the belief that salvarsan was most useful during the early active period of the disease, and that small, frequently repeated doses, namely, gram 0.3 to 0.4 every week or ten days for twelve injections, in conjunction with active mercurial treatment, should constitute the first course of treatment in any new active case. The after treatment should be determined by the return of suspicious symptoms and by the Wassermann reaction on the blood and spinal fluid.

Dr. GEORGE MORRIS PIERSOL of Philadelphia, in discussing the preceding three papers, stated that the chief result of the extraordinary advances in the study of syphilis in the past decade had been to show that spirochetal infection was the real cause of an ever-increasing number of conditions formerly not recognized as of syphilitic origin. It was to be remembered that the Wassermann reaction was not a primary but a secondary aid to diagnosis. In many of the more obscure visceral lesions of the nervous system, cardiovascular apparatus and in latent hereditary syphilis, very definite clinical manifestations might be present, and yet the blood Wassermann reaction be negative. Conversely, while a positive blood Wassermann reaction meant that a syphilitic infection was present, it far from proved that the condition present was due to this infection. For example, some enthusiasts regarded every case of chronic gastric disorder with a positive Wassermann as due to syphilitic infection. While syphilitic gastric ulcer was possibly frequent Dr. Piersol thought Fenwick correct in his conclusions that in about one-half of the cases in which the two diseases coexisted there was no direct relationship between them. Dr. Piersol stated that no apparently cured case of secondary lues should be discharged until spinal puncture had demonstrated the absence of involvement of the nervous system. Only in this way could early meningitis be recognized. He emphasized the inadequacy of the present equipment of the majority of State and hospital dispensaries for the treatment of active syphilities. The expense of their ultimate dependence upon the State might be almost entirely avoided by provision by the State for the control and scientific management of this class of patients. He believed that a cure could be pronounced only after a repeatedly negative Wassermann reaction for at least two years after a provocative injection of salvarsan and a normal spinal fluid. The persistence of spirochetal infection had been shown in the recent work of Warthin. Out of 41 cases autopsied in 11 of whom syphilis had been regarded as cured, 5 of whom har been under recent active syphilitic treatment and in 25 of whom syphilis had been clinically excluded, Warthin had found active syphilitic lesions and spirochetes in the tissues of all. In his work Warthin had also noted a relationship between glycosuria and diabetes and chronic latent luetic lesions of the pancreas.

Dr. JOHN A. KOLMER of Philadelphia expressed his pleasure that Dr. Thomas had found the arsenobenzol prepared in the Dermatological Research Laboratories of the Philadelphia Polyclinic of low toxicity, which observation was in accord with those of many physicians throughout the country. This arsenobenzol, he explained, was submitted to severe animal tests, in amounts equivalent to 3.6 grams per 60 kilograms, or about 125 lb. of body weight. Experimental and clinical data indicated the superior spirocheticidal activity of salvarsan and arsenobenzol over neosalvarsan. In an experimental study of the toxicity of various mercurials he had found that insoluble salts of mercury as the salicylates were very slowly absorbed from the subcutaneous and muscular tissues. For this reason physicians should avoid administering such preparations at close intervals. He believed the particularly favorable results reported by Dr. Thomas upon the treatment of syphilis as judged by the effects upon the Wassermann reaction to be due to the technic employed in the Wassermann reaction and more particularly the employment of an alcoholic extract of syphilitic liver as antigen. These results were not in accord with his own experience and that of many others. A study of antigens since 1912 and covering over 3000 tests with a number of different antigens Dr. Kolmer said had shown conclusively the superiority of cholesternized extracts as antigens in this reaction. He believed it a serious error to discontinue treatment on the basis of a negative test with an antigen of alcoholic syphilitic liver. Experience had taught him that a number of such patients were still Wassermann positive and could be rendered Wassermann negative with additional treatment. The Hecht-Gradwohl reaction as a control on the Wassermann had been found by him to yield about 12 per cent. more true positive reactions than the Wassermann. He regarded the Hech-Gradwohl reaction as the best serological evidence of the cure of syphilis with which he was familiar, and believed that no case of syphilis should be discharged from observation until the Wassermann reaction was negative with cholesternized antigens and then negative in the Hecht-Gradwohl reaction.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held May 11, 1916.

DR. ROYAL S. HAYNES IN THE CHAIR.

Report of a Case of Chondrodystrophy (from the Vanderbilt Clinic).—Dr. JESSE F. SAMMIS presented this report. He stated that the patient was a child, 9 months of age, whose chief complaint was inability to hold up the head. This child was the youngest of four children, the others being perfectly normal in both physical and mental development. The family history was negative. The child was born at 8¾ months intrauterine life, its weight at birth being given as 12 pounds. The labor was difficult and the child extremely cyanotic, having been resuscitated with difficulty. The child had been normal until four months of age, when it was noticed that the head appeared to be increasing in size very rapidly and that the child was making no effort to sit up. At nine months of age the child could hold up his head but could not sit up. He played and laughed in a normal way and appeared almost as happy as other children of his age. He was presented because he exhibited all the characteristics of achondroplasia in a typical way. The disproportion between the trunk and the extremities was marked, the hands scarcely reaching to the waist line; the skin, owing to the shortness of the extremities, hung in folds. There was the prominent forehead, the saddle nose, and the protruding jaw characteristic of this condition. The abdomen was prominent and an umbilical hernia was present. There was a slight lateral curvature of the spine and kyphosis. The hands were of the type described as "trident." There was considerable relaxation of the ligaments and the child's muscular development was poor. The liver and the spleen were both easily palpable. The Wassermann was negative. The measurements showed the great disproportion between the head, the limbs, and the trunk characteristic of chondrodystrophy.

Autoserum Treatment of Chorea.—Dr. ABRAHAM GOODMAN presented this communication. He first reviewed the literature of chorea, especially with reference to etiological investigations. He said his attention was first attracted to the subject by two cases admitted to the German Hospital with a diagnosis of chorea. In one of these cases the choreic movements were augmented to a high degree in a short time and the child developed an intense coma. It was suspected they were dealing with a miliary tuberculosis of the central nervous system. All the usual forms of medication were tried without avail. It had occurred to the writer, in 1913, that if one could use the serum of a patient with chorea and inject it into the spinal column favorable results might be obtained; that possibly the enzymes or the protein bodies might be a factor in the disease. Realizing the dangers of such a procedure, they made cultures of the blood and spinal fluid of choreic patients and in none could they demonstrate any organism. The use of salvarsanized serum had in the meantime given additional encouragement to work along these lines, so they determined to try it. The first case was the one described above. They felt that they would lose the case and that the use of the serum was justified. They employed this method and the child became quiet within two days. One should be sure he was dealing with a case of chorea before applying this treatment, since every case with choreiform movements was not a case of true chorea. Another important factor in the treatment of cases of chorea with autoserum was to be sure that all drug medication was eliminated. To be sure that any treatment in chorea was effective it must give quick results; if it was slow in producing an effect one could not be sure that the disease was not self-limited. With the autoserum the effect was manifested within two or three days. The method employed was briefly as follows: The child was allowed to lie in the ward for three or four days and in the meantime other infections, as syphilis, were excluded. They then drew off 45 or 50 c.c. of blood and centrifuged it. The serum was then pipetted off and kept for two hours at room temperature. A lumbar puncture was then done and 20 c.c. of the spinal fluid withdrawn. The serum was then taken from the incubator and very slowly injected into the spinal cord, allowing ten or fifteen minutes to inject 15 c.c. It was very important that the injection be made slowly so as not to disturb the equilibrium. The patient was then put to bed and there was no immediate reaction. At times there might be a rise in temperature, but this was exceptional. Dr. Goodman said they had thus far made from 20 to 25 such injections without any serious results. It was amazing to see how quickly these cases of chorea responded to this treatment. Dr. Smith had a case at the Vanderbilt Clinic that had been growing worse for three months. The child exhibited most violent movements and after two injections was cured and discharged. At the present time they were engaged in trying to find wherein the actual value of this procedure lay, whether it was due to an antibody, an enzyme, a protein, or what not. In the meantime any remedy that would relieve this distressing malady was worthy of careful consideration.

Dr. SAMUEL FELDSTEIN of Brooklyn said that at the Brooklyn Jewish Hospital they had recently treated a case of chorea by Dr. Goodman's method with most amazing results. This patient was a girl, 13 years of age, who two months previously had begun to suffer from rheumatic polyarthritis which necessitated her stay in bed for three weeks. After ten days' relief she was again compelled to take to her bed on account of the recurrence of the articular symptoms. Three days previous to her admission she was seized with severe choreic movements, these being so violent at the time of admission that a thorough physical examination could not be made. Her temperature was 100.4° F., pulse 120, and respirations 26. There were signs of a mitral regurgitation. After observing the patient for three days and being compelled to give dionin in ⅛ grain doses at night for the extreme restlessness, the child's condition became aggravated. They then removed 40 c.c. of blood from an arm vein and kept it at room temperature, allowing the serum to separate spontaneously. Most of the serum was clear, the remainder was centrifuged. They then removed 20 c.c. of clear fluid from the spinal canal and injected 10 c.c. of the serum. Following the injection there was considerable reaction, rise in temperature to 102° F., headache, and rigidity of the neck. These symptoms disappeared the following day. The day after the choreic movements were greatly decreased, and by the third day had largely disappeared. A week later the injection was repeated, this time allowing the serum to separate spontaneously at room temperature over night. The second treatment was followed by a much milder reaction. A few days later the patient was practically free from spontaneous choreic movements, and had remained so up to the present time.

Dr. CHARLES H. SMITH said he had seen the case of chorea to which Dr. Goodman had referred and that if he had cured that case he had performed a miracle, for it was the most severe case of chorea he had ever seen. Every attempt had been made to alleviate the condition of that child. It had received maximum doses of salicylates, bromides, chloral, arsenic, and tonics, and it scarcely seemed possible that it could be cured.

Dr. RUDOLPH MOFFETT said he had been associated with Dr. Goodman at the German Hospital and had observed this treatment, and he could only say that it worked wonderfully. After injecting a case it cleared up within a few days. They had been using 10 c.c. in making the injections, and he thought they should use 15 c.c. and that they might thus avoid the necessity of giving a second injection.

Observations on Tuberculosis at the Vanderbilt Clinic.—Drs. CHARLES H. SMITH and H. LAMBERT BIBBY presented this contribution, which was read by Dr. Smith. He said that when a child was brought to them for examination there were two questions which they always asked: (*a*) "Has the child been infected with tuberculosis?" This question was answered by the skin test. (*b*) "Is the infection latent or active?" The terms latent and active were preferable to infection and disease, since they were more accurate and since all infection meant disease. An active tuberculosis in a child was not like incipient tuberculosis in the adult. In the child the lesion was not apical, often not pulmonary, but by node or hilus infiltration. This made the diagnosis extremely difficult and quite different from making a diagnosis in the adult. The diagnosis in the child was made on symptoms of impaired nutrition and anemia, undersize, and failure to gain in weight at the proper rate. The presence of an irregular fever lasting over a considerable length of time was very suggestive. Other symptoms that were valuable were anorexia, fatigue, languor, headache, and night sweats. In some instances the fever seemed to incite

the child to unusual activity. In children cough and positive chest signs were rare, but there might be transient bronchitis, asthmatic bronchitis, or enlarged bronchial lymph nodes. A latent tuberculosis was shown by a positive von Pirquet test and no symptoms or signs of the disease. The frequency of these various symptoms in a series of 80 cases giving a positive von Pirquet reaction were as follows: Fever in 16 cases; no gain in weight in 9; loss of weight in 7; failure to gain when at rest in 3. Among these 80 cases, 21 or 25 per cent. had tuberculosis in the active stage and all were without the signs of the disease. With reference to the von Pirquet test there were several points to be observed. It was better to perform the test with a scarifier as one was less likely to draw blood in this way. The skin should be properly sterilized before making the inoculation and should be allowed to dry before the dressing was applied. A protective dressing should be applied to protect the puncture from contamination from clothing or finger nails. They had found physical signs in the lungs in only 21 out of 150 cases, and these consisted in slight changes in the breath sounds. Dullness was difficult to detect and uncertain. The physical signs detected in these 21 cases were transient localized râles at the apex with a positive von Pirquet in one case, localized râles in the axilla in three cases, two with a negative and one with a positive von Pirquet; general bronchitis (accidental) in two cases, one giving a positive and one a negative von Pirquet, asthmatic bronchitis in five cases, all positive; pleurisy in four cases, all positive; consolidation with cavity formation in four cases, three giving a positive and one a negative von Pirquet reaction, and two cases with pertussis. This gave 14 per cent. in 150 cases in whom there was a probability of tuberculosis; the larger number of these gave a positive von Pirquet reaction but some gave a negative reaction. The signs of involvement of the bronchial lymph nodes were dullness, tender spines, and Despine's sign. Enlarged bronchial lymph nodes and infiltration of the hilus caused an increased conductivity of the sounds, but this sign was not pathognomonic. There was some confusion as to just what was meant by Despine's sign and it was better to say whispered bronchophony to a given vertebra than to say Despine's sign positive. There were certain points to be observed in eliciting Despine's sign. The room must be quiet; the sign could not be elicited where persons were walking about and talking. The child must be able to whisper well; it was, of course, impossible to get the cooperation of a child under the age of three or four years. It was well to listen high in the cervical and low in the dorsal region and then to continue to listen above and below until the point was reached at which one heard the vesicular sound. This point varied considerably in different subjects. The *x*-ray, in making a diagnosis, was either a brilliant aid or a great disappointment. In order to get information one must get a good *x*-ray with a short exposure. When there was a positive tuberculous infection, the *x*-ray might show enlarged bronchial nodes, or tracheobronchial involvement by large central shadows, or small nodes might be shown along the main bronchi. Small dark shadows well separated from the root shadows were very suspicious. Pleural thickenings might be noted which were interlobar or from old pleural effusions or infiltrations. There might be a fibrosis extending out from the hilus region, but it must be remembered that there were variations in the hilus shadows normally present. The *x*-ray might show consolidation or cavities, but it had been found that the cavities were much smaller than the signs would indicate. In regard to treatment, it might be said that children with latent tuberculosis needed watchful care, extra rest, air, and food. Children with symptoms of active disease should be put to bed in the open air with careful feeding and kept in bed until the temperature became normal. They must be watched for months and years in order to detect any signs of relapse. At the present time there were insufficient preventoria and sanatoria. All children with positive von Pirquet reactions needed careful watching; if such a child ran a temperature it should be considered as needing the same care and treatment as an active case of tuberculosis. At the present time our sanatoria took only children from homes in which there were members with tuberculosis, but made no provision for the child accidentally infected from some other source.

Dr. Franklin Morris Class said he agreed with everything that Dr. Smith had said. He saw many of his patients at the Vanderbilt Clinic Day Camp and saw what he had accomplished. The most difficult cases to diagnose were the early cases of tuberculosis in children under twelve years of age. He was also convinced that most children suffering from early tuberculosis showed no signs in the lungs; and those cases showing pulmonary signs generally suffered from an infection other than tuberculosis. It was especially difficult to make a diagnosis in a dispensary as one had to see each case over a considerable period of time.

Dr. Leon T. LeWald said the problem of making a diagnosis of early tuberculosis in children was just as hard for the roentgenologist as for one who based his diagnosis on physical signs. There might be a small focus in a bronchial gland which the *x*-ray did not readily show. As to Despine's sign, there was considerable variation in the vertebræ and that explained the difficulty in the location of the sounds. It was also difficult to determine the presence of a small focus as the shadow of the cross section of a bronchus might be mistaken for an enlarged gland. It was advisable to have stereoscopic radiographs not only in one plane, but taken at different angles, at right angles, and at oblique angles.

Dr. Maurice Fishberg said that an important point had been omitted in the discussion of the Despine's sign. In interpreting the findings in tracheophony we must bear in mind certain anatomical peculiarities of the bifurcation of the trachea, mainly according to the age of the patient. In infants under three years of age the bifurcation was on a level with the seventh cervical vertebral spine, but with advancing age it sank lower and lower. At the age of eight years it was on a level with the third dorsal vertebral spine, and at twelve years of age it was as low as the fourth dorsal spine. In adults it might be as low as the fifth or even the sixth dorsal vertebral spine. Under the circumstances the sign was positive in a child under three years when tracheophony was heard lower than the first dorsal vertebra; in a child of six the sign was negative when tracheophony was audible above the third spine. In a child of twelve tracheophony might be audible as low as the fourth or fifth dorsal spine without enlarged thoracic glands. In many children this sign was negative though the glands were enlarged because the trachea was situated more anteriorly than normally, or only the anterior glands were tuberculous. After all the sign was due to the interposition of anything between the trachea and the spine, and tuberculous glands were the most common in childhood. In adults we might find tracheophony on rare occasions as low as the lumbar vertebræ with or without being able to assign a plausible cause to the phenomena. In children if these anatomical points were not borne in mind the sign was of little value.

Dr. L. Emmett Holt said that, with regard to the von Pirquet reaction in tuberculous meningitis, he thought the impression had gained currency that it was only exceptionally that one got a positive von Pirquet reaction in that disease. It had been their experience that except in the last stages of the disease, when the patient was extremely prostrated, the skin test had almost always been positive. At other times a negative test might be of great value. This was illustrated in the case of a child who was admitted to the hospital because the mother had noticed a lump on the head. This proved to be a bulging fontanelle. There was a history of convulsions, fever, and drowsiness. A lumbar puncture was done and 120 c.c. of perfectly clear normal fluid withdrawn. In this instance the von Pirquet test was negative and the child recovered. The symptoms in this case pointed to tuberculous meningitis but the child certainly did not have that disease. It probably belonged to that type of meningitis sometimes called serous meningitis. As to Despine's sign, Dr. Holt said he had been impressed by the extreme variability of the sign in different children. He did not believe it was possible to fix on any one point and say that this was the exact point at which the whispered voice was significant. It was a valuable sign for diagnosis and was usually best obtained on the right side. Early wasting was often absent with active tuberculosis in infancy. One might see a child with fairly positive signs of tuberculosis and yet the child would show no loss of weight for a considerable time, and a child might have a fairly active tuberculosis and even gain weight. Loss of weight in young children was not so significant of tuberculosis as in older ones. Most of the children with tuberculous meningitis were rosy and plump up to the time when active symptoms of meningitis developed.

Dr. ABRAHAM L. GOODMAN said that one point that had impressed him was the difference in tuberculosis in the very young children and those betwen the ages of ten and twelve years. He had ben amazed to see how well nourished these young children were, and how extensive the tuberculosis often was without any particular objective sign. In older children these objective signs were usually present. Most of these younger children had enlarged bronchial lymph nodes and the von Pirquet reaction was usually positive. These cases of early tuberculosis exhibited indefinite fevers accompanied by gastrointestinal disturbances, and were treated often as such until the condition was recognized. Every case of indefinite fever in early life should be looked upon as a possible tuberculosis and, with the added refinement in technique and execution in detail of *x*-ray examination, the early appreciation of tuberculosis was made possible. When one found enlarged mediastinal glands together with a von Pirquet reaction and an increased temperature from time to time, one was justified in making a diagnosis of incipient tuberculosis. When such children were placed under proper hygienic and sanitary conditions and given daily doses of guiacol and arsenic for years, they could be permanently cured. Guiacol and arsenic not only had a favorable influence on tuberculous processes in the lungs but had a direct influence in the process of metabolism.

Dr. CHARLES H. SMITH, in closing the discussion, said that with reference to Despine's sign, it was difficult to get a child under two years of age to whisper; one could not usually get a child under three or four years of age to whisper properly. By the time a child was three or four years of age the bifurcation of the trachea was approximately as far down as at the age of twelve years. There must be some significance in this sign as one gets it as low as the fourth or sixth dorsal vertebra and, on the other hand, there were a large number of cases in which it stopped at the first dorsal or seventh cervical vertebra. Undoubtedly it did occur without the presence of tuberculosis, but the figures with reference to its occurrence were certainly suggestive.

Books Received.

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THE PRACTICAL MEDICINE SERIES, Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Vol. V—Pedinatrics. By ISAAC A. Abt, M.D., and A. LEVINSON, M.D. ORTHOPEDIC SURGERY. By JOHN RIDLON, A.M., M.D., with the collaboration of CHARLES A. PARKER, M.D. Series 1916. Published by The Year Book Publishers, Chicago. 232 pages. Price $1.35.

THE SANITARY PROGRESS AND VITAL STATISTICS OF HAWAII. An Address Delivered Before the Medical Society of Hawaii, Honolulu, March 5, 1915. By FREDERICK I. HOFFMAN, LL.D., Statistician the Prudential Insurance Company of America. Published by Prudential Press, Newark, N. J., vtvf.. 82 pages.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART ARMORY HARE, M.D., assisted by LEIGHTON F. APPLEMAN, M.D. Published by Lea & Febiger, Philadelphia and New York, Vol. XIX, No. 3, whole number 71, September 1, 1916. Illustrated. 394 pages, $6 per annum.

LA FIÈVRE TYPHOÏDE ET LES FIÈVRES PARATYPHOÏDES. Par H. VINCENT et L. MURATET. Published by Masson et Cie., Editeurs, Libraires de l'Académie de Médecine, 120 Boulevard Saint-Germain, Paris. 1916. 278 pages. Prix, 4 fr.

LES FORMES ANORMALES DU TÉTANOS. Par M. COURTOIS-SUFFIT et R. GIROUX. Préface du Professeur FERNAND WIDAL. Published by Masson et Cie., Paris, 174 pages. Price, 4 fr.

TRAITEMENT DES FRACTURES. Par Prof. R. LERICHE. Published by Masson et Cie., Paris. 1916. 189 pages. Illustrated. Prix, 4 fr.

TRATADO DE PEDIATRIA. Por el Dr. ANDRES MARTINEZ VARAGAS, Tip, Lit. J. Vivis-Barcelona, Tomo 1, 1915. Illustrated. 959 pages.

Miscellany.

"The Most Notorious of All Medical Practitioners."—Marat is notorious not for charlatanism—for, as a matter of fact, he was never accused of quackery—but because he was one of the moving spirits of the French Revolution. Until quite recently laymen and most physicians seem not to have realized that he was, for his time, a distinguished scientist and physician. But his entire life was a series of paradoxes. He was racially Italian, not French, and his true name was Mara. He was born and raised in Switzerland. He became so good a Britisher that he practised in London for ten or twelve years, was received in its best literary and scientific circles, and published in English many articles on physics. He received a medical degree from St. Andrews. His political and iconoclastic career was also begun in England when he wrote "The Chains of Slavery," in 1774. During his sojourn in London he wrote three pamphlets on medical subjects, two of which were devoted to affections of the eye. About 1777 he removed to France, and wrote works in French, but not until 1788 did he begin to show activity as a revolutionist. His political career, which lasted a bare five years up to his assassination, was so momentous that it completely obscured his earlier activities. His health suffered, chiefly as the results of an irritating dermatosis which caused constant unrest and insomnia. It is not impossible that this distressing disease may have had much to do with his apparently murderous mania which kept the guillotine working overtime.—C. Edward Wallis, in the Proceedings of the Royal Society of Medicine.

The Ambulance Driver.—An American ambulance driver, a Harvard student, has contributed to the October number of the *American Red Cross Magazine* a thrilling account of ten days' experiences before Verdun, immediately preceding the Somme engagements. He tells a story of the rescue of wounded soldiers on the French side, in the midst of terrific shrapnel and gas fighting, so graphically that an editorial note says it "exceeds in vividness and action anything bearing on individual achievement that has come to our hands from the Western war front in Europe." This heroic young American, a member of the Harvard section which was later honored with military medals and crosses of war, "rolled" for ten nights in his light auto ambulance bringing to field hospitals badly wounded "blessés." He describes plunging into gas clouds, wearing a gas mask, with shrapnel shells whistling and exploding about his car, and of rescuing at one time one of his fellow ambulance men, the whole back of whose car had been shot away. This man he found in a pitiful plight, his nerves gone, and unable to talk straight. With his car full of wounded men, and shells exploding all about one of the rear wheels, his ambulance became entangled in barbed wire. His frantic efforts to unwind this wire, now and then ducking under his car because of the warning whistle of a shell, are so realistically described that the reader might easily imagine being at his side. The explosion of one shell threw him on his face in a pool of horse's gore, and another shell blew out both of the rear tires of his car so that one trip back was made on the rims over a road literally paved with dead horses and men and wreckage.

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Original Articles.

THE MANAGEMENT OF POLIOMYELITIS, WITH A VIEW TO MINIMIZING THE ULTIMATE DISABILITY.*

BY ROBERT W. LOVETT, M.D.,

BOSTON.

IT occasionally happens that in the treatment of a certain disease we allow ourselves too largely to be governed by generally accepted ideas and sometimes tradition too greatly influences us. Such a state of affairs does not make for progress and chiefly pertains to those affections which are not forced upon our attention by some undue prevalence.

Sometimes a more careful study of fundamental facts with regard to such diseases changes our point of view and gives us greater efficiency in our study of their phenomena and in our therapeutics.

It is to such a consideration of poliomyelitis that I would invite your attention in the present paper. I have no startling facts to bring forward, no new discovery, no revolutionary therapeutic measures, but it seems to me that the data already at our command are sufficient to warrant a renewed study of them, to see if in them we cannot find encouragement for greater hopefulness in our outlook and for greater efficiency in our treatment. The situation surely warrants an attempt in this direction, for you have in New York City to-day several thousand children paralyzed in the last few months and in the rest of the country several thousand others, and the problem of treating these children in the best possible way is not only a surgical and humanitarian problem of great present interest and importance, but an economic question of no mean dimensions. It is particularly incumbent, moreover, on those of us who are concerned with the therapeutic side of medicine to remember that the best brains in the country have been organized for the study of the epidemiology and pathology of this disease and are taking their task most seriously. Although theirs is the more important work because prevention is better than cure, it is none the less imperative for us clinicians to take our problem just as seriously and to inquire into the efficacy of our present methods and the possibility of improving them. Until the happy day arrives when this disease may be controlled or prevented, it is our business to see that the wreckage which is left behind these epidemics is efficiently and economically cared for.

Poliomyelitis in its paralytic form has been too much regarded as a chronic condition of no great interest except in its operative aspect, hopeless in general so far as restoration of function goes, although recoveries are occasionally seen, but on the whole a disabling condition best met by braces to make walking possible and in the later stages often to be helped by operations. We orthopedic surgeons have largely prescribed braces with perhaps massage or electricity or muscle training as probably of use and have been much interested in the operative question. The neurologists have been less enthusiastic about braces, but have on the whole favored electricity, about the value of which there has been much controversy. The general practitioner has often ordered braces from the instrument maker, who has a free hand in their design and fitting and has felt that electricity and massage were of use, and all have on the whole regarded the affection as an undesirable one to treat and a tiresome thing to have anything to do with except in its operative aspect.

The point of view which I shall advocate in this paper is that the treatment of poliomyelitis is one of the most gratifying and satisfactory problems in surgery, for the reason that nowhere does the close analysis of each case and the application to it of commonly accepted anatomical and physiological principles yield more satisfactory results, that the problem in every case after the acute attack is a problem in functional anatomy exact, clean cut, and clear, that the final functional results are in most cases largely influenced by the precision, efficiency and persistence of the treatment, especially in the early stages, and that certain phenomena of the disease, clinical and pathological, warrant us in holding out to these patients a much higher degree of hopefulness than we have been in the habit of doing. I am fully aware that such a statement requires very decided substantiation and such substantiation I hope to present to you in the form of figures, hitherto unpublished, later on in the paper. But for the moment I will ask you to join with me in laying aside preconceived ideas about braces, to omit for the time being controversial matters about electricity, to postpone for a few minutes the discussion of operative measures and to consider first what the clinical pathology of the disease really is and what anatomical and physiological measures based on general principles may most reasonably be expected to be of therapeutic value.

Anterior poliomyelitis is to be regarded as an infectious disease accompanied in a certain proportion of cases by paralysis. Paralysis is not essential, but accidental, and the proportion of cases in which it does or does not occur is at present undetermined, but most of the men who have most carefully studied the epidemiology of the disease believe that the so-called abortive or non-paralytic form is very common, possibly more common than the paralytic form. From the standpoint of public health and of therapeutics this point of view of the disease is obviously much sounder than to regard it as a paralytic affection often occurring without pa-

*Read at a meeting of the New York Academy of Medicine, October 5, 1916.

ralysis. The paralysis is purely accidental and incidental, the infection is the central fact. In the present discussion, however, we are dealing wholly with the paralytic form of the disease.

The infectious agent, which is the cause of the affection, having entered the system, shows a particular affinity for the cerebrospinal axis on which it inflicts special injury, greatest in the spinal cord, but only to a less extent in the brain. The significant pathological changes in the cord are a perivascular infiltration of the vessels supplying the gray matter, edema, punctate or larger hemorrhages in the anterior horns, degeneration or necrosis of the nerve centers, and a widely distributed meningitis. Commensurate changes also occur in the medulla and brain. The posterior nerve root ganglion is also involved in the process, and in experimental pathology is the first of the structures to show changes. The clinical expression of these processes is a widely distributed and erratic motor impairment, accompanied in most cases at the outset by marked tenderness over the affected area. The cause of this motor impairment is to be attributed to one or more of the following pathological conditions which exist.

1. A mechanical anemia of the motor cells in the affected areas of the cord results from the obstruction of the vessels from the perivascular infiltration. Such cells may recover or go on to necrosis, depending on the extent and duration of the obstruction. If the effusion is soon absorbed, the blood returns to the cell and it resumes function.

2. The edema of the affected part of the cord, which is a prominent but temporary feature, interferes with motor function in the edematous area.

3. The hemorrhages, if in the neighborhood of motor cells, may abolish their function.

4. There is perhaps a direct toxic action of the virus on the motor cells, causing their destruction.

If the patient lives, the perivascular infiltration and edema subside gradually or quickly and the hemorrhagic products are absorbed, leaving behind the areas too much damaged to recover, which are converted into focal scleroses.

Such in the briefest outline is the process in its various stages that we are called on to treat. First an acute hemorrhagic myelitis, second a convalescent myelitis with returning power, and third a cord, in the motor area of which are scleroses, all stages accompanied by more or less motor impairment.

We surely cannot adopt or advocate any one treatment for all these stages and we must clearly distinguish between the different phases of the process in considering therapeutics.

Three phases of the clinical phenomena suggest three pathological stages. These are:

1. *The Stage of Onset.*—Pathologically it is an acute hemorrhagic myelitis and meningitis, and clinically the child is suffering from that and from a severe infection. It covers the period from the beginning of the illness until the disappearance of the tenderness, because tenderness must be accepted as evidence of an active process still existent in the cord. In those exceptional cases where tenderness is absent, this stage may be counted as lasting from four to six weeks.

2. *The Stage of Convalescence.*—Pathologically, the products of the hemorrhage are being absorbed, edema and perivascular infiltration are diminishing, and physiologically the motor area of the brain is trying to send impulses to the affected muscles to find their path partly or wholly blocked. Clinically, the child is more active and trying to use the affected member, tenderness has gone, but the power to execute certain movements is impaired or lost. But there is a continual gain and under all conditions of treatment or neglect, improvement occurs, for a while. So-called trophic disturbances begin to appear, circulation is impaired, affected members are atrophied and do not grow as they should and deformities begin to develop. This stage begins with the disappearance of tenderness and lasts for about two years.

3. *The Chronic Stage.*—Pathologically edema and perivascular infiltration have long since disappeared, the meningitis has healed, and in place of the destroyed areas in the cord are found focal glioses (focal scleroses due to increase of neuroglia tissue). These lesions are analagous to focal scleroses, such as fibroses or areas of scar tissue due to increase of connective tissue in other organs.

Clinically the case is apparently stationary, or retrograding. Spontaneous improvement is much less noticeable than in the previous stage and in many cases seems to have stopped. So-called trophic changes are present. Deformities from muscular contractions and gravity have occurred in many cases and further improvement without treatment is not to be hoped for. This stage apparently begins on the average about two years from the onset and continues through life.

I shall next ask you to consider for a moment certain general phenomena with regard to the disease which seem to have a definite bearing on the whole question of treatment before taking up the question of a definite plan of treatment for each of these phases.

We have been handicapped in our study of poliomyelitis in the past by the absence of any adequate quantitative method of examination. We have been in the position of an oculist who had no lenses at hand with which to examine his patients for errors in refraction, or of a physician who was obliged to treat typhoid fever without a thermometer. Now, although the latter, if an experienced man, might very probably carry the individual case through the attack perfectly well, his general study of the phenomena of typhoid fever would be of no great value to himself or to others, because he would have no more exact quantitative instrument than his hand. We have been in exactly this position with regard to poliomyelitis and our knowledge of the various phenomena of the disease has been for this reason necessarily inaccurate and on the whole loose.

In January, 1915, I was asked by the State Board of Health of Vermont to undertake the treatment of the cases of poliomyelitis occurring in that state in the epidemic of 1914, and pursued the work in connection with laboratory work under the charge of the Rockefeller Institute. It became perfectly evident on examining cases in large numbers that without some quantitative standard, no reliable study of the group could be made nor would it be possible to present anything but impressions as to the result of treatment. The problem was therefore presented to the Physiological Department of Harvard University, and Professors Cannon and Martin were good enough to take the matter up, and by June Professor Martin had a method far enough advanced for preliminary trial in Boston at the Children's Hospital, and it has since then been used in Vermont in all of our clinics.

The conclusions that I shall present rest on obser-

vations on about 15,000 muscular groups.* The method has been already described in detail and consists in ascertaining the strength of twenty-two different muscle groups on each side of the body in their resistance to the pull of a spring balance. The method has proved reliable and has verified itself.

Under these conditions it is obvious that a much more accurate study of the phenomena presented by affected muscles was possible than before, and the conclusions which I shall next present are the outcome of that quantitative study.

1. *Partial Paralysis is Much More Common than Total.*—The original manual examination of individual muscles in the Vermont series showed that in 1452 muscles recorded, partial paralysis was two and one-half times as common as total paralysis. The spring balance muscle test subsequently used in 1069 muscular groups in the Vermont series showed partial paralysis to be nine times as common as total. This greater proportion was because of the greater delicacy of the test over the hand examination which placed in the partly paralyzed class many subnormal muscles which by the hand would have been classed as normal. The practical outcome is that partial paralysis is very much more common than total.

Total paralysis, when present, in 82 per cent. of 196 cases existed below the knee. These data must necessarily modify somewhat our conception of poliomyelitis and its treatment. We are not dealing with a total and hopeless loss of power except in a small percentage of the muscles, but with a weakening which is of various grades. Now the treatment of weakened muscles rather than the treatment of totally paralyzed muscles comes at once to the front as our main problem in poliomyelitis. It, therefore, should be our aim to conserve and stimulate and improve by every means in our power such weakened muscles with a view of bringing them as near to normal as may be. It is very important to a patient who has, *e.g.* lost 80 per cent. of his gastrocnemius power whether that muscle gains 10 or 50 per cent. of that loss.

It is obvious that the conservation of muscular strength and the utmost care for the affected muscles should be our chief end in treatment. Certain factors bear on this matter of how we may best handle the muscles with a view of securing the maximum improvement.

Spontaneous Improvement.—A factor of much importance in this matter of securing muscular improvement lies in the existence of spontaneous improvement which starts as soon as the tenderness has disappeared. The Vermont observations have shown that this goes on much longer than has been generally believed. In a series of cases one year after the attack, measured at an interval of two months, muscles which were not treated but which had been affected, showed an improvement ratio of 2 to 1 which must be put down to spontaneous improvement. Of 44 totally paralyzed muscles in 7 cases affected over a year, 27 per cent. developed demonstrable power without treatment in a two months interval.

We have then in our aim to improve the condition of muscles the fact that spontaneous improvement even in badly affected muscles exists to a considerable degree at periods later than usually stated.

Fatigue and Its Effect.—The overuse of convalescent affected muscles and the over-treatment of such muscles by too much massage and too much therapeutic muscular exercise is undeniably bad and is being generally so regarded. It is a fact recognized by the present advocacy of prolonged recumbency after the acute attack is over and the danger of overuse is wholly borne out by the Vermont muscle test figures. Not only does overuse delay favorable progress, but undoubtedly can lead to muscular deterioration and may destroy apparently permanently the returning power in convalescent muscles. Consequently the worst possible advice that can be given to parents is to encourage patients to be as active as they can to "strengthen" the muscles.

The reason for all this is that the loss of power in affected muscles in the first months of the disease is a considerable one, leaving the muscle as a rule with a degree of power quite too little to enable it to come anywhere near performing its normal function. Very little activity, therefore, may be enough to constitute gross overuse of the neuromuscular mechanism, and such overuse is admittedly detrimental to any muscle, normal or abnormal. Consequently, while we feel that we are safeguarding the patient by restricting activity we may still be overtaxing him. One must therefore remember that the danger of over-exercising convalescent muscles is very much greater than the danger of under-exercising them.

Three salient facts, therefore, stand out from the study of the Vermont and other cases by means of a quantitative test. These are: (1) Partial paralysis is more common than total. (2) Spontaneous improvement goes on a long time. (3) Fatigue and over-exercise, therapeutic or otherwise, are dangerous.

We are now in a position to return to the question of what should consitute the treatment of each of the three phases of the disease already defined, in the light of the pathology of each stage and in view of these general and more or less fundamental considerations.

1. *Treatment of the Acute Phase.* (From the onset to the disappearance of tenderness.)—In this stage Nature is attempting to repair the damage done to the cord, especially to the motor area. Rest and absence of irritation and of meddlesome therapeutics should constitute our treatment at this stage. There is no evidence that drugs are of any use, nor would one reasonably expect much from counter-irritation, externally applied applications of heat or cold, or from electricity.

It is not physiological to irritate and stimulate the peripheral ends of nerves connected with affected and hemorrhagic nerve centers by massage and muscular exercise while the acute process, as evidenced by tenderness, exists. Joints will not become ankylosed, muscles will not hopelessly atrophy, and the patient will not become bedridden because he is kept quiet for as long a time as need be to enable the damaged cord to repair without interference. Deformities may occur in two or three weeks after the onset and must be prevented by support of the feet at a right angle (where the most common early deformity appears) by plaster of Paris splints or some similar simple contrivance. This policy of doing nothing is trying to the parents who have heard of the wonders of massage and of electricity and are anxious that no time should be lost and trying also even to the experienced surgeon when the tenderness is of unduly long duration. There is evidence to show that hexamethylenamin prevents or delays the infection in monkeys, but no evidence

* Lovett & Martin. *American Journal of Orthopedic Surgery*, July, 1916.

to show that it is of use after the infection has occurred. Immersion in a warm saline bath is agreeable and apparently beneficial toward the end of this stage and may be comfortably carried out by immersing the patient on a sheet. There is a reason to hope that the administration intraspinously of the blood serum of recovered patients as early as possible in the onset of the disease is a therapeutic measure of value in diminishing mortality and limiting the paralysis.

The treatment of the acute stage may be summarized as follows: Rest, the avoidance of meddlesome therapeutics, the prevention of deformities, and probably the early administration of the blood serum of immune patients.

Treatment of the Convalescent Phase.—During this period one faces squarely the question of muscular care and development. The destructive process has ceased, the harm has been done, the development of the possibilities of what remains is our problem. I believe that in this stage the amount of ultimate function is largely determined and we must remember that nature is assisting us to the best of her ability with the great asset of spontaneous improvement which is more marked in the first six months than in the second six, and more marked in the second six than in the last six months of the two-year period arbitrarily allotted to this stage.

Perhaps certain data with regard to the gastrocnemius muscle may make clear what seems to me to be the general behavior of muscles during this time. The calf muscle should normally be able to exert a force in pounds of from two to three times the body weight of the individual. This muscle is very frequently weakened by poliomyelitis. If it is partially paralyzed and is immediately protected by a high heel when the upright position is assumed, this throws it out of use in walking. If walking is restricted and if the muscle is judiciously exercised, in all cases that I have observed it has gained in muscular strength, and in two cases it has been quantitatively recorded as returning to the normal amount of power within two years. If it is not so protected and exercised, it has in all cases which I have observed lost power and stretched, with the acquirement of a calcaneus deformity of greater or less degree; whether it goes on to a complete loss of power cannot yet be said, because the quantitative observations on which these statements rest have not yet covered a sufficiently long period. But what happens to the gastrocnemius muscle which is easily measured and checked and observed, undoubtedly points to a general rule governing the behavior of other muscles not so easily observed and measured. So that in formulating the treatment for this stage the different reaction of this one muscle to protection and to over-fatigue may be borne in mind as probably typical.

With regard to the specific treatment of this phase, when the tenderness has wholly disappeared, or at the end of six weeks or therabouts in cases where there has been no tenderness, the question arises whether we shall begin to get the patient up or whether we shall continue recumbency, and here there is ground for a perfectly reasonable difference of opinion, probably soon to be settled here in New York City by your immense experience in the present epidemic.

Those who would keep the patient recumbent for months argue that in that way they avoid fatiguing the convalescent muscles, that the damaged nerve centers have ample time given them for complete recovery, and that muscle training and massage can be carried on perfectly well while the patient is in bed, all of which is perfectly true.

My own experience has led me, however, to feel that soon after the acute stage is over it is on the whole better to get the patient on his feet; that is, in about two or three months after the attack. The prolonged recumbency is not favorable to the circulation, which is intended to work at least some of the time in the upright position. The nervous system of children is not desirably affected by such prolonged confinement, and what is more important is that when the patient is put on his feet there is an instictive effort to balance and hold himself upright, which exercises muscles not otherwise to be reached. But this ambulatory treatment must meet the objection that fatigue may be incurred by an attempt to get about, which is perfectly true, and this must be guarded against. If the people are not intelligent enough to follow directions, prolonged recumbency would undoubtedly be the best treatment, provided, of course, that deformities were prevented. It has been too much the custom in the past to allow children to sit around for months and years with no treatment worthy of the name until they acquired the deformities of flexed hips, flexed knees and dropped feet, all favored by prolonged sitting. Still, although this danger exists, it is not a serious objection to the treatment by prolonged recumbency properly carried out. The only danger is that the unqualified advocacy of prolonged recumbency might seem to sanction a method which has been productive of great harm in the past in the hands of inexperienced persons.

With regard to the use of braces, corsets, and other forms of apparatus, it is necessary to define clearly what their place should be. Braces bear about the same relation to the treatment of poliomyelitis that crutches do to the treatment of fracture of the leg. They are compensatory rather than therapeutic. In a fracture of the leg there is a local injury which Nature is trying to repair. Now in order that the patient may get about we use a compensating appliance in the form of crutches, while locally we use ice bags, local fixation and massage at the different stages as our real treatment. If we are careless in our treatment, or in exceptional cases properly treated, we may get deformity or non-union, in which case we shall have to operate, otherwise we get complete cure. Now in poliomyelitis we have also an abnormal local process in the cerebrospinal axis which Nature is trying to repair. Unfortunately, this process cannot be as efficiently treated locally as can the fracture of the leg, nor does it spontaneously go on to a cure in nearly so large a number of cases as in fracture. But while it is progressing we use compensatory appliances in the form of braces to enable the patient to get about, while we attempt to hasten the repair of the local process by massage, muscle training, the avoidance of fatigue, and perhaps by electricity. Braces have, however, a further function in preventing muscular stretching and deformity, but then so do crutches in fractures, for if we allowed walking without crutches in imperfectly consolidated fractures we should get deformity and shortening. So if we regard braces as compensating and preventive appliances to be used in poliomyelitis rather than as therapeutic agencies we shall reach a more adequate idea of their proper place. To speak of the "brace treatment" of poliomyelitis would from this point of view be inaccurate.

The legitimate use of braces, however, is of great importance and its disadvantages and advantages must be carefully formulated.

Braces are heavy at best, and a weakened limb is not helped by carrying extra weight, the bands and lacings constrict the muscles, they induce an unnatural gait and prevent normal muscular action. On the other hand, they permit going about and many a patient would be practically bedridden without their use. They prevent muscular stretching and the loosening of joints, and most important of all they prevent or control deformity. The latter, if allowed to persist, at first affects the soft parts but later leads to serious bony distortion. Apparatus must be used in the majority of cases in poliomyelitis and much harm in the past has been done by trying to go without it. In what has been stated here I have in no way intended to criticise the legitimate use of braces, but simply to call attention to the fact that their chief value is compensatory and preventive rather than therapeutic, and that we must look elsewhere for our therapeutic aid. This consideration seems to me of primary importance.

With regard to the use of braces and apparatus, I find a very good rule as follows: If the patient cannot walk without such aid, or if in walking or standing he does so in a position of deformity, he should wear apparatus. It is essential that apparatus should be mechanically sound, light and properly fitted, for nowhere is nicety of adjustment so important in its direct effect on gait as in this disease. In the convalescent phase I believe that braces should be worn only for walking and then removed, and as in the first year very few children severely enough affected to require braces have any business to walk much on account of the danger of fatigue the braces will be worn but very little. If crutches are also necessary they should be used. Equilibrium must often be reckoned with by itself in children who have been long confined to bed, and such children must be taught to balance just as if they were learning to walk for the first time. This loss of balance is quite unrelated to the degree of paralysis present.

We will now assume that the patient is up, provided with braces if he needs them, and we must take up the most important question as to what we can do to improve the condition of the neuromuscular mechanism, bearing in mind the fact that most of the muscles are weakened and not totally paralyzed. There are three chief measures indicated, which are massage, electricity, and muscle training, the rationale of which must next be discussed, and in this matter we are approaching what I understand to be the real treatment of poliomyelitis at this stage.

Massage promotes the flow of blood and lymph from the affected limb and the displaced blood is replaced by a new supply and the circulation of the limb consequently stimulated. Waste products are removed and muscular atrophy and atony apparently delayed by it. But its effect is largely local, for it does not promote the passage of an impulse from the brain to muscle. Its overuse, either by too long treatments or too heavy manipulation is undoubtedly harmful and in the past has been responsible for more or less damage. A measure of undoubted use, we must not expect too much from it; there is nothing magical or mysterious about it and it can do harm as well as good.

Electricity.—This no place in which to enter into a controversial discussion of the value of electricity and I am only desirous of making what I believe to be a fair presentation of present opinion and to leave a definite statement to the time when I can back it up by quantitative figures on a sufficiently large number of cases with proper control over an adequate period of time. Such a series of observations has been provided for and will be soon taken up. "Impressions" resulting from the observation of the recovery rate of cases of poliomyelitis are unreliable, because the recovery rate of apparently similar cases varies enormously.

Faradic electricity is a mild form of exercise to muscles which will not contract voluntarily. It is disagreeable, but probably mildly effective under the conditions named.

Galvanic electricity and the newer forms, such as the high frequency, sinusoidal, static, Morton wave current, etc., are supposed to work in a way less definitely understood in increasing muscular power and improving nerve conductivity. In my own experience, where I have used electricity of one form or another on only one side of the bilateral cases, I have not been able to observe a faster gain on the side thus treated.

The objection to electrical treatment is that it has been extensively used, and for the most part in such a loose way that even its advocates would not expect much from its use, and that while this was being done the parents have as a rule neglected other measures, thinking that the patient was being adequately treated by the electricity alone.

My claim would be that until the case of electricity was definitely proved, it was better that it should not constitute the sole treatment and that electricity was probably of no value at all when carelessly applied by laymen.

That the use of electricity in connection with other therapeutic measures may or may not add to their efficiency, a matter which cannot be settled until quantitative examinations have been made in sufficient number.

Muscle training is the third of the therapeutic measures under consideration, and more closely than the other two meets the therapeutic requirements indicated by the pathology of this stage. In essence, it is an attempt to reconnect a cerebral motor impulse with a peripheral muscular contraction, a normal connection which has been impaired or lost by the injury to the motor centers in the cord occurring in the acute stage, so that cerebral motor impulses are checked or diminished at these impaired centers and the intended muscular contraction either occurs feebly or not at all. Now the method of muscle training aims at two things, first at forcing the efferent impulse to develop a new path around the disordered nerve center in the cord, and second to secure contraction of the desired muscle, however feeble, which is of course the best possible treatment of the muscle itself. These two attempts rest upon a sound anatomical and physiological basis. The motor nerve centers are grouped in cigar-shaped bundles running in the length of the cord and overlapping each other. Each muscle connects with more than one bundle and every bundle sends fibers to several muscles. Moreover, the intercommunication between the bundles is most extensive and intricate, consequently unless the destruction in the cord has been very extensive, the chance is that some new communicating path or some combination of paths can be established to carry a motor impulse of some

degree around the damaged area. If there is a railroad wreck blocking the main line, communication between terminals may be maintained by sending trains around the wreck by means of a branch track. So that there is no reason to believe that in muscles not totally paralyzed there is every prospect to expect continuous muscular improvement from repeated attempts to drive a motor impulse from brain to muscle, a permanent improvement in conductivity.

So far as the second aim, muscular development *per se*, is concerned, it is a matter of common information that muscular exercise in proper amounts strengthens muscles. The athletic trainer does not turn primarily to massage or electricity to strengthen weak muscles but to muscular exercise, which consists of active contractions. The muscles partially paralyzed in poliomyelitis are simply weakened muscles requiring an extremely small dose of exercise.

The practical application of muscle training is carried out by ordering the patient to execute a special movement and at the time of the effort assisting him manually to perform the movement.

Dorsal flexion of the foot, *e.g.* is performed with assistance for perhaps ten times, each time at the word of command with sufficient rest between the attempts to prevent fatigue.

The exercise and position suited to the especial muscle and its ability are selected.

Precision, care, and persistence are essential to success.

As a rule, intelligent parents can carry out muscle training by themselves with sufficient supervision to have the exercises changed as the muscles improve. Bringing the parents into the case, moreover, places the responsibility where it belongs, for the treatment to be successful must be carried on year after year to obtain the maximum results.

In six private cases, under muscle training at home, measured last winter, whose acute disease had been from three to nine years previous, with an average duration of six years, the average monthly percentage gain of strength in affected muscles was 8.2 per cent. These were the only cases of long duration in my private practice whose measurements were available. A woman with a weakened abductor muscle of one thigh and who wore a brace to correct a bad foot had never received other than brace treatment. The duration of the paralysis was thirty-six years. Under daily muscle training by an expert she gained 125 per cent in the strength of the gluteus medius muscle in six weeks. A patient in Vermont at the end of four years, who had had no previous treatment beyond braces, was started on home exercise in July, 1915. In two months his affected muscles had gained 470 per cent. in strength and his unaffected muscles 70 per cent., a net gain of 400 per cent. These muscles were severely affected. So that we may conclude that muscle training requires long continuation if the maximum results are to be obtained, and that it is effective at a later stage of the disease than generally supposed.

It is absolutely essential to success that muscle training should be preceded by a thorough and complete muscular examination. In brace treatment a thorough muscular examination would seem to be important, but paralysis or weakening of the abdominal muscles is constantly overlooked, lateral curvature of the spine in its early and curable stage is missed and local weakening in the arms is not looked for, as a rule, when the paralysis affects only the leg. The only safety lies in a complete examination of all the muscles which can be reached, whether they appear to be paralyzed or not. The Vermont measurements have shown the affection to be very widely distributed and that the affection of one muscle alone is rare. When one leg is affected, apparently alone, the other leg is as a rule somewhat involved, the more delicate our means of measurement the more widely distributed will be found the paralysis, an observation which brings the clinical phenomena of the affection more closely than before in accord with the modern pathological findings. For the most accurate type of work the spring balance muscle test is necessary, but it is complicated and requires practise on the part of two assistants, and great care in its use. For formulating the phenomena of the disease and analyzing the effect of treatment it is obviously essential, especially in connection with operative work.

As the problem in most cases is the problem of making the patient walk better, every patient who can walk should be made to do so and much will be seen in this way which otherwise would escape detection; lameness characteristic of certain muscles is shown in walking as in no other way. Children should walk naked and adults should wear trunks, bandages or union suits, as it is essential to have the whole body outline in view.

In entering here this plea for a thorough examination of every muscle in both arms, both legs, back and abdomen in every case, I am simply stating a perfectly obvious requirement for any really accurate treatment. In my own experience the results of the treatment are in large measure proportionate to the care, precision and persistence with which the treatment is given. Muscle training inaccurately formulated and carelessly carried out is of little therapeutic value.

Deformities as they occur in this stage should be removed. It is a sound rule that no non-operative treatment should be undertaken till fixed deformity has been removed. It is of no use to put braces on a child with flexion contraction of the hips, for he cannot walk with any facility, nor can a child with an equinus deformity (a dropped foot) use a brace properly.

The examination for deformity should go hand in hand with the muscular examination mentioned.

Deformity can generally be prevented, but if it is recognized only after it has occurred it should be treated as early as possible. The masures available are stretching, tenotomy, fasciotomy, myotomy, and rarely osteotomy. As this paper is intended to discuss principles and not details, this general statement about deformity must suffice.

The convalescent phase may now be summarized. It is the stage of muscular care and development. Braces may or may not be needed; if deformity occurs it should be removed. Of the three therapeutic measures available for muscular improvement, muscle training has the best physiological and anatomical basis. A thorough examination comprising every accessible muscle and a study of gait is obviously essential for proper treatment.

3. *The chronic stage* of poliomyelitis has in this paper been arbitrarily assumed as beginning two years after the onset, because it is only after this period by common consent that the operative question can be properly discussed. This has seemed to set a proper time for assuming the beginning of this stage. At this time the spontaneous improve-

ment is much less rapid than in earlier stages and the prospect of gain from the therapeutic measures described is less, but at no period of the disease can it be assumed that the possibility of improvement and sometimes of great improvement from the use of suitable therapeutic measures has ceased. Without treatment the patient is likely to remain stationary or to retrograde.

Braces may be still needed and are subject to the same rules as in the preceding stage, except that they may be worn continuously at this time with much less detriment than earlier in the disease. The danger of harm from fatigue still exists and must be guarded against if the best progress is to be made. What has been said of massage, electricity and muscle training still holds at this stage as in the former, except that improvement is less rapid. Deformity must be cleared up when it occurs or is found to be present.

In this stage first arises the important question of operative interference and the settlement of this question is in many cases the crucial feature of this stage. Operations are performed first to improve existing function and these are such operations as tendon transplantation and nerve transplantation, while the second class are done to secure better stability in badly paralyzed joints, and to this class belong artificial ankylosis, the use of silk ligaments, tendon fixation and the removal of the astragalus with backward displacement of the foot. Experience has shown, and all experienced surgeons are agreed that it is unwise to do any operations on poliomyelitis other than to correct deformity until two years have passed, because until about that time conditions have not become stable and it has served as a good working rule, but with further experience has come the doubt in the minds of many surgeons whether operation is not better deferred until three or four years or even until later childhood, and the latter point of view has gained ground of late. It is hard, however, to set a definite time other than the two-year limit for such varied operations as are performed for poliomyelitis. Some operations are merely the change of tendons, to rebalance the foot, *e.g.* and if these are deferred too long, bony deformity may be acquired and deterioration of stretched muscles may occur. It would seem as if a quantitative examination, such as the muscle test affords, might in the individual case afford much information as to the proper time for interference, and that in some cases two years would be quite long enough to wait in older children, while in others it might be wise to defer the operation in an attempt to develop certain muscles, and in younger children. On the other hand, the more destructive operations necessitating the extensive removal of bone are better deferred. In arthrodesis or artificial ankylosis, for example, many early operations have been followed by serious bony distortion resulting from the injury to growing epiphyses, so that so sound an authority as Robert Jones advises that no such operation should be performed until growth has been nearly completed. Tendon fixation and silk ligaments are not so much open to this objection and probably can be performed with safety in middle childhood. But the removal of the astragalus implies a good deal of disturbance in the mechanics of the foot, and is not in my experience best performed on young children, but rather in middle or late childhood.

Extensive operation is not, in my opinion, desirable in young children even in the case of tendon transference.

On the whole, the operative treatment of poliomyelitis is one of the most brilliant achievements of modern orthopedic surgery. Fairly recent in its development, it has passed through rather a florid period of over-development, followed by a time of undeserved depreciation, to emerge into a period of greater stability with an increasing agreement on the part of experienced men as to the relative value of the different operative methods. It is by all odds the most interesting part of the treatment of poliomyelitis, and I for one have to struggle continually to keep from becoming too much interested in this phase to the detriment of the routine treatment of the early phase, where I believe that ultimate function is more largely determined than in any other period of the disease.

It seems obvious that operation can in many cases be avoided by more accurate early treatment, that it is desirable to avoid unnecessary operation, and that when operation is to be done the results are likely to be better (especially in tendon work) if the case is exhaustively studied beforehand.

Many cases are destined for operation from the end of the acute attack and must be carried through the second stage with all care. The majority of all cases are not operative and never will be, because the paralysis is too severe or too slight, or so distributed as to render operation useless, while a third class become non-operative or operative in the third stage by the care, or lack of it, given them in the earlier stages. It is manifestly sound surgery to see that as many operations as possible are avoided by careful treatment. When fixed deformity is present it must always be corrected by operation except in lateral curvature of the spine, but as deformity is as a rule to be prevented by efficient care in the early stages, here again unnecessary operations are to be avoided by such care.

Table 1.—Result of Muscle Training

Patients treated daily at office by skilled assistants.

Age	Time Since Attack	Interval Covered by Tests	Average Total Gain of Affected Muscles, per Cent.	Average Monthly Gain of Affected Muscles, per Cent.	Apparatus Worn	Region Recorded
22	1 mo.	6 mos.	197	24	Sling	Arms
8	3 mos.	5 mos.	82	16	Corset, crutches, braces	Legs
9	3 mos.	6mos.	146	21	None	Legs
9	21 mos.	10 mos.	200	20	Plaster jacket, crutches, braces	Legs
14	4 mos.	4 mos.	688	172	Corset, braces, crutches	Legs
8	15 mos.	7 mos.	702	100	Corset, braces, crutches	Legs
8	3 mos.	6 mos.	184	30	Corset	Legs
Patients treated at home by relatives or nurses (unskilled).						
10	1 yr.	6 mos.	13	2	High heels	1 leg
30	5 mos.	1 mo.	44	44	Sling	1 arm
24	6 yrs.	3 mos.	12	4	None	1 leg
10	2¼ yrs.	8 mos.	108	13.5	Corset, plate	1 leg
11	6 yrs.	5 mos.	89	17	Plaster jacket, braces	Legs
4	1 yr.	7 mos.	30	4	Brace	1 leg
11	9 yrs.	2 mos.	33	17	None	Arm and leg
10	3 yrs.	4 mos.	16	3.5	High heel	1 leg
10	5 yrs.	7 mos.	None	None	High heel	1 leg
14	8 yrs.	8 mos.	67	8	Plaster jacket, brace	1 leg
16	2 mos.	3 mos.	620	206	Brace and crutches	1 leg.
8	1 yr.	7 mos.	202	28	Braces and crutches	2 legs, 2 arms

The question naturally arises, what evidence is there that the point of view here advocated is cor-

rect. What figures can be brought forward to show that this treatment has proved of value in any considerable number of cases. The figures presented are first from private practice and are given in Table 1.

Seven cases under daily treatment by an expert showed an average net percentage gain in muscle strength of 314 per cent. in treatment lasting from five to ten months, the average net monthly gain being 45 per cent. The duration of the paralysis at the beginning of treatment was from one to twenty-one months.

Twelve cases under treatment at home with unskilled assistance in the muscle training showed an average net gain of 103 per cent., with an average monthly gain of 29 per cent. These cases were of from two months' to nine years' duration when treatment was begun, with an average duration of three and one-half years, so that they may fairly be considered cases of the less promising class.

No cases where measurements were available were omitted from either table.

The presentation of figures will next be made from the Vermont observations. The cases in this instance were seen at clinics, of which three were held in eighteen months. Treatment was prescribed to be carried out by the parents with occasional supervision from one trained nurse skilled in muscle training who covered the entire state, encouraging patients to follow up treatment and changing exercise as occasion arose. Many of the families were ignorant and poor, living on farms without many comforts, isolated in winter and spring, and a less favorable ground for a therapeutic effort would have been hard to find.

In the cases seen in July, 1916, ninety-seven had followed treatment and sixty had not followed treatment to any degree. Certain data with regard to the two groups are available dealing with their progress in the previous year, or year and a half in some instances.

Table II.

Treated Cases, 97		Untreated Cases, 60.	
Unable to walk at outset	30	Unable to walk at outset . .	13
Able to walk now* (27)	90 per cent	Able to walk now (2) . .	15 per cent
Unable to walk now (3)	10 per cent	Unable to walk now (11) . .	85 per cent
Recoveries.			
(13)	13.4 per cent	(2)	3.3 per cent
Improved (clinically) (97)	100 per cent	Improved (clinically) (16) . .	27 per cent
Unimproved	0	Unimproved (44)	73 per cent

*Of the 27 now able to walk the conditions are as follows: Without support, 9; with braces, 8; with crutches, 2; with braces and crutches, 8.

Measurements as to muscle gain by quantitative measurements taken at intervals of one year ending in July, 1916, are available in fifty cases. Forty-six followed treatment to a greater or lesser extent and four did not follow treatment.

The average net gain in muscular strength in the affected muscles in the treated cases was 59 per cent.; the gain in untreated cases 17 per cent.

The term "net gain" means that having reckoned the percentage gain in the affected muscles the percentage of gain in the normal muscles was deducted from this. So that the term "net gain" means that the affected muscles gained faster than the normal muscles. In ten cases, however, it was classed as net loss, because although the affected muscles had gained, the normal ones had gained faster. In one case, however, there was a real loss of muscular strength in one year amounting to 11 per cent. This was a case of severe paralysis wearing two caliper braces, but having little other treatment. In no other case in the forty-six who followed any kind of prescribed treatment was there failure to gain strength in the affected muscles, and in thirty-six of these forty-five the affected muscles gained faster than the sound ones. The onset of these cases ranged from 1908 to 1914. Treatment was begun in 1915.

I have purposely avoided giving more detailed figures for fear of confusing you, and whether or not my figures bear out my contention in the beginning of the paper, that we are justified in holding out a higher degree of hope than heretofore, that thorough, persistent and long-continued treatment will produce results which are encouraging, I leave you to decide.

The impression that I should like to have you carry away as the outcome of this paper is that paralytic poliomyelitis is more often a weakening of the affected muscles than a total paralysis. As a result of this, conservation and improvement of such muscles must be our main treatment. That the use of braces is conservative and preventive rather than therapeutic. That of the therapeutic measures at our disposal for use in the convalescent stage, muscle training best meets the physiological and pathological requirements, but to be effective such treatment must be based on a thorough and accurate muscular diagnosis, and must be carried out with optimism, persistence and accuracy, and that the treatment under these conditions is effective in influencing ultimate function.

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SOME ASPECTS OF SPECIAL INTEREST BEARING ON THE ROENTGENOLOGICAL DIAGNOSIS OF TUBERCULOSIS OF THE LUNGS.*

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"The science of Roentgenology is in the interpretation of the Roentgenograms as applied to the diagnosis and prognosis of disease, just as the science of pathology lies in the interpretation of the slide" is the pronouncement of one who takes special pride in letting it be known that he is a specialist, that his specialty is that of Roentgenology. He is a Roentgenological diagnostician, therefore, of many medical and surgical specialties.

We have reached a stage in the evolution of Roentgenology in which we look down condescendingly upon the art of making Roentgenograms as no longer deserving, because no longer requiring the valuable time and personal effort of the physician. By a happy division of labor the technician relieves the Roentgenologist of what formerly took much of the doctor's attention, the mere making of pictures, during the first period, in reality the premedical period, of Roentgenology.

We have now entered upon the second period, the genuinely professional period. But I see a third period, the ultimate period, casting its shadow before.

As Cohn pointed out, "He will derive most as-

*Read by invitation of the New York Roentgen Society at its joint meeting with the Philadelphia and New England Roentgen Societies in New York, March 11, 1916.

sistance from Roentgenology who has acquired the greatest proficiency in clinical and physical methods of examination," so also the specialist, the real specialist who devotes himself heart and soul to one branch only of medicine or surgery, should be best able to interpret Roentgenograms pertaining to his particular specialty. This will constitute the period of benevolent assimilation of Roentgenology, and of the Roentgenologist too, by medicine and surgery. The division of labor which resulted in the differentiation between technician and Roentgenologist in the second period will go on logically, perhaps unmercifully, until every physician in the final period interprets his own plates.

But before this millennium is fully upon us, before the second-period Roentgenologist shall disappear from the face of the earth as an anachronistic, superfluous, moreover necessarily superficial and therefore more or less ridiculous middleman, and only physicians and technicians remain, I should like to remind you of two or three facts, lest we forget, and then consider some of the points of special interest just at present in connection with the Roentgenological diagnosis of tuberculosis of the lungs.

Roentgenology of the lungs dates back to the very beginning of the use of the rays. Thus Dr. Crane published in March, 1899, in the *Philadelphia Medical Journal,* his article on "Skiaskopy of the Respiratory Organs," one of the earliest detailed presentations of the subject in this country. At this period the fluoroscope was chiefly relied upon and was more useful, without a doubt, than Roentgenography, which was but poorly done. In 1899 but few Roentgenologists could take a lung in one minute. More commonly five or ten minutes were required.

It was in this same year that Rieder and Rosenthal (*Muenchener medizinische Wochenschrift,* 1899 No. 32, and *Fortschr. a. d. Geb. der Rocntgensts.,* 1899, Band iii) reported their method of making Roentgenograms of the lungs in one second or less by sandwiching a film between two intensifying screens. This constituted, not the beginning of, but the first great stride in advance in, the Roentgenology of the lungs. The beautiful atlas: "Die Roentgographie in der inneren Medizin" by Prof. H. Von Ziemssen and Prof. H. Rieder, published by J. F. Bergmann in Wiesbaden in 1901, was the first born fruit of this conception. How I admired those pictures with their wealth of detail as compared with the meager black and white gross shadow pictures of earlier days!

At the third annual meeting of the Am. Roentgen Ray Society, which was held in Chicago, Dec. 10 and 11, 1902, I was permitted to exhibit, though not yet a member, Roentgenograms of the lungs taken in one, one-half, and one-fourth second, with and without the use of intensifying screens. These were the first of the kind made and exhibited in this country.

The next year I read by invitation of the society at its Philadelphia meeting an article on "Skiagraphy of the Chest," which was published in the transactions of the society for 1903, together with a halftone reduction of the first one-second tuberculous chest without the use of intensifying screens, ever published here or elsewhere so far as I have been able to determine. As a rule my exposures even then were shorter than one second, but extremely short exposures were difficult to reproduce as halftone reductions. I have noticed, by the way, that for some reason not clearly defined, Rieder has gone back to long exposures for pulmonary Roentgenography.

You will pardon me for thus lingering fondly over this polliwog period of my Roentgenological career. In fact, I may as well confess it, there is still somewhat of the polliwog left in me, and at times I feel that some of our frogs matured perhaps rather prematurely.

As Snook took up a German idea and realized it in the modern interrupterless transformer which has made Roentgenography, especially of the lungs, much easier; as Coolidge revolutionized the Crookes tube and gave us the Coolidge tube, so we need some one, some other American if possible, to perfect the Dessauer Blitz-Apparat—a thing I have been urging manufacturers to do for years—and furnish us with the real article, an instrument that will enable us to take a lung, or stomach for that matter, in say one five-hundredth of a second without the aid of intensifying screens and without boring the target. We need it, and therefore we must confidently expect it will come about.

Now that we are graduating out of the first class of Roentgenologists and delegate the picture making business to assistants (nurses, "Sisters," boys, young ladies, medical students, and here and there perhap a genuine expert technician) and have more leisure for the professional study of plates, it is but reasonable to expect of us better interpretations.

It pleases me to state from personal observation that some by their superior work have justified this expectation. Too many, however, have not yet. Now there is a very good reason for this. We read marvelous tales of former polyhistors—men who were preeminent in botany, zoology, geology, psychology, mathematics, metaphysics, and theology—who knew a dozen or more dead and living languages and who were besides accomplished artists —artists in painting, music, sculpture, architecture —and artists of the logos: poetry, oratory, and literature. I have also come across physicians who serve as multi-specialists. The Dutch have a way of dubbing such pan-prodigies as "men of twelve trades and thirteen failures."

Now, it seems to me that the latter-day professional Roentgenologist is in a predicament somewhat similar to that of the encyclopedic polyhistor, polyglot, polygraphic, polypragmatic polyp of scholastic, prescientific days. He has too many irons in the fire. He has more specialties than he can manage. The real specialist does not, and cannot, take him quite seriously, and is only tolerating him good naturedly until he can permanently dispense with his services by taking upon himself to do the work that naturally and by right and reason belongs to him and to no one else. The Roentgenologist as such, according to my opinion and contrary to that of some present, is an artifact, a temporary by-product of medicine who in due time will fall by the wayside or find his way back into the regular ranks. Not until then shall the present Roentgenological epicycle be completed and the mission of the Roentgenologist be fully discharged.

It is as such a by-product myself that I approach the consideration of certain Roentgenological topics of pulmonary phthisis, as a Roentgenologist, that is to say, who would make use of the Roentgen rays as he may of the trocar, which likewise constitutes one means of diagnosis and of treatment, but likewise a poor basis upon which to construct a specialty.

At once we meet with serious difficulties. The average Roentgenologist, among whom I take my place, is not yet chiefly, and first of all, pathologist, as he should be. His knowledge of the underlying pathological processes is second hand, or largely so. He looks through other observers' eyes. His mind is biased by what he learns directly or indirectly from them. His apperception being determined by the second-hand mental furniture thus casually acquired, as much as by the dots, dashes, "splashes," "fans," "tobacco clouds," "interweavings," "mottlings," etc., which constitute his own special contribution to the work in hand, is it to be wondered at that a study of the literature of Roentgenology of the lungs, especially of incipient tuberculosis of the lungs, reveals the fact that the progress made is perhaps not quite satisfactory?

Until we can approach our subject from the viewpoints both of macroscopic and microscopic anatomical pathology and of clinical medicine, we Roentgenologists, we peculiarly situated middlemen, should be exceedingly cautious in our deliverances.

When a patient has a hemorrhage from the lungs and the plate shows nothing wrong except a dense spot in the hilus, it is not advisable to tell the attending physician that the hemorrhage is due to the spot opening a blood-vessel by scratching it by the movements of respiration. Such stunts do not promote usefulness nor enhance reputation.

Again, whether pulmonary phthisis is to be conceived of as primarily affecting the blood-vessels and is, therefore, hematogenous, as Aufrecht holds, or is of an aërolymphogenous nature, as Tendeloo maintains, or whether the primary process is acinousbronchial, are pathological questions which we as Roentgenologists should not consider incumbent upon us to settle. Of one such attempt at the third Roentgen Congress in Berlin, Holzknecht spoke sarcastically as a "taking by storm the diagnosis not only of tuberculosis of the lungs, but of its pathogenesis as well."

It is, however, an altogether different matter when a Roentgenologist notes agreement between his own observations and the findings of the pathologist, and undertakes to point it out. This I had the pleasure of doing at the 1911 meeting of the American Roentgen Ray Society, quoting Tendeloo as saying: "It has been accepted for a long time that pulmonary tuberculosis begins in the apex of that organ. But this is an error that has caused much confusion. Where do we find the foci? A primary tuberculous pulmonary focus often begins in the apex, but also often in other parts of the lungs. By far the most foci are to be found in the paravertebral cranial part of the lung, that is, in the pulmonary sector close to the vertebral column, cranial from the fifth rib about between the hilus and the apex, including the apex. The physician who examines but the apex and not the paravertebral cranial part of the lung does not fail again and again to overlook beginning tuberculosis."

This corresponds exactly with the region where early radiography most frequently detected changes. It is the domain of the vertebral branch of the upper lobe bronchus, the posterior division of which, according to the extensive investigations of Birch-Hirschfeld, is frequently stunted, distorted, and kinked. Schmorl recognized a groove caused by pressure of the first rib in adults and sees in this the cause of the stunting, kinking, and distortion of this particular division of the bronchus whose linear markings Dunham sees behind the first rib.

Bacmeister was able to produce in young rabbits an isolated apical tuberculosis in the region of Schmorl's furrow by causing a slowly increasing pressure-stenosis and subsequent direct and indirect hematogenous infection.

Tendeloo finds the primary foci in places where the respiratory movements of the lymph are slightest—"in peribronchial perivascular tissue and the under parts of the pleural and subpleural lymphatics, or in lymphadenoid tissue. . . . These movements depend on the respiratory movements of the air vesicles, which are not equal in all parts of the lungs: those of the paravertebral cranial vesicles are the slightest, and from here they increase in all directions."

Nikol accepts Tendeloo's observations on the respiratory movements of the air vesicles and their influence in creating a vulnerable zone which he locates, as does Tendeloo (and upon his authority), in the same region, though not in the same tissues, Tendeloo using his observations on the respiratory movements of the air vesicles to support his theory of the lymphogenous origin of pulmonary tuberculosis; Nikol adapting the same observations of Tendeloo for further development of his own bronchogenous theory. In inhalation experiments, dust settles in this region first and mostly, and it is the last region to clear up. Here Babcock locates his primary clinical focus, "a point about an inch or an inch and a half below the extreme summit of the lung and somewhat nearer its posterior and outer border." "From this," he continues, "it spreads downward and backward and hence should be sought for in the suprascapular region, since clinical signs of disease may be discovered here before they appear in front. From this primary focus the lesions often spread downward along the anterior aspect of the upper lobe, about three-fourths of an inch within the margin, frequently occurring in scattered nodules, separated perhaps by an inch or more of healthy tissue. It is not unusual to find in these scattered nodules the only evidence of disease of the lung when posteriorly excavation has advanced to such a degree that but little more than the pleura remains."

Such correlations as these are useful to the Roentgenologist in his difficult task of reading plates. But what we really need is a rounded-out conception of the pathogenesis of pulmonary phthisis, a macroscopic if not a microscopic consistent pathology as a common basis upon which clinician and Roentgenologist can meet, understand each other, and cooperate. The language of the plate is not in terms of râles and resonances, but refers to visible lung changes; it is of sight, not of hearing. Both constitute systems of symbols, and as such both are more or less unreal. Unfortunately, we cannot put them on a graphonola or Victor machine and by means of steel needle interpret by retransformation. Nor can we profitably read one set of symbols in terms of the other. Both râles and resonances on the one hand and the cabalistic configurations of the Rooentgen plate, on the other, speak of more or less gross lung changes, the exact character of which must be left to the pathologist, not the Roentgenologist, to determine. He is the logical umpire.

If men like Aufrecht, Tendeloo, and Nikol would add Roentgenology to the other physical methods employed by them, we should soon be in possession of a body of facts useful to both clinician and Roentgenologist. And now that the pathologist can hire a technician, there is nothing to hinder him

from doing this, and we may look to more rapid progress in the future. Meanwhile we Roentgenologists shall have to continue to cross-question the pathologist and try to correlate as best we may our own hieroglyphics with the direct information he may give us.

What, then, are some of these Roentgen signs and what do pathologists offer that may help us to recognize and to name them?

First of all, let us listen to Dr. Kennon Dunham: "I am sure that the increase in the hilus shadows, the thickening of the trunks, together with such alterations in the linear markings as increase in density and breadth, studding, interweaving, and extension to the periphery, constitute a shadow picture characteristic of early tuberculosis. . . . If the linear markings in the limited area are sharply defined and dense and show clear cut studdings beyond the trunks, a healed lesion is suggested. . . . The moderately advanced and advanced cases of pulmonary tuberculosis are readily recognized. In the less advanced cases careful study will disclose the alterations in the linear markings, heavy trunks, and hilus shadows previously described. If in such cases the fine linear markings of certain trunks are fuzzy or seem to merge to form a cloud effect, such as a film of tobacco smoke, active tuberculosis would be suggested." This describes in Dunham's own language a Roentgenographic vision which all have seen, no doubt, but which he has singled out as no one else has done and which he uses as a key with which to decipher the Roentgen code of pulmonary phthisis. For this and for his volume of stereoroentgenograms illustrating his theory, he deserves great credit, no matter what the final verdict as to their significance may be.

By way of contrast let us now compare with Dunham's characteristic Roentgen signs those of F. S. Bissell and E. T. F. Richards: "The earliest and only characteristic Roentgen signs of pulmonary tuberculosis are minute islets of increased density which tend to group themselves in a typical manner in certain elected localities in the lung. . . . These are Roentgenological tubercles. . . . Their first points of election appear to be (*a*) in the first and second interspaces near the median triangle and (*b*) toward the periphery of the lung near the angle of the scapula. . . . As the process goes on to repair, with hyperplasia of fibroblasts and the formation of connective tissue, the field in which the tubercles lie becomes much broken in appearance and marked by interweaving striæ of increased density. This 'network' may remain after the lesion has healed and all evidence of tuberculosis has disappeared, so that we do not consider its presence alone of diagnostic value. We must remember, too, that fibrosis and thickening of the bronchial arborizations may be the result of other irritants than those due to the bacillus tuberculosis, and as we have encountered this 'network' so frequently in other lung infections we have come to consider it of little value except as a corroborative sign. . . . It is apparent that many men rely entirely upon this broken field for their early diagnosis, and this must inevitably lead to many errors." These authors, basing their conclusions on 219 cases, recognize, as well as Dunham, that "an active or recent lesion is much more prone to appear in continuity with a chain leading towards the hilus."

Assmann points out that whereas formerly the examination of the apices was considered of prime importance, the region below the apex, between hilus and clavicle, at present receives more attention. But since he, too, considers mottling the most important early Roentgen sign, as Grau has shown, and since these mottlings are often obscured in this region by dense hilus ramifications, he prefers the apex plate to bring them out more clearly than is possible elsewhere.

According to Rieder: "The extension of the tubercular disease or the flaring up of a latent tuberculosis acquired in infancy takes place, as Roentgenological investigations prove, not only in children, but also in adults, from hilus outward and not from the apex. Its farther extension, often on both sides, follows the three larger hilus ramifications, most frequently the upper, less often the middle, seldom the lower branches."

Byshell regards "definite mottling and nodules at the roots of the lungs as the only reliable evidence of tuberculosis." Melville expresses himself thus: "The one and absolute evidence is the presence in part or parts of the lungs of the characteristic fine mottling."

Jordan thinks that the linear shadows may be traced even to the periphery of the chest in healthy persons, but that mottling is the evidence of active disease. Hence, he cautions us not to diagnose phthisis "unless you can show mottling through a small aperture and show it on a photographic plate."

It would be instructive in more ways than one, and besides highly interesting, to submit to all of the authors quoted a series of plates of early tuberculosis for description and interpretation. Each would go at it according to what psychologists call, I believe, *his apperceptive mass.* That, of course, is inevitable. I imagine Dunham gazing into the mirror of the stereoscope and saying: "I see characteristic fan-shaped densities which extend from the pleura to the hilus with the apex of the triangle toward the hilus; the base of the fan is outward and backward behind the first interspace; the linear markings are replaced by an intricate fine network which is veiled somewhat as if by a cloud of tobacco smoke. What I see is characteristic, that is, pathognomonic of early tuberculosis."

If his friend, Dr. Wolman, were present he would undoubtedly remark (and this in his actual language): "I conceived at first a profound distrust of diagnoses that had to be based on Dr. Dunham's peculiar stereoscopic markings. But now I can testify to my conversion to a belief in these same scorned markings, these mysterious markings for which we know no acceptable explanation. However, after subjecting them to a severe *clinical* test. I can state that undeniably they possess empirical truth."

Baetjer, no doubt, on hearing this would repeat what he has said before: "This method of diagnosis is empirical, as Dr. Wolman may well say, and has no known pathological basis, and has been substantiated by clinical findings only. Now it seems to me that this is the point where error could so easily creep in. Clinical findings do not constitute absolute proof. Besides, it seems to me that any chronic infection of the lungs could just as easily produce changes in the bands which carry the artery, vein, and bronchus. In emphysema and chronic bronchitis we see a marked thickening of these bands extending throughout the lungs. I agree with Dr. Dunham that the irregularities along these linear markings, which he has termed 'fuzzy,' are collections of small tubercles, but they are seen in a later stage of the disease."

Assmann looking over the same plates would agree as to the final diagnosis, but not until he had supplemented the examination of the stereograms with a minute scrutiny of apex views of the same case; because the hilus strands are dense and obscure the mottling, which he also insists upon as the characteristic, and only characteristic, Roentgen sign, if there be such, of early tuberculosis of the lungs.

All others present would concur in the final diagnosis, but they would reach it by different approaches. Even Rieder, while on the lookout for his particularly own Roentgen signs of cavitation in early tuberculosis—and probably finding them, too, while others overlooked them through lack of equal preparedness of their apperceptive masses—even Rieder would not be likely to overlook Dunham's "fan," for he seems to be quite familiar with it in all of its details. In his book (Rieder and Rosenthal, Fig. 31, page 278) he gives one of his characteristic schematic representations of it. His own pathological bias, however, must be held responsible for his description of the interweaving part of the fan as "net-like branchings of swollen lymph-vessels."

The other day, talking with a friend about characteristic Roentgen signs of early phthisis I noticed he used the word "characteristic" in a sense peculiar to himself. He contended that the words "characteristic" and "pathognomonic" meant different things. Nor would he yield the point until he was shown in Webster: "Pathognomonic, Med. characteristic of a disease."

Now, it occurs to me that after listening to all of our Roentgenological authors with keen interest and thorough appreciation of the excellence of their work, many of us present might feel that their differences, after all, were less vital than their agreement and that the difficulties may perhaps be partly due to misunderstanding—a matter of language, of English, which Professor Wenley says is "entirely inadequate for purposes of philosophical expression." Differences that cannot be accounted for on this score may, for aught I know, be charged to diversity of apperceptive masses.

The question is still an open one, therefore, whether there are such things as pathognomonic Roentgen signs of pulmonary tuberculosis. Bandelier-Roepke, for instance, maintain that there is nothing in an *x*-ray plate of a tuberculous lung that is characteristic or pathognomonic of the disease. Strictly speaking, no doubt this may be true. The direct diagnosis of tuberculosis of the lungs by means of Roentgenography, like the direct positive diagnosis of ulcer of the bulbus duodeni, may be, "strictly speaking," unwarranted. For the sake of argument we may admit that just as other lesions besides an ulcer can produce "characteristic" bulb deformity, so also the "characteristic" signs of pulmonary phthisis may be produced by other pathological processes. Well, neither are there, as Babcock points out, auscultatory phenomena which are pathognomonic of early tuberculosis. Practically, however, we shall seldom go wrong in the case of pulmonary tuberculosis, especially, if, instead of relying exclusively on one so-called characteristic sign, we look with a thus enlarged apperceptive mass for all of the characteristic signs known or possible. For it is a fact of which we as Roentgenologists may well be proud, that in spite of all difficulties inherent in the problem itself and of those growing out of the subjectivity of the examiner, a striking unanimity of final diagnosis is reached when variously disposed and predisposed experts examine the same plates. This is in happy contrast with what Babcock, himself a well-nigh preternaturally expert percussor, says of percussion, which by some is considered equal or superior to Roentgenography: "So much depends upon the skill of the examiner in practisting this mode of chest examination that two or more men may draw different conclusions from percussion of a case at the same sitting."

We are approaching, though we have not yet reached, direct diagnosis. Careful Roentgenologists will render such tentatively only. But, of course, we cannot rest satisfied until this, too, can be done, both positive and negative, and that unhesitatingly. Some characteristic Roentgen sign always present, always recognizable, never due to anything else, even though empirical, would do. But while waiting for pathology to determine the archetypal basis needed for interpreting the ectypal Roentgenogram, which must take some time, may it not be possible to discover a heuristic principle, some temporary working hypothesis to help us out? Anything relatively fixed is better than wind and waves.

Classification such as that of Cornet, which reduces the polymorphous lung changes of pulmonary phthisis to two main processes—tuberculous peribronchitis and caseous pneumonia—and which also does justice to Orth's conception of the dualistic nature of the histological changes involved as proliferating and exudative, has in its favor that it is at least simple.

The main objection to this division lies in the vagueness of the conception "peribronchitis." This also applies to Assmann's assumption that the peribronchial tubercle constitutes the prototype of all tuberculous lung changes. For the same reason Nikol takes pains to show that Ziegler describes as *bronchopneumonic nodules* lesions which Orth designates as *tuberculous bronchitis and peribronchitis*, while Abrikosof, who constantly speaks of bronchitis and peribronchitis, seems to identify peribronchitis with *Lymphangitis tuberculosa peribronchialis*.

Assmann adds to the confusion when he classifies his peribronchial tubercles as miliary tubercles, a term which is reserved by common practice to the hematogenous variety, though it is true that it may be difficult at times to distinguish between the two upon the Roentgenogram.

Assmann cautions us not to regard the Roentgen appearance of miliary tuberculosis as pathognomonic, and reports a case of bronchiolitis obliterans, diagnosed clinically and Roentgenographically as miliary tuberculosis, the real nature of the lesions being revealed at autopsy. He also tells of a post-mortem on a patient who had died of puerperal septicemia whose lungs were studded with minute abscesses of the size of the head of a pin, which probably would have appeared on the plate like miliary tubercles. Unfortunately, a Roentgenogram was not made. But aside from rare instances such as these, and possibly of miliary carcinosis, the more or less distinct general mottling of disseminate miliary tuberculosis constitutes a Roentgen sign of tuberculosis that is well-nigh pathognomonic.

A Roentgenogram of the lungs shows hilus, hilus ramifications, and parenchyma. No matter how biased, whether we believe the bronchi, the lymphatics, or blood-vessels to be chiefly or primarily involved, we satisfy the demands of bronchogenists,

lymphatogenists, and hematogenists alike if we approach the study of the Roentgenogram by way of the hilus ramifications in all cases not clearly miliary. These ramifications represent the triple track military highways which the invading enemy must take. In these or in their vicinity we must expect to find the early signs of his trenches.

We may specify farther: Since Tendeloo, Birch-Hirschfeld, and Nikol, though they disagree absolutely on the pathogenesis of pulmonary phthisis, are agreed that what Tendeloo has determined to be the area of the greatest biochemical susceptibility is also first involved, we have good reason for concentrating our attention upon this area.

Tendeloo's region corresponds to the hilus and hilus ramifications which follow the course of the upper vertebral branch of the upper lobe bronchus, and it is interesting to note that Roentgenologists have long ago learned to look upon this indentical region as the one to be suspected before all others—not from any pathological or clinical bias; in fact, in spite of clinical teaching, but because their experience very soon taught them to look for changes where they were found most constantly and most abundantly in early cases.

Necessarily, the first changes to attract attention were those of the regional glands, of the dustbins and lethal chambers, as some one has aptly called them, that drain the area of greatest biochemical susceptibility.

With the advent of short exposure technique, changes were detected along this ramification higher up as well, often of a more delicate nature, until now the distal endings reveal even more characteristic changes than does the hilus. At the periphery the bacilli are first halted and the earliest signs in adults are to be expected there.

In children, according to Gohn, and as is now well regnized, the location of the primary focus is much more inconstant, Gohn's tubercle may be found almost anywhere. According to Gohn himself, it is located most frequently in the anterior portion of the upper lobes—just the opposite from the adults—and in the posterior portion of the lower. It may be actively progressing or more commonly obsolete, frequently very small, a mere little scar, though the tracheal and hilus glands show extensive and rapidly progressing involvement, as if on account of the greater permeability of the mucous membranes and better functioning lymphatics of children the bacilli are swept almost immediately into the dustbins at the roots of the lungs.

Not only as depending upon the age of the patient, but also as directly and inversely proportional to the virulence of the infection, and the inherited and acquired resistance of the host, the type of the disease must differ from the very start. We should expect to find, therefore, early signs of acute and of more chronic forms both, and look for them not merely in one location but everywhere, according to age and circumstances.

Combinations of various pathological conditions occur in one and the same case. One form of the disease may change into another. Chronic types become acute, and vice versa. To note density differences, hence to distinguish, constitutes the very life and soul of Roentgenology, a reason the more why we should purposely guard against making too sharp distinctions, as against a tendency growing out of the very nature of our work—lest it become a bad habit.

With this caution and with the exception of miliary tuberculosis and the special type of the disease common to children, we are justified in assuming, therefore, that the early lesions will be found as described.

Of the several types of early lesions as well as of more advanced forms of the disease, Assmann has published good illustrations. Dunham has not found it possible to reproduce the earliest lesions as stereographic reductions on account of the difficulty and expense, and gives only two illustrations of "early" tuberculosis.

Since, as we have seen, the location of the early lesion is determined by the hilus ramifications, that is to say, by the anatomical structure of the lung itself, the suggestion arises that its histology also may depend upon the same general factor. The results of Nickol's investigations make it highly probable that this is, indeed, the case. He finds that the most typical of all lung lesions, the acinous nodular focus, depends for its location and macroscopic and microscopic appearances upon the anatomy of the structural unit of all lung tissue, the lobulus.

This lobule is made up of an intralobular bronchus giving off two or three collaterals and two terminal bronchi with their dichotomous bronchioli, each again giving off smaller branches. The terminal structure is the acinous bronchiolus. This corresponds to the bronchiolus respiratorius, as given in Quain's "Anatomy." Here the alveoli begin and ciliated epithelium leaves off. Each bronchiolus gives off three or four alveolar passages. An acinus, therefore, is the domain of a bronchiolus respiratorius with the alveolar passages appertaining to it. Acini are more uniform in size than lobuli. A lobule contains from fifty to one hundred acini. Lobules do not anastomose, but interdigitate with each other, as do also their accompanying lymphatics and blood-vessels.

The bronchiolus respiratorius is first involved in acinous tuberculosis, as well as in non-tuberculous bronchopneumonia. The acinous foci conglomerate into small and larger-sized nodules. From the start there is apparent a tendency toward induration and hence this form belongs to the chronic and subacute variety.

Macroscopically the acinous nodular focus appears as a conglomerate of small greyish blue bodies which look like miliary tubercles. They differ in that miliary tubercles are more evenly distributed over the entire lung, diminishing in size from apex to base, while acinous foci occur in groups at the end of the bronchi and form clover leaf and rosette-like bodies.

These foci have hitherto been variously described as peribronchial tubercles—Assmann; or as walnut sized and larger foci of fibrous groundwork, in which gray or yellow nodules of the size of a millet seed are imbedded—Orth.

The distal portion of Dunham's "fan" is probably made up of acinous nodular foci of Nikol, the central induration obscuring the nodules and accounting for the clouding.

The rosettes of millet seed sized nodules, softer and earlier, may stand for the islets of mottling so strenuously insisted upon by most others as an earlier and even more characteristic sign.

The leaves (mottling) which hide the branches in spring and summer, after falling, leave the bare branches standing out boldly as against a clear sky when healing has taken place.

Viewed after this manner, the acinous nodular

focus assumes preeminence as the prototype not only of one form of chronic and subacute phthisis, but of caseous bronchopneumonia and tuberculous bronchitis as well.

The acinous nodular focus thus becomes the keystone which finishes and supports the entire pathological arch and the key to the crypto-Roentgenogram. How this is accomplished by Nikol for pathology and how to correlate the data thus obtained with those of the plates, we have no time now to pursue any further.

Enough, if by condensing the fog I have succeeded in a measure in clearing the atmosphere, and by pointing out a way toward a more consistent and comprehensive view, I have contributed to a better understanding among ourselves.

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THE MEDICAL MIND.*

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During the thirty-odd years which have passed since I received my diploma, I have naturally had many opportunities for the study of the Medical Mind, or if you please, medical psychology.

We are a curious mixture of heredity and environment—a curious blend of optimism and pessimism. Our heritage is a glorious one for we present an unbroken line of professional workers with one ideal which was old before the Christian era. From the time Hippocrates taught his disciples at Cos to the present, the one great idea, the one great controlling thought has been to find the truth and, having found it, to use it for the benefit of mankind. The truth sought for has never been sought that it may be put to the base use of man's destruction.

Of all the sciences, medicine has always worked and studied that the lot of man might be easier—that the diseases which threatened the human race might be checked, that the inhospitable climes might be made fit for the human abode. But of all the sciences, medicine alone has never had as its goal the discovery of agents for the destruction of man. We have never prostituted our mighty enginery to the destruction even of an enemy. This is, indeed a glorious heritage and one we must not lose sight of. In all the ages and in all civilized lands we have been bound together by this mighty purpose into a common brotherhood. The discoveries and researches of each are the common property and interest of all—no discovery anywhere, by anybody, at any time, in the healing art or in the preventive art but is of vital interest to all. So true is this that a common purpose has verily knitted the profession into a solidarity unknown to the theologians or to the jurists. What does the lawyer care about the law of another country—it does not effect his practice nor his methods. With us, on the contrary, if a German, Erlich, discovers a method of treatment as by salvarsan; if a Frenchman unlocks the door of mystery and Pasteur gives the key to the treatment of rabies; if an Englishman, Lister, solves the riddle of wound infection; if an American, Gorgas, by a system of sanitation makes the pestilential Isthmus of Panama a health resort and banishes the scourge of yellow fever—these leaders proclaim truths of interest to the medical world, and every physician of the world is the gainer.

*President's Address delivered before the Buffalo Academy of Medicine.

This brotherhood is, however, a far closer bond than the bond of common possession of truth or of aims. We have a sense of mutual aid. The assistance which the humblest of us in time of sickness can command from the greatest is another of our blessed heritages. It is true that the burden sometimes is heavy and that some have been severely taxed, but as Weir Mitchell once said, "I have cheerfully paid it all."

We have still another inheritance which we have had so long that by common consent society does not dispute it. I mean the care of the poor. It is not enough to say that we are repaid by the experience we gain. although it is true we gain some experience, but no other profession so universally, so continuously does its charity on such a wholesale scale. No, there is something else which keeps us at the work, something else beyond scientific ardor. It is the love of humanity. It is best seen in the villages and small settlements. It is best described in the "Bonny Brier Bush." The Medical Mind is influenced by these strains of heredity. Our environment has often caused serious rifts in the brotherhood because, above all things, we are human. We are critical, skeptical, credulous. Let some toiler and earnest worker discover a truth and give it to the world. Its reception makes interesting reading and causes us to wonder at the strangeness of the human mind. Harvey announces the circulation of blood; Jenner gives vaccination to us; Morton gives us anesthesia; Oliver Wendell Holmes shows us the cause and prevention of puerperal fever. All these and innumerable others are met by ridicule, angry opposition, and abuse.

It is not that the medical mind does not welcome the truth. It is that we are slow to see it—that we have been thinking in grooves for so long that it takes years before a new manner of thinking can be developed. Also another psychic factor is involved. Often a new view is discreditable to the rest of the profession. Self-esteem is wounded. Could any pronunciamento have hurt more than Holmes' paper when he bravely announced that the physicians themselves carried puerperal fever on their hands from childbed to childbed. This is so interesting a chapter that it will bear a little further reading. Holmes published his essay on the Contagiousness of Puerperal Fever in 1843. The two leading professors of obstetrics in America, Drs. Hodge and Meigs of Philadelphia, abused him in language which has been described as something worse than the fair severity of hostile arguments, but fortunately the medical discussion did not lose itself in personal quarrel; fortunately for the multitudes of mothers, Holmes kept his temper, saying "every real thought on every real subject knocks the wind out of somebody. As soon as it comes back he very probably begins to spend it in hard words." He said, "I take no offense and I make no retort. No man makes a quarrel with me over the counterpane that covers a mother with a new-born babe at her breast. There is no epithet in the vocabulary of slight and sarcasm that can reach my personal sensibilities in such a controversy. Let it be remembered that persons are nothing in the matter. Better that twenty pamphleteers should be silenced than one mother's life should be taken. The teachings of these two professors in the great schools of Philadelphia are sure to be listened to. I am too much in earnest for either humility or vanity, but I do entreat those who hold the keys of life and

death to listen to me for just once. I ask no personal favor but I beg to be heard in behalf of the women whose lives are at stake until some stronger voice shall plead for them." He knew that he had "planted the seed of truth and that it would grow —the assaults only watered it."

These quotations are from Holmes' introduction to the pamphlet which, in answer to his opponents, he published in 1855, being a reprint of the publication of 1843. That this benefaction to mankind was always a great satisfaction to Holmes is but natural, and years later in an essay he referred to it thus: "When by the permission of Providence I held up to the professional public the damnable facts connected with the conveyance of poison from one young mother's chamber to another's—for doing which humble office I desire to be thankful that I have lived, though nothing else good should ever come of my life, I had to bear the sneer of those whose position I had assailed and as I believe at last demolished, so that nothing but the ghosts of dead women stir among the ruins."

I have quoted at length this passage at arms because it illustrates the difficulty which truth has to gain admittance when it knocks at the doors of professional prejudice, also because of the emphasis it gives to the valuable heritage we possess in claiming brotherhood with a spirit like this. It seems to me that it is not altogether a fault that we are slow to receive new ideas. It is far better to be critical than credulous. All that is new is not true. On the contrary, much more is false. One injunction of Holy Writ we must always follow, "Prove all things." If there is any tendency at present in the medical mind which must be guarded against it is the too ready acceptance of things not proven. An instance in point is the too ready acceptance of new products of laboratories of sera and vaccines, a great tendency of the present generation of physicians, and this is due to the environment and is a tendency to let others do their thinking. It may be better for the patients, but it is a habit which dwarfs individual mental growth. It is difficult for the medical mind to weigh evidence. Few of us have analytical power. Many of us are too lazy mentally to use what we have. Some of us are too engrossed in the drudgery of the profession. The reasons are many, but the tendency is one that must be fought.

In the domain of psychiatry a recent idea known as the Freudian theory is a good illustration of my meaning. This theory is being carefully studied by practically every psychiatrist and neurologist. It is earnestly discussed. It has its advocates and its opponents, but everywhere there is an evidence of a desire to arrive at the truth. In obstetrics the same scientific spirit is shown in the study of the merits of so-called twilight sleep. In ophthalmology the profession has patiently studied and weighed the evidence for and against the effects of refractive errors and muscular imbalance upon health.

Now dentistry is claiming the same earnest attention and the influences of pyorrhea and mouth infections are being weighed in the balance of criticism. Our studies, because of the close environment in which we live, are bringing us nearer the people. They know of the new discoveries as soon as we do and they expect us to use them. Mental unrest, therefore, is a psychic quality of the medical man. We were satisfied yesterday—to-day someone announces the radiograph—to-morrow we are asked to use it. The Curies discovered radium, the lay press publishes it, and the harassed physician is asked what he thinks about it—so that the psychology of the physician, due to his environment, must include a certain alertness and up-to-dateness, and right or wrong he is expected to have an opinion. It seems to me that we need to counsel together and get our bearings that a reasonable mental attitude is that of "watchful waiting," but we are not justified in sitting still and letting others prove it to be false or true, if it is in our power to help.

Our environment is crowding us along lines besides the healing art. Everything that tends to the perfecting of the body development or to the unfolding of the infant mind has come within our province, so that to-day the physician must add to his sphere of interest some knowledge of the principles of physical culture, open air schools, and systems of pedagogy. There is now no danger that the medical men will become one-sided, because the list of side interests is steadily growing longer and more formidable. The law is now closely allied to medicine so that the physician and the lawyer are bound to have common interests in the future. This is because it has been necessary for courts and commissions to have medical opinions on a variety of subjects pertaining to jurisprudence in the probate of wills, criminal cases, the extent of injuries, the estimation of the defects of different disabilities—this last being made necessary by our Workmen's Compensation Acts.

These responsibilities are put upon us and we must not shirk them. The cause of justice demands that these duties be honestly and fairly met. The physician must bring to bear judicial qualities and he must bring all his experience and reading to his aid. That the medical mind has failed to meet the requirements is a common taunt—that it is the fault of the environment and the method of the court is our answer. That the physician means to be honest but does not know how does not satisfy either our critics or ourselves. It may not be unprofitable to review a few of the scathing opinions of experts as given by judges.

Of late years there has been a growing distrust of all experts and a feeling against the admission of their testimony. To better show how authors view the subject I quote. Wharton on evidence, Section 454, says: "When expert testimony was first introduced it was regarded with great respect. An expert was viewed as the representative of a science of which he was a professor, giving impartially his conclusions." Two conditions have combined to produce a material change in this relation: (1) In matters psychological, there is no hypothesis so monstrous that an expert cannot be found to swear to it on the stand and to defend it with vehemence. (2) Then the retaining of experts by a fee proportioned to the importance of their testimony is now as customary as is the retaining of lawyers. Hence it is that, apart form the partisan character of their opinions, their utterances, now that they have as a class become the retained agents of the parties, have lost all judicial authority, and are entitled only to the weight which sound and consistent criticism will award to the testimony itself.

Lord Kenyon used the following language: "Skilled witnesses come with such a bias on their minds to support the cause in which they are embarked that hardly any weight should be given to their evidence."

But that is an English opinion of English experts;

you may think we stand better over here. Let me disabuse you by quoting Judge Davis of the Supreme Court of Maine in the Neil case: "If there is any kind of testimony that is not only of no value, but even worse than that, it is, in my judgment, that of medical experts. They may be able to state the diagnosis of a case more learnedly, but upon the questions whether it had at a given time reached a stage that the subject of it was incapable of making a contract or irresponsible for his acts, the opinions of his neighbors of men of good common sense would be worth more than that of all the experts in the country."

Stephen in his criminal law, page 209, says: "I object to the proposition of referring scientific questions to them (experts)." In this way has the medical profession of England and America dishonored the trust put upon it. Our judges say our opinions are bought and sold like any other commodity, and after it is given it is worth nothing.

What has brought about this discredit? Is it that we are less fair-minded and judicial, or is it that we are less honest than are the experts of France and Germany? For in those two countries we find no such distrust.

Another point of contact with our environment which vitally concerns us is our relation and our duty to our country. The times in which we live are no more strenuous and not so critical as those first years when Dr. Benjamin Rush signed the Declaration of Independence, or when Dr. Joseph Warren commanded the troops at Bunker Hill, or in the war of 1812, when Dr. Cyrenus Chapin led the patriotic band in Buffalo. At no time has the need of the country lacked the support of physicians. We have no need to be ashamed of the professional record. In all positions of danger and hardship the doctor has never been accused of lack of courage or of devotion to his duty. When the call has come it has always been answered. To-day the call has been issued again in no uncertain tones. We are called to help in the cause of preparedness. That preparedness is to put the country in such a position of safety and security from invasion that we are forever safe from aggression and insult from any nation on the face of the globe. There is no call for preparedness to carry on a war of conquest, but a preparedness to defend our shores. There is a group of citizens who object to this. They are of the same type of mind as those who object to vaccination against typhoid fever or smallpox. The medical mind, by training, believes in prevention and must necessarily believe in national as well as individual preparedness. But faith without works is dead; we must not only believe in this, but as individuals we must help bring about that preparedness which will get us out of our present state of defencelessness. We must help convince others. I urge you that as a profession we present a solid front on this question.

The medical mind, gentlemen of the academy, must show itself true to its glorious heritage, loyal to its environments and loyal to our country. We should certainly consider the medical needs which the enlarged army calls for. We must impress upon our minds and the minds of the young men just entering the profession the fact that the army and navy medical service is an honorable and useful scientific service. Many of the important medical advances have been made by army surgeons and none more notable than that of Surgeon Beaumont upon Alexis St. Martin. I have always been as much impressed by the mental caliber of Beaumont by his patience, by his readiness to seize the wonderful opportunity which presented itself, by his real and untiring energy, as I have by the importance of his observation.

In arranging my impressions of the medical mind and the influences which have shaped it, my hope has been that we might realize the great opportunity for our influence that the present offers, and that we should show that the united profession must conscientiously labor for the preservation of peace and the prevention of war, by a thorough national and individual preparedness for war and that we may do our share toward bringing about the Parliament of Nations and the Brotherhood of Man.

TREATMENT OF FLAT-FOOT IN OLD PATIENTS.

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Albert Hoffa wrote that the treatment of flat-foot was one of the most gratifying things in orthopedic surgery; efficiency tests of clinical results of fourteen years' work, however, have brought to notice a number of exceptions to the smooth and prompt relief of pain, so that a study of my early mistakes is valuable. In the bright lexicon of youthful flat-foot there is no such word as fail; but in patients after middle age, we have our limitations and complications—hence this honest orthopedic confession.

In the wintertime of life painful affections of the feet require careful differentiation. Our patients are then most exacting, and it is possible that they and their foot ailments are less understood. More time is necessary in diagnosis, the psychological element looms up as an important factor, and in a busy orthopedic clinic, time does not permit the personal and economic study of old men and women. When the busy medical adviser, to whom all burdens are brought, loses his patience with his elderly clients and their chronic diseases, they are prone to depression, accentuated by their apparent helplessness.

To begin with, old age itself is a condition that must be reckoned with when the treatment of a case of foot disability is undertaken. Many changes take place in all the bones, the cartilages begin to atrophy, there is less joint lubricant, there is a progressive thinning with calcification of the capsular structures of the joints, and we say that the patient is becoming stiff in these articulations. Even the spine begins to stoop, the intervertebral discs thin out, and the stature is diminished. The angle of the femoral neck with the shaft becomes more acute, and the stride becomes shorter; the head droops a little and the knees bend. The *x*-ray shows that the bony striæ are thinner and sharper in the medullary portions; "toothless old age" is due to this essential atrophy. Furthermore, a number of conditions, weaknesses, or dyscrasias, can conspire to bring about serious arthritides of longer or shorter duration after a slight traumatism. In youth, the effects of a strain are scarcely noticed; bruises and wrenched joints quickly clear up and are soon forgotten. In old age, we have to consider senile arthritis, osteoarthritis and arthrosclerosis (Noscher); these are

often traceable to nothing else but the altered and delayed processes of growth, evolution and retrogression of cells.

Clinically, there are many types of senile osteoarthritis. Many authors have attempted pathological and bacteriological classifications; some have as a basis chemical findings; some attempt to group them by their radiological appearances, while the rheumatoid group have as a basis the mode of onset. Sometimes we find that a given case presents characteristics that place it in several categories. When each case is considered by itself, then the patient receives the most benefit, exactly as he should when chronic conditions make their appearance in any other system of organs.

In the foot, a senile arthritis may affect any of the tarsal or metatarsal joints; the ankle presents swelling, effusion and stiffness, while pain on bearing the weight of the body is an early symptom. Later, there is bony thickening, creaking, limited mobility, capsular tenderness, and all the signs of partial or complete adherence of joint surfaces. The metatarsal bones being thinner, smaller and more subcutaneous, will show excresences in the form of bunions and prominences of the instep and of the ball of the foot. The experiences that patients narrate, in their quest of the boon of painless feet, illustrate the futility of treatment that is not based on a sound knowledge of the anatomical and pathological changes at the bottom of the difficulty in locomotion. One man told of having consulted thirty physicians, masseurs, water-cure and electric-cure practitioners.

If a flat-foot is swollen, and complicated by a condition of affairs such as I have attempted to describe, it is useless to decree the wearing of a pair of rigid Whitman plates without preparing the extremities for their reception and proper use. We must not lose sight of the fact that the condition is one of a progressive, painful, complication of flat-foot, an inflammatory process attended with exudate and bony thickening. The mechanical principles of treatment must often be postponed until accessory hygienic and medical aids are applied. For instance, we can have recourse to rest in bed for a period, with or without plaster-of-Paris retention, under a dietetic regimen; eliminative and analgesic measures then do most good.

When function is again permitted some old people would rather have a pad of corn plaster felt under the arch of the foot than any plate that has ever been designed. In other cases, especially after ankle fracture, the wearing of an ankle brace extending to the knee, is the only way of putting an elderly man on his feet. Writers have repeatedly drawn attention to the tendency of practitioners to put up malleolar fractures without safeguarding against this eventuality, and with reason.

I have applied a great many Whitman plates to the feet of elderly patients and believe that many of the criticisms of this form of support are due to the lack of that careful judgment that should be exercised in the selection of the case for an arch-prop that is mechanically perfect, yet rigid and unyielding. The metal insole of the old-fashioned shoe-store variety, has a limited field of usefulness; when it is used in conjunction with a shoe, built up on the inner side, it is comfortable, efficient, and to be recommended in the event of dropsy from cardiac or renal disease.

Gymnastics play an important rôle in the management of old patients with painful ankle and tarsal trouble; a flat-foot exerciser affords much comfort to sufferers from the arthritic complications. After a 15-minute use of the foot-circumduction machine there is experienced a new feeling of strength and added confidence in the feet. The exercises should be followed by skilfully administered massage, and kneading of the muscles of the sole, the tendons about the ankle, and the calf is of much benefit. Resistance movements and manipulation tend to strengthen the arch-raising muscles and to restore the normal range of motion. In some patients, experience is the only guide to answering the question as to whether or not adhesions are to be forcibly broken up. Occasionally this very breaking up may result in increased stiffness from intracapsular hemorrhage. The influence of a logical working diagnosis at the outset of treatment will determine a successful outcome.

It is surprising to note the widening list of the infecting ports of entry that may furnish the starting point for the polyarticular diseases that cripple so many old people. The teeth have been written upon to great length by many observers in the past few years. Some miraculous cases can be related following radical removal of infective oral foci. I have recently had under my care a woman of 55, who had been unable to walk on account of an infective osteoarthritis of the ankles and tarsus. She had been subjected to several operative procedures for the relief of the pain in her stiff, flat feet; plates were not tolerated. Her oral cavity was cleaned by the wholesale extraction of abscessed teeth, and she was very promptly enabled to walk. Another patient had suffered from a most severe septic form of articular rheumatism, frequently recurring; the trouble ceased when an abscessed bicuspid was drawn. The sources for infection are more numerous in older patients because resistance is lowered; thus we see in them more virulent types of chronic joint affection. I have seen several cases of polyarthritis in old men, traceable to a chronic cystitis. Besides the ear we must not overlook the accessory sinuses of the nose. Chronic infections of the gastrointestinal canal are often the cause of arthritis deformans.

The administration of medical adjuvants to mechanical treatment is not to be omitted when a case of intractable ankle arthritis complicates a flat-foot; tonics, thymus extract, pituitary extract, and even colchicum, should be employed in appropriate cases. For women at the climacteric I often use thyroid extract, as recommended by the French writers. Hot saline baths and spa treatment have their devotees. The Bier artificial hyperemia or dry hot-air baking is exceedingly beneficial as a pain-relieving measure in the chronically stiff and aching feet following subacute rheumatism in older subjects. The procedure requires time and careful attention to details, but the end often justifies the means. A household substitute is the alternating hot and cold foot douche.

Many flat-feet in older patients are not painful. We see many cases of "kidney feet" and "splay feet," which are the result of rickets in childhood. The flat-foot of adolescence, sometimes attributed to juvenile or adolescent rickets, is a more painful proposition. In the true rachitic flat-feet, even though much distorted, we find the joints accommodating themselves to altered functions, and such feet can bear their owners down the paths of life without any symptoms and without any arch props.

Corns and calluses are common after middle life,

even in normal feet; it is not necessary to point out the fact that a flat-foot encased in American shoes of the prevailing mode is sure to acquire these adornments if worn long enough. The busy family doctor is prone to decree plate-wearing for such clients. Corn-paring would prove more pain-sparing. Sometimes the chiropodists can do more and gain more friends than the careless general surgeon.

Metatarsalgia is very common in old people, but the number of cases in which this affection can be traced to flat-foot is in the minority. A great number of painful neuralgic cramps of the toes and the forefoot, in the absence of bunions or other distortions, are early symptoms of toxic or diabetic neuritis. Many ills of this sort are sadly neglected. After the diagnosis has been made and the patient placed under the care of his family physician, diabetic metatarsalgia requires a protective strip in the sole of the shoe, called by Cook the "anterior heel." The weight of the body is shifted, by this little device, backward to the less painful area of the plantar muscles.

Other obstinate and annoying forms of metatarsalgia are due to cerebrospinal disease. The blood-vessels, too, give out, in the wear and tear of life; obliteration and thrombosis are frequent in the declining years, inducing very painful interference with locomotion. The diagnosis and management of the various forms of angeitis need not be discussed here; but a plea for their early recognition is always timely. Almost every case of senile gangrene from localized arteriosclerosis that has come under my observation has been previously treated for something else.

Old patients cannot always stand a plate for the treatment of metatarsalgia, that we find so useful in the case of younger persons. Felt pads, strapped to the under surface of the ball of the foot are very much easier to tolerate. The shoemaker may line the shoes with the same soft material. Physical agents, such as massage, manual or even vibratory, are to be recommended. A few cases have improved with diathermia.

No type of patients discard the wearing of plates so quickly as those who have tried them in the presence of spurs of the os calcis. When these exostoses begin to torment by pain at the bottom of the heel (the condition seems to be more common in elderly women), their owners are soon forced to the conviction that the plates they have bought are provoking unbearable pressure on a painful spot. The logical treatment of a calcaneal painful spur is removal; yet conditions do not always warrant an operative procedure. I am inclined to believe that some of my patients suffering from these senile deposits have been relieved by baking; some are better off in the country, where they can walk on soft turf. There is no doubt that a small number of genuine exostoses on the under surface of the heel lose their senstiveness after the lapse of years; some of the elderly patients whom I have observed seem to be able to pursue their duties in the presence of demonstrably large bony spicules, which had been very painful during an earlier period.

People often wonder why their shoes become painful after fifty, even though the size, shape, last, and material are the same that they have been accustomed to for years. Occasionally this condition is felt most over the base of the fifth metatarsal bone. At this time of life the foot becomes more spare, fat that has protected bony surfaces before commences to atrophy, and the shoe may easily exert painful pressure. Sometimes an exquisitely tender bursa develops; careful shoe construction can, however, readily obviate these ills. It is often necessary to change the last of the shoe from time to time. It has been stated in articles on senility that one of the effects of old age is a "dropping of the arches"; that the old man's foot becomes flat as a result of universal muscular atrophy and weakening. I have examined many feet with this in mind and have come to an opposite clinical conclusion, as many, if not most, seem to present a heightened or raised form of arch; and whereas many of the plantar tissues atrophy after fifty, I firmly believe that nature makes ample provision against the so-called flat-foot of senility. She seems to provide for an increase of the normal turned-in position of the foot. Time and again I have been able to detect a slight tendency to bowing of the legs and actual outcurving of previously straight shins has not been rare. The same can be noticed in the works of some of our notable sculptors, Rodin, for instance.

Old people should have carefully fitted shoes and the only last that fills all requirements is that of an orthopedic shoe. Scrupulous attention to detail in fitting and selecting these will be found the best preventative against corns, bunions, and hammer-toes. Old people are prone to chilblains and frost-bite; the stockings should be of thick wool in winter and thin cashmere in summer.

Nacher says: "A serious difficulty in the treatment of old age is the uncertainty of the action of drugs on the senile organism. So little is known of the therapeutic action of drugs upon diseased, degenerating tissue. Drugs which are almost specifics in certain diseases in maturity may be ineffectual in similar conditions in senility." Surgical and hygenic measures, however, as well as orthopedic efforts, offer much hopeful result if judiciously planned and carefully carried out.

15 West Forty-fourth Street.

CARDIAC CRISES IN TABES DORSALIS.

REPORT OF A CASE WITH SUDDEN DEATH.

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Specific involvement of the sensory functions of the pneumogastric nerves or sympathetic nervous system in different locations is said to be the cause of attacks of pain in the various organs, which are known as visceral crises.

These crises are quite characteristic and easily recognized, especially if an existing tabes has been established as the etiological factor, and most frequently involve the gastrointestinal tract. In addition to the gastric, intestinal, and rectal, crises have also been known to occur in the nose, larynx, liver, kidney, bladder, urethra, and clitoris.*

Attacks of pain about the heart in tabes are not uncommon. These have usually been described as girdle sensations, although real anginoid attacks are occasionally encountered. True cardiac crises, however, are extremely uncommon; in fact, their existence as a manifestation of tabes is a matter of dispute.

*I have under observation at present a young tabetic with testicular crises which, like all tabetic pains are aggravated, temporarily, following intraspinous treatment.

Osler[1] refers to cardiac crises, because he has seen them in several cases, but inasmuch as these patients were at an age when true angina pectoris could not be excluded, their exact value as a symptom of tabes had to be questioned. Starr[2] says that cardiac crises may occur in tabes, but they are extremely rare; he has never seen a case. Gaucher[3] seems quite certain that cardiac crises do occur, and emphasizes the need of distinguishing them from the rapidly curable syphilitic angina pectoris. Massary[4] is of the same opinion, and quotes Heitz,[5] who found in tabetics a degeneration of the medullated fibers of the cardiac plexus.

The case to be reported occurred in a man (E. D. No. 225), 46 years old, who had an initial lesion followed by a rash twenty years ago. He had had no constitutional treatment whatever, and felt in excellent health until two years ago, at which time he began to have nocturnal headaches and double vision. Since that time there have developed sexual impotence, shooting pains in legs, rectal and vesical incontinence, numbness and tingling in the legs, and failing memory.

He has noticed difficulty in pronouncing his words of late. There has been an aggravation of all his symptoms for the past eight months, since which time he has been walking with crutches. He complains of a constricting band sensation about two inches wide encircling his body at the free costal margin and for the past eight months he has had attacks of pain over the heart. These pains come on quite suddenly, are stabbing in character, and radiate up into the neck. The pain is very severe while it lasts, the heart "seems to stop beating," but the attack usually disappears about five minutes after reaching its maximum intensity.

On physical examination the patient was seen to be poorly nourished and developed. The pupils were widely dilated, irregular, unequal, the right larger than the left, and did not react to light. There was a marked tremor of the face and tongue with dysarthria. The lungs were clear, and no abnormalities could be made out in the heart except a slight accentuation of the second aortic sound. The abdomen and abdominal viscera were negative. The gait was typically tabetic, and pronounced inco-ordination and Romberg sign were present; all the deep reflexes were abolished. The systolic blood pressure was 130; the diastolic 94.

The Wassermann blood reaction was two plus, and the spinal fluid, which contained 121 cells per cmm. and three plus globulin, gave a four plus inhibition with 0.05 cc.

Four days prior to his death he received an intraspinous injections of mercury in his own serum from which he had very little discomfort, only slight pain, and the maximum temperature following the treatment was 99.6°. He recovered very quickly and two days following the injection felt quite well, was walking about as usual, and remarked that the pains about the heart were not so severe. He appeared as well as ever on the morning of his death, when suddenly while sitting on the bed, talking to a patient, he uttered a cry, clutched at his heart, and fell back on the bed. He was seen about a minute later and was pulseless; stimulation failed to revive him.

Postmortem Examination: The pericardial fluid was increased in amount, the heart had stopped in systole and showed moderate hypertrophy. It weighed 305 grams; the left ventricle was 2.1 cm. thick, the right 0.8 cm. The valves, as well as the coronary arteries throughout their entire extent, showed no abnormalties. The aorta, with the exception of three small atheromatous, calcified plaques on the posterior wall, just above the ring, was negative. In addition, the capsule of the liver showed a few cicatrices, there was a Meckel's diverticulum, and there were only two lobes in the right as well as the left lung.

Summary and Conclusions.—In a man with advanced taboparesis there occurred attacks of pain about the heart, in the nature of cardiac crises. There were no postmortem evidences to explain the sudden death which occurred in one of the paroxysms, which renders quite plausible the assumption that death was due to a cardiac crisis.

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LATE INFECTION FOLLOWING THE CORNEOSCLERAL TREPHINE OPERATION FOR GLAUCOMA.

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THE trephine operation for glaucoma by its simplicity of technique and by its immediate favorable results has appealed strongly to the average oculist and has now become a well established operative measure.

It is now about five years since Col. Elliot introduced the operation and since then it has been practised extensively throughout the medical world. In the enthusiasm of the moment and in the eagerness of the profession to grasp at a procedure that will cure or at least retard the course of some forms of glaucoma not helped by an iridectomy, the secondary and remote dangers resulting from this new method have been overlooked.

Lately two cases of late infection of unusual severity following the scleral trephine operations have been seen by the writer.

CASE I.—J. S., thirty-five years of age, was first seen by me March, 1915, when he came to have his glasses for reading changed. Examination showed evidence of a trephine operation combined with an iridectomy in each eye, which had been performed three years previously. The left eye had very little vision, hand movements at five feet. The nerve was pale, atrophic, and there was a deep depression. There was no increase of tension. In the right eye vision was 20/30 with correction plus 1.00 spherical. Disc slightly cupped. Tension 22 mm. Hg.

The patient was not again seen by me until April 15, 1916, when he came to my office and said that while working at his trade some aniline pigment got into his right eye and he rubbed it to allay the irritation. He awoke the next morning with the lids stuck together, and the eye inflamed and painful. On examination the eyeball was deeply congested and over the trephine opening was a raised and circumscribed yellowish mass. There was a distinct exudate in the anterior chamber. The upper part of the cornea near the flap showed a superficial ulceration and the rest of the cornea was dull. The fundus could not be seen. Vision was reduced to light perception and tension was normal. Under treatment the hypopyon gradually disappeared and the cornea cleared up, revealing an active iridocyclitis with opacities in the vitreous and deposits in the pupillary area and around the lens.

The patient was kept in the hospital for seven weeks and the inflammation slowly abated. At present, vision is greatly reduced (5/200) on account of the floating vitreous opacities and the altered condition of the lens.

The intraocular inflammation in this case was evidently secondary to the corneal ulcer, the infection involving the conjunctival flap and spreading to the ciliary body through the scleral opening.

CASE II.—M. R., fifty-two years old, was first seen by me June 15, 1916, and gave a history that the left eye had been enucleated three years ago following two operations for glaucoma, and the right eye had been operated on shortly after for the same disease with the preservation of good vision. Three days before his next visit, the remaining eye suddenly became painful and red and the vision foggy. An examination showed an acute conjunctivitis with infection of the in-

terior of the eye. The site of the flap over the trephine opening was obscured by a yellowish elevated bleb. Hypopyon was present. Signs of a severe iridocyclitis were visible, fibrinous deposits in the pupillary area, and on the surface of the lens capsule and opacities in the vitreous. Very little vision was present. The infiltrate in the anterior chamber disappeared in a few days, but the infection of the conjunctiva and ciliary body was obstinate and persisted for several weeks in spite of rigid treatment.

At the time of discharge from the hospital, the inflammation had subsided, but the vision, due to the iritic deposits on the lens and the vitreous opacities, was greatly reduced, the patient being barely able to find his way about.

The unfortunate outcome in these two cases, the infection in each instance involving the remaining good eye and leading almost to total loss of vision, together with the increasing number of cases being reported of secondary complications following the trephine operation for glaucoma, should teach us to be guided in our prognosis concerning the ultimate outcome, and to use this method of procedure only as a last resort.

Besides late infection other pathological conditions following the trephine operation have been reported, such as opacification of the lens, and closure of the trephine hole by proliferation of connective tissue, or by being blocked by iris, ciliary body, suspensory ligament or lens. In acute and subacute glaucoma the consensus of opinion seems to favor the ordinary iridectomy as the operation of choice. In glaucoma simplex, the miotic treatment should be persisted in as long as the intraocular pressure is controlled, and the visual field and central vision are not on the decline. A majority of these cases will yield to therapeutic measures.

In those cases of chronic glaucoma that are uninfluenced by miotic and constitutional treatment, and operative measures are essential to save the sight, a broad iridectomy properly executed will often stay the course and should first be tried, offering as it does more rapid healing and lessened liability to infection.

In some cases an iridectomy will fail to control the symptoms, on account of far advanced structural changes in the filtration area, in which event the trephine operation is the only choice open, and it should then be performed over the site of the coloboma. As a possible prevention against subsequent infection, the conjunctival flap should be made as large as possible and quite thick.

221 Second Avenue.

Treatment of Auricular Fibrillation.—Robert H. Babcock states that there are three principal indications in the treatment of this affection in addition to rest in bed. First, the relief of insomnia and dyspnea, which is almost always afforded by hypodermics of morphia. One injection should be given each evening with an attempt to reduce the dosage. If morphin fails for any reason, heroin or codein may be employed. Second, the relief of visceral congestion, which is accomplished by the use of purgatives which are secondarily indicated to antagonize the action of morphin. An alkaline purgative on waking each morning should follow an initial catharsis on the first evening of treatment; the author prefers blue mass, 5 grains, for this purpose, combined with a saline and a little hyoscyamus. The patient should have two or three watery evacuations daily. The third indication—which may not always be present—is cardiac stimulation. In all severe cases, and sooner or later in all cases, digitalis will be called for. At the outset the Karell diet is recommended. Under this management some compensation may return, perhaps with ability to resume occupation in some measure. This may require the daily use of digitalis, and the patient in any case should be under constant supervision.—*The Medical Herald.*

Medicolegal Notes.

Privileged Communications.—In a servant's action for injuries, where defendant compelled plaintiff to give testimony as to his statement to a hospital physician regarding his injury, by recalling him to the stand and exacting a statement that he had told the doctor at the hospital how long he had had pain and when it first started, the New York Appellate Division held that plaintiff did not waive his privilege covering his statement to the hospital physician.—Murphy v. New York, N. H. & H. R. R. Co., 157 N. Y. Supp. 962.

Physicians Need Not Keep Records of Prescriptions for Dangerous Drugs under New York Statute.—Under section 248 of the New York Public Health Law, as added by Laws 1914, c. 363, and amended by Laws 1915, c. 327, providing that all persons authorized by law to handle dangerous drugs shall keep certain records of such drugs when "dispensed, given away or in any manner delivered," and declaring a violation of the section a misdmeanor, and section 246, forbidding the delivery of such drugs without a physician's prescription, and providing for records of such delivery, a physician who wrote prescriptions for dangerous drugs without keeping a record of the transactions was not guilty of a violation of section 248, as he did not "dispense" the drugs himself; the statute making a distinction between the "dispenser" of the drugs and the physician who writes the prescription.—People v. Cohen, 157 N. Y. Supp. 591.

Punishment for Practising Without License.—Texas Penal Code 1911, Art. 756, provides that the punishment for unlawfully practising medicine shall be by fine of not less than $50 nor more than $500, and by imprisonment for not exceeding six months. A conviction was had and punishment assessed at a fine of $100. On appeal this was reversed. On conviction the jury must assess both a fine and imprisonment within the legally fixed maximum and minimum.—Rutherford v. State, Texas Civil Appeals, 187 S. W. 481.

Treating Patient with Cocaine.—In an action against a physician for selling cocaine there was evidence that the person to whom the drug was sold, though addicted to the use of it, was suffering from a disease for which cocaine was a known remedy, and that the defendant sold him the drug as a treatment for it. It was held that the Missouri statute making it unlawful for any druggist or other person to retail or sell or give away cocaine except on the written prescription of a licensed physician or dentist was not intended to cover cases of a physician selling and delivering cocaine in the course of his practice and in his treatment of a patient.—State v. Hesse (Mo.) 187 S. W. 571.

Waiver of Privileged Communications.—The Missouri statute makes physicians incompetent witnesses as to any information acquired from a patient, which was necessary to enable them to prescribe. This statutory provision is in derogation of the common law and creates a privilege which the patient may waive at will. In an action for personal injuries the plaintiff, as a part of his case, stated the advice given to him by his attending physician as to his physical condition and future fitness for work at the time he left the hospital. This, the Missouri Supreme Court held, opened the door for a full inquiry as to the knowledge of the physician of the health and extent of the injuries of the plaintiff at the time of the alleged statement by the physician, and as to what advice he then gave the plaintiff in view of the knowledge on which it was predicted.—Blankenbaker v. St. Louis & S. F. K Co. (Mo.) 187 S. W. 840.

Liability for Services to Minor Child.—In an action by a physician against a married woman for services to her minor child, living with her, it appeared that she and her husband, the father of the child, lived together. The Texas Court of Civil Appeals held that in order to make the wife personally liable for the services, she must have entered into a contract therefor. Her mere acquiescence or consent for the doctor to treat her child would not bind her personally or make her separate estate liable. It is not sufficient that she merely give an order or call in the physician, for in such case the presumption is that she does so as the agent of her husband, whose duty it is to supply such things. After the services were rendered a mere verbal promise on her part to pay would not render her separate estate liable for the debt of the community. She would not be bound personally for the default of her husband by such verbal promise to pay his debt.—Davenport v. Rutledge (Tex.) 187 S. W. 988.

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THE VALUE OF THE MEDICAL RESERVE CORPS.

IT has not been so long that the Medical Reserve Corps was regarded as something of a farce by the civilian practitioner on one hand and the military surgeon on the other. It was the custom to allude to one's appointment as first lieutenant in that body in the speech after the medical banquet, in a facetious vein, as being a rather good joke on the army. Despite this playful attitude toward such a commission there have always been title-loving physicians who were not at all averse to adding it to their names as they appeared on publications; these were usually the ones who were especially prolific with printed matter. The designation of the original appointments to the Reserve Corps as the "Distinguished List" served to animate the fiction that the possessor of one of these commissions had received a sort of honorary degree, in recognition possibly of his superior attainments.

The Spanish-American War probably did more to wake up the profession to a realization of its responsibility to the country in the matter of military medicine than any other event. It is a matter of history now, and history that does not make pleasant repetition, how the few trained military surgeons were overwhelmed by an avalanche of civilian physicians, ignorant of tactics, transportation, administration, in fact every branch of military medicine. There were six of these untrained doctors to every trained surgeon in that war. That there has been a great improvement in this regard has been shown by the prompt response of the surgeons of the Reserve Corps to the country's need during our recent border trouble. At present there are more than 250 reserve officers now on regular duty. To quote Lieutenant-Colonel L. Munson, M. C., U. S. A., editor of the *Military Surgeon*, "All of these are selected men, many of them with a good theoretical knowledge of the special duties of the medico-military officer and not one without, at least, a conviction that there are such special duties, with good reasons for their existence."

The question of rank has often obscured the real issue in the minds of some. We recall one practitioner, known as one of the most successful in a large city and professor of practice of medicine in a large college, who related at a medical banquet his experience at the time of the occupation of Vera Cruz. He held a commission as first lieutenant in the Medical Reserve Corps, and went to see an officer in the Medical Corps with some idea of offering his service. "But," he said, "when I found that I would be subject to orders from some youngster of twenty-odd years old whom I had quizzed in my classes I promptly resigned my commission." This specimen of patriotic ideals was related in a humorous way and was greeted with more or less laughter. In pleasing contrast to this attitude, let us quote a sentence here and there from a speech by First Lieutenant Henry C. Coe of the Reserve Corps before an annual meeting of the Association of Military Surgeons (*Military Surgeon*, September, 1916): "We have been presented with the honorable title of lieutenant in the regular service, for which regular officers have worked. We owe it to the Government to earn our right to the office and its privileges. . . . The members should not lie awake nights to think how they can add another bar, or a leaf, or a spread eagle to their shoulder straps. We are all doctors, thank God, as we are all officers and gentlemen. If there is any nobler title than this, I don't know it. The youngster with the double hurdle is my superior officer, and as such I expect to obey him promptly as if he were the chief surgeon. Envy, distrust, self-importance —these have no place in our corps."

This surely expresses the attitude of our profession toward our country. If we join the Medical Reserve Corps let us do it with no mental reservations, but with a whole-hearted intention to give the best that is in us to our country, to make that gift valuable by preparation in time of peace and self-abnegation in time of war.

THE DECLINING BIRTH RATE OF GREAT BRITAIN.

A DECLINING birth rate is generally regarded as an index of decadence of a race or nation. This view, however, is by no means universal among prominent scientists, for many hold to the Malthusian opinions that it is better to have a well selected population and one of a general high standard than a larger but more mixed and, on the whole, inferior class. Nevertheless the majority of individuals still adhere to the Bible admonition "be fruitful and multiply" and to other ethical principles as "do not attempt to outwit nature," and "the public interest demands a high birth rate, private selfishness desires a small family."

It is instructive to turn to the British birth-rate commission's report published recently, dealing with statistical evidence on the matter. The commission has found itself warranted in concluding that in Great Britain, as in other countries of Northern and Western Europe, there is unmistakable proof that a sharp decline is taking place in the birth rate, and there seems no reasonable ground for doubting that the countries included will ultimately reach the state of France. The birth-rate in England and Wales has declined approximately to the extent of one-third in the past thirty-five years. Statistics seem also to show that in the countries such as France in which the decline first

showed itself the downward progress has been slow, while in those in which it has been recent, such as Germany, the fall has been more precipitate. It would seem as if in the statistical part of the report the commission had tried to find other causes than artificial restraint to account sufficiently for the decline in the birth-rate. Nevertheless, the conclusion was borne in upon them that the fall was not due, at any rate to any important extent, to alterations in the marriage rate, to a rise of the mean age of marriage, or to other causes diminishing the proportion of married women of fertile age in the population. Density of population was insufficient to explain it, for the rural rate was not widely different from the urban; food might exert some influence, but it would be difficult to get facts and figures of any value in support of this view. The theory of cyclical variations in the natural power to conceive or procreate, the hypothesis of variability of germinal vitality, as brought forward by Dr. Chalmers of Glasgow and others, was very attractive, but it broke down in the face of Irish figures. The commission was also compelled to give up the view that the higher education of women had any bearing on the decline. Statistics appear to show that there is no physiological difference between the fertility of college and non-college women, although there surely must be a slight difference in the probability of offspring being brought into the world owing to the later age at which women educated at college, must of necessity, marry.

In short, while the commission was unable to discover any sufficient cause for the falling rate, beyond that of conscious limitation and artificial restraint, yet certain circumstances did affect fertility, and brought it about that the decline must be regarded as dysgenic and not eugenic. The fall in the birth-rate in England and Wales had been more marked in those districts in which a higher standard of living was found; the size of the family tended to vary inversely as the social status of the parents, professional and allied occupations having a low fertility and laboring occupations generally a high one (that of coal miners being very nearly twice that of physicians). Housing conditions, too, had an influence, for fertility decreased regularly as the size of the tenement increased, and infantile mortality decreased along with it, but the saving of infant life in more commodious and comfortable tenements compensated, to a slight extent, for the lower fertility of those living in them.

Thus it cannot be denied that fertility is closely connected with social status, the relation being such that the more prosperous the social class the lower the fertility. Moreover there is no proof that the higher mortality among the infants of the lower social class suffices to adjust the difference. Consequently the decline cannot be regarded as eugenic, but is out and out dysgenic. That is to say that the babies are not fewer and of a superior quality but the contrary. It may be for the good of a nation if babies are fewer and of a finer quality, but when they are fewer and of an inferior quality it is obviously and distinctly detrimental.

Three suggestions are made, for which the medical part of the commission is presumably responsible. The first is that women should be assured that the pains of child bearing can be mitigated. The second suggestion calls for an increased knowledge with regard to the ways in which quality as well as quantity may appear in the expected babies. The third suggestion is that infantile and child mortality should be checked by means taken not only after but before birth, that is, by a maternity and child welfare scheme. Decrease of birth rate appears invariably to go hand in hand with civilization, and the more advanced the civilization the greater the decrease of birth-rate. France is probably, regarded from all standpoints, the nation most advanced in civilization, and it is in France that the birth-rate is the lowest.

A PLEA FOR THE HOSPITAL INTERNE.

THE hospital interne occupies an exalted or a subordinate position, depending on the point of view. To the young nurses and orderlies he is more or less of a little tin god—to the visiting staff a useful adjunct or a necessary nuisance, according to the personal equation involved. Possibly he (with increasing frequency in these enlightened times—she) is a more important part of the hospital machinery than is realized. He occupies an intermediate position between the hospital management and the visiting staff on one side and the nursing staff on the other. He learns from the one and teaches the other.

In an article in the *Southern Hospital Record* for July, Dr. Emory Park speaks a few words on behalf of the resident physician or interne. Some of his statements should be quoted and applauded: "The hospital shouldn't demand that the interne write all the histories and do the other detail work and then step aside when the operations are performed and let some outsider be the assistant at the operation." "Some hospitals let inconsiderate members of their visiting staff call residents away from their meals or let them set their operations at that time as will make the interne either miss a meal or choke it down in hunks." "They should be well fed and provided with clean, comfortable rooms and bathrooms."

Internes seldom receive any money except in some instances a nominal sum. The tacit arrangement in vogue is in the nature of a fair exchange. The hospital receives service which is in reality indispensable; each patient is visited once, twice, or more times a day, routine dressings are done and the feeling is that the patients are protected—that there is for twenty-four hours a day a staff of trained men on guard, capable of interpreting symptoms and knowing when to call in the more experienced physicians. They may be likened indeed to the outposts of an army camp. They recognize danger at a distance, and it can be repulsed before it threatens the heart of the army itself; so that the general sleeps more soundly in his tent, just as the famous surgeon is able now and then to take a week-end knowing that Smith and Jones at the hospital will not have him called needlessly, but also that they will not let any of his patients die for want of attendance. In return for these services the interne expects and should receive ex-

perience. Not the facility of inscribing "Mag. sulph. ℥i" in an order book until he wakes from dreams writing it in the air, not the holding of the surgeon's coat while he puts on a plaster cast, and not the bird's-eye view of the operation as third assistant, but the actual diagnosis and treatment of cases, the administration of anesthetics, and the performance of operations. For each interne in his hospital each member of the visiting staff should feel the kindly interest which the old-time preceptor had for his pupil.

We do not favor the loosing of a recent graduate, full of theory, but deficient in practice, upon wards of helpless sufferers. But certainly the interne should have free scope with his stethoscope in the wards, and he should be allowed to give anesthetics, at first under supervision, but later alone, and there is no reason why he should not be first assistant at operations and even do a large part of them himself.

Many hospitals and diverse ideals of management pass before our eyes as the years go by. We have seen hospitals where anesthetists were called in from the outside to serve in rotation to the exclusion of the resident staff, where each surgeon seemed to have always some protégé whom he brought into operations to act as first assistant while the interne who had examined the case, prepared it for operation, and would later carry it through the miseries of the postoperative period, stood around and passed instruments. We have seen hospitals where the tip went forth to potential candidates that the food was bad, thus frightening away many a good man. Another one where the doctors' home consisted of a ramshackle frame building, which prospective internes took one look at and fled. As Dr. Park reminds us in his article, the hospital interne is not only a highly and specially educated person, but he is a gentleman. He is entitled to the treatment accorded a gentleman anywhere and, in addition, to the full amount of the consideration for which he gives his services, that is, all the experience which the hospital affords together with the advice and oversight of the older men attached to the staff. The hospital period is probably the most valuable of the young doctor's training if he is fortunate enough to get in the right sort of a hospital, and with a little friendly cooperation by those responsible for the management of the hospitals all of them would be made desirable in this regard.

The Rationale and Practice of Chemotherapy.

Our notions of chemotherapy are at present in an unsettled state, for we do not know how many forms of therapeutic activity are to be comprised under this term, nor, so far as we have gone, are we sure in practice even of the parasitotropic action of arsenic in infectious diseases, and chiefly of salvarsan in syphilis. J. E. R. McDonagh believes that salvarsan is not truly parasitotropic, because it attacks only a certain formation contained in the spirochete by reason of an oxidizing action. Salvarsan is on the other hand organotropic and toxic and attacks especially some of the intracranial tissues. Much of McDonagh's reasoning is directed against Ehrlich's side-chain theory which takes for granted that chemotherapy is parasitotropic therapy. On the other hand McDonagh may be correct in his belief that chemotherapy is a matter of oxidations and reductions. He has used non-toxic oxidizing compounds of sulphur or iron in an attempt to replace arsenic, but evidence of cure of obstinate syphilitic lesions by such drugs is not yet regarded as entirely conclusive. Dr. C. H. Browning has claimed that chemotherapy really began thirty years ago with the use of methylene blue, a sulphurated compound, in malaria. Mr. John Ward holds that a parasitotropic substance must be organotropic as well. Arsenic, which in certain combinations is the most powerful parasiticide, is also highly organotropic, hence toxic. Iron is neither parasitotropic nor organotropic, while sulphur, non-parasitotropic, is organotropic in that it is a stimulant to organic cells and tissues. McDonagh first passed from toxic arsenic to its congener phosphorus, but finding this likewise too toxic, made experiments with a third metalloid, sulphur, which he incorporated into certain synthetics closely resembling in composition salvarsan. Intramine, one of these, has been used somewhat since the war began as a substitute for salvarsan but is admittedly inferior to the latter save, it is alleged, in recurrences. McDonagh insists, however, that with it should be associated for best results a reducing principle, namely colloidal iodine, to be introduced into a vein or muscle. McDonagh has also prepared a synthetic of the salvarsan type in which iron enters. He insists especially on the value of intramine in intracranial syphilis which is often made worse by salvarsan; also in so-called neurorecidives which salvarsan has been accused of causing.

Synesthesialgia.

This term is used by some neurologists as a condensation of synesthesia algica, a rare phenomenon encountered in lesions of the median and sciatic nerves, in which there is pain referred to the hand or foot which is not in the area of distribution of the affected nerve, and has no relation to the ordinary neuralgic or neuritic pains proper to the nerve trunks themselves. Weir-Mitchell associated certain pains (causalgia) with areas of glossy skin and ascribed both to the presence of a neuritis. Meige and Benisty referred this sympathetic pain to a vascular component—alterations in the blood-vessels. Leriche believed that both pain and trophic changes (glossy skin) were due to inflammation of the sympathetic fibers. Souques suggested the operation of a reflex mechanism. An article in the *Rivista Critica di Clinica Medica* for August 12 calls attention to some recent work in this field by Micheli who reported two cases of causalgia from nerve injury associated with synesthesialgia. The former symptoms could be ascribed to vasomotor and trophic alterations which occur in specially disposed individuals, viz., those with increased vasomotor excitability. Stimuli proceeding from these areas make themselves felt on sound portions of the skin. The patients always seek to relieve the burning pain of causalgia with moist applications, hence the parts become macerated. Micheli places a rubber glove or sock on the affected hand or foot, and in this way protects the surface from outside irritation. Leriche reports a sympathectomy or resection of the perivascular sheaths for a length of 8 or 10 cm., which has given him good results.

News of the Week.

Army Medical Corps Examination.—The Surgeon General of the Army announces that a preliminary examination for appointment of first lieutenants in the Army Medical Corps will be held early in January, 1917, at points to be hereafter designated. Full information concerning the examination can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements are that the applicant be a citizen of the United States, between 22 and 32 years of age, graduate of a recognized medical school, and of good moral character and habits, and have had at least one year's hospital training, as an interne, after graduation. In order that all arrangements for the examination may be perfected, applications should be forwarded without delay to the Surgeon General of the Army. There are at present 228 vacancies in the medical corps.

The Western Surgical Association will hold its next session on December 15 and 16 at St. Paul, Minn., instead of at Indianapolis as scheduled. The change has been made because of the absence of the chairman of the committee of arrangements, Dr. Joseph Rilus Eastman of Indianapolis, who is "somewhere in Austria" at the head of a surgical unit.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, amounting to $250, will be made on July 14, 1917, provided that an essay deemed by the committee on award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but must not have been published. They must be typewritten, in English or accompanied by a translation, and must be in the hands of the secretary of the college on or before May 1, 1917. Further particulars may be obtained from Dr. Francis R. Packard, secretary, College of Physicians, 19 South Twenty-second Street, Philadelphia.

Dr. Bulkley's Lectures.—The governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff, will give the eighteenth series of Clinical Lectures on Diseases of the Skin, in the Out-Patient Hall of the hospital, on Wednesday afternoons, beginning November 1, 1916, at 4.15 o'clock. The lectures will be free to the medical profession on the presentation of their professional cards.

Paratyphoid Carriers.—Forty-five members of the 14th and 71st Regiments, just returned from the border, are carriers of the paratyphoid bacillus, according to examinations made by the Health Department. The 14th, which had 130 cases of the disease, furnished forty healthy carriers, and the 71st, with fourteen cases, turned out five carriers.

Infantile Paralysis in New Jersey Institutions.—A member of the freshman class at Princeton University died last Saturday from poliomyelitis, and a case of the disease has been reported at the State Normal School in Trenton.

Tin Sickness (?) in Germany.—The Amsterdam correspondent of the *Exchange Telegraph* in London says that "a remarkable disease is spreading in many parts of Germany, especially in Berlin, Hamburg, Munich, and Cologne, caused by continual feeding from preserved foods. The sickness is described as 'tin sickness.' It is considered a serious form of blood poison. Thousands of cases are reported in every large city, although the authorities exercise strict control over the tin used for preserved foods." If the story is true, it is more likely that the trouble is a deficiency disease, canned foods being notably lacking in vitamines.

American Ambulances for Balkans.—The recently formed section of the American Ambulance Field Service, which is to be attached to the French Army in the Balkans, left Paris on October 13 for Saloniki.

To Attack Christian Science.—The New York County Medical Society, through the Comitia Minora, has determined to conduct a State-wide campaign for the elimination from the public health law of that section under which, by a recent ruling of the Court of Appeals, Christian Scientists may claim the right to practise.

Gifts to Charities.—Among a number of other charitable institutions the Brooklyn Home for Consumptives, Brooklyn, N. Y., receives a bequest of $5,000 under the will of the late Mrs. Albert Bierstadt of that city.

Harvey Lectures for 1916-1917.—The first lecture of the Harvey Society for the present season was given on October 14, at the New York Academy of Medicine, by Prof. J. S. Haldane of the University of Oxford on "The New Physiology." The other lectures of the series will be as follows: November 4, Dr. F. M. Allen, Hospital of the Rockefeller Institute, "The Role of Fat in Diabetes"; November 25, Dr. Paul A. Lewis, Henry Phipps Institute for Tuberculosis, "Chemo-Therapy in Tuberculosis"; December 16, Prof. Henry H. Donaldson, Wistar Institute of Anatomy and Biology, "Growth Changes in the Mammalian Nervous System"; January 13, Prof. E. V. McCollum, University of Wisconsin, "The Supplementary Dietary Relationships Among Our Natural Foodstuffs"; February 3, Prof. J. W. Jobling, Vanderbilt University, "The Influence of Non-specific Substances on Infections"; February 24, Prof. John R. Murlin, Cornell University, "The Metabolism of Mother and Offspring Before and After Parturition"; March 17, Prof. Francis W. Peabody, Harvard University, "Cardiac Dyspnea"; April 7, Prof. W. H. Howell, Johns Hopkins University, "The Coagulation of the Blood." As in the previous years, the lectures will be given on Saturday evenings at eight-thirty, at the Academy of Medicine, and will be open to the public.

Cartwright Lectures.—As previously announced the Cartwright lectures of the Association of the Alumni of the College of Physicians and Surgeons, New York, will be delivered by Prof. Richard M. Pearce of the University of Pennsylvania at the college, 437 West Fifty-ninth Street, on October 24 and 25, at 5 o'clock. The subject of the lectures will be "The Spleen in Its Relation to Blood Destruction and Regeneration."

X-ray Victims.—A dispatch from Paris states that Dr. Minard, radiologist at the Cochin Hospital, has been decorated with the Legion of Honor as a recompense for the loss of two fingers through exposure to the *x*-ray in the course of his work on wounded soldiers.

Dr. Francis LeRoy Satterlee of New York has recently undergone a third operation for the removal of a cancer of the right hand, the result of exposure to the *x*-ray some years ago.

Dr. Maynard Ladd of Boston has been appointed physician-in-chief of the children's department of the Boston Hospital and Dispensary, succeeding Dr. A. A. Howard.

College Opens.—The Medical School of Cincinnati University, Cincinnati, Ohio, opened on October 3, with an enrollment of 100 students, an increase of twelve over last year. Ten of the students are women.

Epidemic Waning.—The total record of the poliomyelitis epidemic in New York on October 14 was 9,202 cases and 2,352 deaths, the decline in the number of new cases having been marked during the week.

Mrs. Olive H. M. Rutherford, sixth vice-president of the National Society of Druggists, and said to have been the oldest pharmacist in this country, died at her home in Brooklyn on October 13, aged 85 years.

Rocky Mountain Spotted Fever in California.—Dr. Frank L. Kelly, assistant epidemiologist of the California State Board of Health, recently made an investigation in Modoc and Lassen counties, California, for the purpose of determining the prevalence and geographical distribution of Rocky Mountain spotted fever in those localities. He found that from 1903 to 1916 (the figures of the latter year being, of course, incomplete) 6 cases occurred in Modoc and 32 in Lassen County, the two counties being in the northeastern corner of the State and contiguous. Of these cases 11 occurred in Lassen County in 1915 and 8 in the first part of 1916. During 1915 Modoc County had no cases, and during the first part of 1916 two were reported. The total mortality among the 38 cases was 6. Dr. Kelly's conclusions are: 1. Rocky Mountain spotted fever has existed in California for a much longer period and to a far greater extent than has hitherto been supposed. 2. There are probably five main infected areas, one in Modoc County and four in Lassen. 3 The disease is not as severe in California as in Montana, nor as light as in Idaho. 4. The infection probably entered California through Nevada rather than Oregon.

Medical Society Elections.—Indiana State Medical Association: Annual meeting at Fort Wayne on September 28 and 29. Officers elected: *President*, Dr. John H. Oliver, Indianapolis; *Vice-presidents*, Dr. John W. Phares; Evansville; Dr. Charles M. Mix, Muncie, and Dr. George L. Guthrie, Indianapolis; *Secretary-Treasurer*, Dr. Charles N. Combs, Terre Haute.

Medical Society of the Missouri Valley: Annual meeting at Omaha, Neb., on September 22. Officers elected: *President*, Dr. Charles R. Woodson, St. Joseph, Mo.; *Vice-presidents*, Dr. E. W. Rowe, Lincoln, Neb., and Dr. C. B. Hickenlooper, Winterset, Ia.; *Secretary*, Dr. Charles W. Fassett, Kansas City, Mo.; *Treasurer*, Dr. Oliver C. Gebhart, St. Joseph, Mo.

Orleans County (Vt.) Medical Society: Annual meeting at St. Johnsbury on September 12. Officers elected: *President*, Dr. B. D. Longe, Newport; *Vice-president*, Dr. P. C. W. Templeton, Irasburg; *Secretary-Treasurer*, Dr. James F. Blanchard, Newport.

Burlington-Chittenden (Vt.) Clinical Society: Annual meeting at Burlington on Sept. 28. Officers elected: *President*, Dr. E. H. Buttles; *Vice-President*, Dr. Fred W. Sears; *Secretary-Treasurer*, Dr. O. N. Eastman, all of Burlington.

Obituary Notes.—Dr. Matthews Woods of Philadelphia, a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1873, and a member of the Medical Society of the State of Pennsylvania, the Philadelphia County Medical Society, the American Medical Association, and the Philadelphia Psychiatric Society, died in Philadelphia on October 14, aged 63 years.

Dr. George Carleton Dominick of New York, a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1904, attending physician to the Metropolitan and Volunteer Hospitals, and a member of the American Institute of Homeopathy, the New York State Homeopathic Medical Society, and the Academy of Pathological Science, died at sea, from tuberculosis, after a long illness, on October 2, aged 39 years.

Dr. Tobias John Green of Mexico, N. Y., a graduate of the Geneva Medical College, Geneva, N. Y., in 1845, died suddenly at his home on October 4, aged 98 years.

Dr. Grace A. Murphy Curry of New York, a graduate of the Woman's Medical College of the New York Infirmary for Women and Children, New York, in 1897, formerly assistant pathologist at the City Hospital, Troy, N. Y., died suddenly on October 3, aged 47 years.

Dr. John Joseph Thompson of Webster, Mass., a graduate of Jefferson Medical College, Philadelphia, in 1887, and a member of the American Medical Association, the Massachusetts Medical Society, and the Worcester District Medical Society, and a trustee of the Webster School Board for nine years, died at his home after a long illness, on September 16, aged 56 years.

Dr. William D. Moore died at Philadelphia on September 28 at the age of 49 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1893, and was a member of the Medical Society of the State of Pennsylvania, and the Philadelphia County Medical Society.

Dr. Harry Huston Whitcomb of Norristown, Pa., died at Atlantic City on September 28 at the age of 61 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1880, and he was president of the Montgomery County Medical Society, a member of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. W. H. Barry of Hot Springs, Ark., a graduate of the Memphis Medical College in 1858, died at his home, after a lingering illness, on September 26, aged 80 years.

Dr. Nathan A. C. Mackie of Golinda, Texas, a graduate of the University of Tennessee, College of Medicine, Memphis, in 1881, died at his home, from apoplexy, on September 26, aged 64 years.

Dr. George Jacob Pierce of Worcester, Mass., died from heart disease, on October 2, aged 76 years.

Dr. John William McNamara of Denver, Col., a graduate of the Medical College of Ohio, Cincinnati, in 1901, and a member of the Colorado State Medical Society and the Denver City and County Medical Society, died at his home after a long illness, on September 19, aged 39 years.

Dr. Delbert Claude Adcock of Warrensburg, Mo., a graduate of the University Medical College of Kansas City in 1904, and a member of the Missouri State Medical Association and the Jackson County Medical Society, died suddenly on September 21, aged 36 years.

Dr. John A. McLeod of Milwaukee, Wis., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, died suddenly at his home, on September 21, aged 60 years.

Correspondence.

SURGEONS WANTED FOR THE EUROPEAN ARMIES.

To the Editor of the Medical Record:

Sir:—May I venture to ask that attention be called to the great scarcity of medical men in some of the armies of Europe—notably on the Eastern frontier. I am prepared to guarantee full officer's pay and traveling expenses to 150 competent surgeons for six months' service, or for the period of the war. An item to that effect would be highly appreciated and would probably lead to the prevention of much suffering.

Louis L. Seaman, M.D.

247 Fifth Avenue, New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ANNUAL REPORT—COUNTY OF LONDON—INFECTION IMPORTED—VERMIN—SCARLET FEVER—TYPHOID—KITCHEN ARRANGEMENTS—EPIDEMICS.

London, Sept. 21, 1916.

The annual report on the health of London has appeared as usual with the other statistics. There is a further decline in the population on that recorded for 1911, but it is only slight and is conjectured to be perhaps due to the difficulty experienced by poor persons with several children in obtaining suitable tenements within the county and being obliged to seek accommodation outside. This migration is also held to explain various other anomalies, *e. g.* those of sex distribution. At the age of 25 to 35 more females than males are attracted to London, unless ill health is present, when the reverse movement is observed. The mortality of young adults, especially females from phthisis, is understated in large towns, but, on the contrary, overstated in rural districts, because immigrants to towns return to their country homes when fatally ill, and the same may be said as to other chronic diseases. The expectation of life for London is greater in the last than in any previous returns, the increase being for all periods for women and for nearly all for men. The marriage rate for the year was higher than it has been since 1874, which is being attributed by many to the effects of the war. The birth rate continues to decline; it is now 24.3 per 1,000 as against 25 for the years 1909-13. In only one London borough (Chelsea) is there a rise, and that slight. We have again a very low death rate—only 14.4 per 1,000. The first quarter of the year had the highest incidence; the second, the lowest. Migration has an important effect on the birth rate. Domestic servants in London, who come from the country, frequently return to their homes on marriage. The infant mortality was 104 as against 107 for the previous quinquennium. The greatest number of deaths was due to wasting diseases, premature birth being a primary cause, followed by debility, marasmus, diarrhea, and afterward infectious diseases. The registrar-general's report for 1913 showed a low mortality from abdominal tubercle in London, but there is a heavier mortality from meningeal tubercle, though this is considered by some as only apparent through improved certification.

Great care has been taken to prevent infection being brought from abroad during the war and though some cases were scheduled at the port of London prompt measures were taken and so far seem successful. In the last report 41 per cent. of the children born were unaccounted for as concerning vaccination. The scarlet fever rate was higher, the females being more often affected, but the death rate was higher in the males.

In regard to this disease the prevalence of vermin has been studied. The waves of scarlet fever show crests every few years—say six to eight—and there is a correspondence of this with one showing the prevalence of fleas and also waves of dryness. A contrast of the curves of two sets of schools shows curves for London boroughs—one with the worst social conditions; the other with the best. In the worst the fever was highest in the youngest years and the decline fairly rapid; in the best the rise was delayed and the decline slower. The children in the poorer class of schools had less fever than those of the better class. It is conjectured that the poorer class had had the fever previously or had become immune to flea bites.

There was an outbreak of typhoid fever at the turn of the year 1913-14 and the infection was traced to one establishment and suspicion was directed to the kitchen arrangements—then to the food supply, but it could not be shown that this was certainly the source of infection. Out of 789 cases notified information was obtained about 400. The "trash" sold in London streets is almost certainly a frequent source of infection and in some large towns the water supply is blamed; so is fish, especially shellfish coming from a distance.

The great improvements in the sanitation of London during the last 30 or 40 years have done much to hinder the growth of the typhoid germ and deliver us from epidemic outbreaks, but the importation of cheap and "nasty" food must be constantly guarded against.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 5, 1916.

1. Address Awarding the John Harvard Scholarships—1916. Abner Post.
2. Treatment of Diabetes. F. Fremont-Smith.
3. Insufficient Oxygen Supply as a Factor in Disease. Francis H. McCrudden.
4. Roentgentherapy in Hypertrophy of the Thymus Gland. Philip H. Cook.
5. Guillaume Dupuytren, 1777-1835. William Pearce Coues.

2. Treatment of Diabetes. — F. Fremont-Smith reviews the literature with reference to the starvation treatment of diabetes and calls attention to a new sign in persons developing coma, namely, the rapid decrease of intraocular tension, this lowered eye tension running with equal pace the advance or recession of coma. He says that since the diabetic fails to a greater or lesser extent to metabolize starch and sugar, and since his ability to convert these into fat, or to elaborate any form of food, to the extent of one with healthy tissues, is impaired, it is apparent that he must restrict both amount and quality of food below that taken in health by one of similar weight and height. The limitation of the carbohydrate will be determined from time to time by the glycemia and presence of sugar in the urine. Hyperglycemia and urinary sugar do not run *pari passu*, since permeability of the kidneys to sugar differs in different patients and at different times. The dietetic system recommended requires about 50 grams or 200 calories of carbohydrates daily; the average man takes six or eight times this amount. The carbohydrate intake must be begun at this low point and gradually increased, the rate being dependent upon hyperglycemia

and the appearance of glycosuria. The writer finds Kellog's graduated tables, reckoned on the standards of Chittenden, Lusk and Folin, a very practical guide for feeding carbohydrates, fats, and proteins, increasing or decreasing each element as the uranalysis indicates. For each pound of body weight one should give daily in calories, to begin with carbohydrate 0.5 calories, protein 1.5 calories, fat 0.2 calories, and gradually increase, if sugar-free, up to carbohydrate 4 calories, protein 1.5 calories, and fat 10 calories. On this basis a person weighing 130 pounds, reaching this intake at the end of two weeks, will be taking 2,015 calories in twenty-four hours. Fasting days are ordered weekly or less frequently, followed by two or three green vegetable days. Abundant water is necessary even up to 4 quarts daily and exercise should be graduated according to strength and results. The bowel movements must be kept free by bulky vegetable food, containing abundant cellulose, also by bran and paraffin oil, and the skin must be kept active by cold friction and hot baths, or, if under institutional treatment, by electrical and hydrotherapeutic means. This method of treatment once appreciated, becomes quickly simple, easily managed, and offers renewed courage and enthusiasm to both physician and patient.

3. **Insufficient Oxygen Supply as a Factor in Disease.**—Francis H. McCrudden urges that in the training of physicians more emphasis should be laid on the practical aspects of physiology. He says that the best evidence that the medical student does not receive adequate instruction in the practical aspects of this important subject are the primitive notions of physiology so frequently exhibited in the explanations of the mechanism of disease and the mode of action of different forms of treatment given in our clinical journals. As an example of this he cites the constant recrudescence of the myth of "insufficient oxygen supply," for over a century a favorite explanation of pathological symptoms. The belief in "insufficient oxygen supply" is based on an erroneous notion of the nature of metabolism, according to which the amount of oxidation is regulated by the respiration. The source of this error may be traced to Lavoisier, whose writings also contained a germ of the truth. Voit (1866) was the first to incline physiologists to the belief that respiration is not the cause of metabolism, but the result of the needs of metabolism. He pointed out that the carbon dioxide eliminated is independent of the ventilation of the lungs. In the cell alone lies the essential secret of the regulation of the oxygen used by the body; it is not determined by blood pressure, the velocity of the blood stream, the activity of the heart, or the activity of the respiration. No physiologist has contended that the products of incomplete oxidation will result from either poor respiration or poor circulation. It seems that sufficient time has elapsed for these facts to have filtered into clinical medicine and that more active emphasis will be placed on the practical aspects of physiology which will purge clinical medicine of ideas generally recognized by physiologists as incorrect.

4. **Roentgentherapy in Hypertrophy of the Thymus Gland.**—Philip H. Cook discusses the anatomy, development, and physiology of the thymus gland and reports several cases of enlarged thymus successfully treated by roentgen irradiation. He emphasizes Lang's conclusions: 1. Roentgen irradiation of the thymus produces artificial involution of the gland. 2. *X*-ray therapy is the method of choice in cases of enlarged thymus in children, whether the symptoms be mild or urgent. 3. Urgent cases should receive repeated massive doses. 4. Recurrences due to regeneration of the gland are to be watched for and controlled by further treatment. 5. Children whose physical or mental development is retarded should, if suspicion is directed toward the thymus, receive tentative *x*-ray treatment, even though a positive diagnosis cannot be established. 6. *X*-ray therapy as a precautionary measure, or preoperative treatment may enable children of the so-called lymphatic type to withstand intercurrent disease or anesthetics, which would otherwise prove fatal. 7. Preoperative exposure of older children and adults, where there is a suspicion of enlarged thymus, might lessen operative mortality. 8. Routine preoperative *x*-ray treatment in cases of hyperthyroidism should be resorted to with a view to lessening operative mortality. 9. *X*-ray exposure of the thymus gland has been proven harmless, whether in normal or abnormal individuals. A therapeutic test with the *x*-ray is, therefore, always permissible.

New York Medical Journal.

October 7, 1916.

1. The Therapeutics of Hay Fever. A. Parker Hitchens.
2. Acute Intussusception in Infants. Benjamin T. Tilton.
3. Roentgen Ray Therapeutics. A. Judson Quimby and Will A. Quimby.
4. Occupational Thecitis. Adolph Cohn.
5. The Psychology of the Faddist. B. S. Talmey.
6. Iritis and the General Practitioner. William L. Rhodes.
7. Labyrinthine Inflammation. Charles B. Broder.
8. The Epileptic Syndrome and Glandular Therapy. James L. Jonghin.
9. Chronic Gonorrhea. William S. Barnes.
10. Verify Your References. Frank Place.

1. **The Therapeutics of Hay Fever.**—A. Parker Hitchens presents a historical review of the various theories as to the causation of hay fever and of the types of treatment that have been employed. He suggests the following plan of treatment: First, a thorough rhinoscopic examination in order that any condition requiring surgical treatment may receive attention. In the meantime a diagnosis is made with regard to the varieties of pollen to which the patient is susceptible. As an aid in identifying the pollens inhaled by the patient a special button should be worn by the patient or kept in his vicinity, consisting of a metal frame in which is held a microscope cover-glass coated with the glycerine mixture used by Blackley. The microscopic examination is made after about twenty-four hours' exposure. Prophylactic treatment may be begun two or three months before the hay-fever season. An initial dose of extract containing 0.0025 mg. nitrogen is sufficient to elicit some immunizing response without producing disagreeable effects. Subsequent injuctions are given at five to seven day intervals and may be increased to 0.01 and 0.02 mg. If the area of redness about the point of the first injection has been only slight the second dose is increased to twice the original amount. No further increase is advised. During the season the period of relief following an injection has been found to be variable. A few persons are relieved for only twenty-four hours; in such cases daily doses are necessary. In others the five or seven day interval between injections may be satisfactory. If the symptoms persist in spite of an apparently accurate diagnosis and specific treatment bacterial vaccines are well worth trying.

2. **Acute Intussusception in Infants.**—Benjamin T. Tilton believes that the mortality of operation within twenty-four hours after the onset of acute intussusception in infants should not be materially higher than that of appendicitis operated upon in the same period—that is, practically nil. Fatal results are due to two factors working separately or in conjunction. failure to make the diagnosis early, and faulty operative technic. As regards the differential diagnosis the only condition which comes into consideration is acute colitis. Here the onset is not so sudden or painful. Furthermore the passages are more copious and contain bile, while in intussuscep-

tion the movements are not large and contain only mucus and blood. The diagnosis should be followed by immediate operation, which should be performed with the minimum amount of handling of intestine and traumatism. The best incision, in the author's experience, is one that splits the rectus at the junction of its middle and inner third, and extends one-third above and two-thirds below the umbilicus. If possible the tumor mass should be grasped with two fingers and brought out through the incision, and all further manipulations performed outside the abdomen. Reduction of the intussusception is successful in between 80 and 90 per cent of the cases. Any other procedure besides reduction is so extremely unsatisfactory that every effort should be made to complete reduction. If reduction fails, resection with end to end anastomosis probably offers the best chance of recovery; but the mortality is excessively high, as the case is usually a neglected one. The formation of an artificial anus is attended with practically 100 per cent mortality. The efficacy of attempts to prevent recurrence by such means as anchoring or shortening the mesentery are doubtful and prolong the operation. In closing the abdomen, tension sutures of silkworm gut should be inserted through the skin and aponeurosis, in addition to the layer sutures. Special efforts should be directed to combat shock.

4. Occupational Thecitis.—Adolph Cohn states that thecitis is common as a result of occupations such as dressmaking, cutting, pressing, and working in sheet metal. When one encounters this condition he should always look for a focus of infection and eradicate it. On the whole, the extensors are more commonly affected than the flexors. Extensors are also more commonly affected in those using shears, while the flexors are more commonly affected in those using sadirons. The symptoms clear up in a short time under proper treatment, while untreated they become chronic and result in impaired motion and function. Occupational thecitis is differentiated from tuberculosis thecitis by a history of tuberculosis, fever, and longer duration, irrespective of occupation; from suppurative thecitis, by fever, swelling, and history of digital or palmar abscess; from osteitis, periostitis, or osteoperiostitis, by swelling, fever, history of injury, and *x*-ray; from arthritis, by limited or impaired motion of the joint, history, and *x*-ray. Locally the author prescribes the following:

℞ Tincturæ iodi.....ʒi;
Unguenti belladonnæ.....
Unguenti ichthyolis..... āā ʒss.
M. fiat unguentum.

In addition, baking is of great benefit. Internally, syrupus ferri iodidi, half a dram, and syrup of hydriodic acid dilute, half a dram, is prescribed.

6. Iritis and the General Practitioner.—William L. Rhodes calls attention to the frequent failure of the general practitioner to recognize iritis, with the result that the patients are not treated or mistreated and permanent loss of vision in one eye follows. The symptoms in iritis are typical, consisting in a change in the color of the iris. It has a muddied appearance, and the luster and striated appearance of the healthy iris are lost. There is frequently a fine meshwork of blood vessels forming a halo around the cornea and perceptibly diminishing the further from the cornea they are situated. Miosis is in evidence and the reaction of the pupil to light and to mydriatics is diminished or lost. Posterior synechia appears and can be demonstrated by the installation of a mydriatic. The subjective symptoms comprise pain and photophobia, together with a decrease in visual power. Transient myopia and astigmatism are noticeable in all cases of iritis. The treatment is governed by the cause. In the rheumatic type atropine and dionin, together with hot, moist applications, constitute the local treatment, while internally sodium salicylate is given. A focus of infection responsible for the condition may be found in the tonsils.

10. Verify Your References. — Frank Place emphasizes the importance of accuracy in references, and gives reasons why it is desirable that medical writers should always verify their references. He states that the experience of writers and bibliographers has shown that the efficient bibliographic reference is the one containing the complete and correct answer to the questions, "Who wrote it?", "What is it about?", "When and where was it published?" Answering these questions, the citation should stand as it does in the *Index Medicus* and in the *Index Catalogue of the Library of the Surgeon General's Office*. In referring to a book the details are these: (1) Author's name, with initials; (2) title of book; (3) edition, other than the first; (4) place, publisher and date (imprint); (5) volume, and page therein if a particular statement is to be quoted. Unless references are verified from the originals, marvelous results are sometimes attained. Verifying references means work, but if they are not worth the work they are not worth printing.

Journal of the American Medical Association.

October 7, 1916.

1. The Relation of Choked Disk to the Tension of the Eyeball: An Experimental Study. Walter R. Parker.
2. Report of Five Cases of Tertian Malaria Treated with Diarsenol Intravenously. Frank C. Neff.
3. Bronchiectasis of the Upper Lobes, with Report of Five Cases with Necropsies. Thomas McCrae and Elmer N. Funk.
4. Posture in Obstetrics. J. W. Marcoe.
5. Premature Ventricular Systoles: Their Clinical Significance. J. E. Griewe.
6. Pelvic Infections in Women: Comments on Some Special Pathology with Application to Treatment. Thomas J. Watkins.
7. Intestinal Obstruction. John William Draper.
8. The Fractional Examination of the Stomach Contents. Elbridge J. Best.
9. Trichinosis: Immediate Result Following Intravenous Injection of Neosalvarsan J. B. McNerthney and William B. McNerthney.
10. Blood Cultures in Epilepsy. William B. Wherry and Wade W. Oliver.
11. A Bacteriological Study of the Blood of Seventy Epileptics, with Special Reference to the Bacillus Epilepticus of Reed. H. Caro and D. A. Thom.
12. New Method of Antral Cleaning with Trocar. A. C. Neath.

1. The Relation of Choked Disk to the Tension of the Eyeball.—Walter R. Parker presents this experimental study on dogs and monkeys to prove, if possible, the relation between choked disk and the tension of the eyeball in the case of artificially increased intracranial pressure. Three theories have been advanced to account for the causation of choked disk, namely: the inflammatory, the toxic or chemical, and the mechanical. These three factors alone or in combination have been urged as the possible cause of the swelling of the disk in cases of intracranial pressure. In conclusion he states that (1) choked disk can be produced in the dog and monkey by artificially increasing the intracranial pressure. The most satisfactory results are obtained by the use of sponge tents. (2) When the intracranial pressure is increased by artificial tumors placed in the occipito-parietal region, one element in determining which disk will be affected first is the tension of the eyeball. (3) When the intracranial pressure is increased by artificial tumors placed in the occipito-parietal region, the nerve in the eye of least tension is the first to show the choked disk. (4) When the intracranial pressure is increased by artificial tumors placed in the occipito-parietal region, there is no direct relation between the location of the tumors and the eye first affected.

2. Report of Five Cases of Tertian Malaria Treated with Diarsenol Intravenously. — Frank C. Neff. (See MEDICAL RECORD, June 24, 1916, page 1163.)

3. Bronchiectasis of the Upper Lobes.—Thomas McCrae and Elmer N. Funk report five cases with necropsies. (See MEDICAL RECORD, July 1, 1916, page 32.)

4. Posture in Obstetrics.—J. W. Marcoe. (See MEDICAL RECORD, July 8, 1916, page 84.)

5. Premature Ventricular Systoles: Their Clinical Significance.—J. E. Griewe. (See MEDICAL RECORD, July 1, 1916, page 33.)

6. Pelvic Infections in Women.—Thomas J. Watkins comments on some special pathology with application to treatment. (See MEDICAL RECORD, July 8, 1916, page 83.)

7. Intestinal Obstruction.—J. W. Draper. (See MEDICAL RECORD, July 8, 1916, page 82.)

9. Trichinosis.—J. B. McNerthney and William B. McNerthney report immediate result following the intravenous injection of neosalvarsan. The scientific paper of Van Cott and Lintz and their unfavorable results in the use of salvarsan and neosalvarsan made them slow to use neosalvarsan; however, in their reported case they were rewarded with a most favorable result, which seems to prove beyond a doubt that in certain stages of the disease, at least, neosalvarsan intravenously is a rational method of treatment in trichinosis.

10. Blood Cultures in Epilepsy.—William B. Wherry and Wade W. Oliver state that in cultures from the blood of six cases of epilepsy they had failed to isolate the organism described by C. A. L. Reed as the *Bacillus epilepticus*. Dr. Reed gave them one of the cultures isolated by Dr. Hyatt from a case, and, so far as they could tell, this organism belonged to the *B. subtilis* group. It formed terminal and subterminal spores which, when mature, were almost central. It grew rapidly at 37° C. or 24° C. with a smooth or wrinkled dirty white layer on any of the ordinary mediums. Blood serum was rapidly digested, as was also the case in clot in milk. Acid was produced from dextrose, levulose, galactose, saccharose, and mannite. They decided to test its pathogenicity after they had proved to their satisfaction that it really could be isolated from the blood of epileptics. Dr. Reed kindly offered to allow them to make cultures in his cases; this was done by them in conjunction with Dr. Hyatt. Not only could they not isolate such an organism, but they also failed to find any bacteria in smears stained by the Gimesa stain and by Abbott's spore stain and other methods. Dr. Hyatt had shown them smears containing the spores of *B. epilepticus*, but they had been unable to find similar bodies in the smears which they made. Notes on the cases from which cultures were made are presented.

11. Bacteriological Study of the Blood of Seventy Epileptics, with Special Reference to the Bacillus Epilepticus of Reed.—H. Caro and D. A. Thom present this study, from which they found that in this series of 70 cases, with a total of 160 blood cultures, 156 proved to be sterile. The remaining four showed contaminations. Four cases with either myoclonus or hemiplegia also gave sterile blood cultures. In a series of 17 necropsies on epiliptics, Dr. Canavan was unable to find any organism resembling *B. epilepticus*. It seemed evident that in the 70 cases studied the epileptic syndrome was not due to the *B. epilepticus* of Reed.

The Lancet.

September 16, 1916.

1. The Question as to How Septic War Wounds Should Be Treated. (Being a Reply to Polemical Criticism published by Sir Watson Cheyne in the "British Journal of Surgery.) Almroth E. Wright.
2. Differential Leucocyte Counts in Enteric and Dysenteric Convalescents. I. Walker Hall and D. C. Adam.
3. Notes on the Vaccination of Guinea Pigs with B. Perfringens. Muriel Robertson.
4. Infective Jaundice. (Spirochaetosis Ictero-hemorrhagica). A Preliminary Report. N. B. Gwyn and J. J. Ower.
5. Pneumococcus Meningitis with Recovery following Vaccine Therapy. A. Carnarvon Brown.
6. A Crossed Hip Reflex in Enteric Fever. E. B. Gunson.
7. The Ground Level Latrine. F. E. Fremantle.

2. Differential Leucocyte Counts in Enteric and Dysenteric Convalescents.—I. Walker Hall and D. C. Adam have made differential blood counts in a number of healthy men as a basis for comparison, and then examined the blood films from convalescent cases of amebic and bacillary dysentery, typhoid, and paratyphoid fevers. They have not observed the distinct eosiniphilia which they had expected to find in these cases, the eosinophile percentages not having exceeded those met with in routine examinations of other forms of convalescence. This feature does not seem to offer much aid in the differentiation of an inoculation and an infective agglutinin when only one agglutinin is present in the blood. With regard to other types of cells, the evidence accumulated suggests that extended observations, with the addition of other important hematological procedures, may show that some information will be gained by the examination of blood films in cases of difficulty and especially in continuous fever in men who have been inoculated with mixed vaccines against typhoid, paratyphoid A and B, and cholera. It seems probable that when the agglutinin present is due to inoculations, the blood films will yield approximately normal films, while in the case of an infective agglutinin the typical leucocytosis or polynuclear leucopenia associated with the causal organism will be found. The counts obtained from recently inoculated healthy men would lead to the supposition that the cells which react to dead typhoid and paratyphoid bacilli may be proved to be of a different order from those which act upon living infective typhoidal organisms. These writers are not yet satisfied that the figures they have obtained from their paratyphoid examinations are really representative. There has been a difference between the counts yielded by the convalescents from the various war areas which are more than should arise from errors of technic or from personal factors. In the cases from the French area there is a persistence of mononuclear increase and polynuclear decrease in the paratyphoid A which is different from those in the Mediterranean area. The purely typhoid and paratyphoid cases show counts which differ from those yielded by the typhoid plus protozoa and the paratyphoid plus protozoa. The paratyphoid cases from the Mediterranean are approximate to the mixed type of counts both in their polymuclears and mononuclears as well as in the eosinophile cells. There is evidence pointing to the possibility that the cases in which the leucocyte counts differ materially from those of French origin may be ascribed to a mixed infection and put in a class by themselves. It is also possible that the lack of eosinophilia in the post-paratyphoidal cases may arise from the coexistence of amebic infection. It has been observed that leucocyte counts made a few weeks after the injection of a mixed typhoid-paratyphoid vaccine show a greater number of eosinophiles than do those obtained after a pure typhoid inoculation. If the results of these examinations are confirmed it would establish the contention of the writers that when clinical diagnosis is not upheld by serological findings the matter may be cleared up by timely examination of the total and differential leucocyte contents.

3. Notes on the Vaccination of Guinea-pigs with B. Perfringens.—Muriel Robertson gives an account of experiments carried out with *B. perfringens*, from which the general conclusion may be drawn that previous vaccination with killed or attenuated cultures of *B. per-*

fringens does not cause any appreciable raising of the resistance of guinea pigs against a subsequent lethal dose of living bacilli. Recovery from a previous infection with the organism does not prevent a reptition of the illness upon reinoculation with living bacilli, nor does it apparently in any way alter the symptoms or influence the course of the disease.

4. **Infective Jaundice: A Preliminary Report.**—N. B. Gwyn and J. J. Ower have been making a study of this condition since November, 1915, from which it appears that typhoid and paratyphoid bacilli can be excluded as causal agents in these cases. Japanese authors have described a spirochete in cases of epidemic jaundice, and the writers have made a search for this kind of an organism. They describe the method used, and state that aerobic cultures were negative, but on the fifth day examination of the material from the deep agar anærobic culture on the dark stage showed a few spirochete-like bodies. Similar bodies were found in the first examination of another specimen. These presented much the appearance of the *spirochæta pallida*, except that they were usually shorter, coarser, and not so regular or finely spiral. They were definitely motile, but had not the rapid spiral movement of *S. pallida*. In a Giemsa preparation they were not demonstrable; with the Fontana a small number were found to take the silver impregnation readily. The results of animal inoculation have thus far been negative, but the essayists think this may be due to the fact that they have received all their cases late in the disease.

6. **A Crossed Hip Reflex in Enteric Fever.**—E. B. Gunson writes that the crossed hip reflex has been noted in cerebral tumor, various cerebrospinal conditions, and in diphtheria. When the quadriceps femoris muscle is firmly grasped just above the knee between the thumb and fingers, the patient experiences considerable pain referred to the site of stimulation and there occur flexion at the hip joint and extension of the great toe of the opposite limb. The reflex may be incomplete and consist of flexion at the hip only or of flexion at the hip and contraction of the tensor fasciæ femoris muscle without actual contraction of the great toe; crossed extension of the great toe without flexion at he hip occurs in some cases. Pain on stimulation is a marked feature, and usually persists for several days after the reflex movements can no longer be elicited. This reflex has been studied by the author in thirty-seven cases admitted to the General Hospital, Alexandria, from Gallipoli. The reflex appeared as early as the second day of the disease, and in one case persisted into the eighth week; the time, onset, and duration were vary variable. The reflex bore no absolute relation to the severity of the disease, but tended to be more complete and persisted for a longer time in severe types. The presence of the reflex in enteric fever is held to signify a temporary perturbation of the spinal cord, the result of a toxic or inflammatory process, on which some of the other reflex changes observed in enteric fever may also depend, and to which the extreme weakness of the back and limb muscles may in part be attributed. The reflex was found to be of some diagnostic value, as it was never present in doubtful cases.

British Medical Journal.

September 16, 1916.

1. Gas Gangrene as Seen at the Casualty Clearing Stations. Cuthbert Wallace.
2. The Direct Transfusion of Blood: Its Value in Hemorrhage and Shock and in the Treatment of the Wounded in War. A. Primrose and E. S. Ryerson.
3. Trench Fever: The Field Vole a Possible Origin. W. J. Rutherford.
4. A Case of Ulcerating Granuloma Successfully Treated by Intravenous Injections of Antimony. George C. Low and H. B. Newham.
5. Lamblia Infections in Men Who Have Never Been Out of England. A. Malins Smith and J. R. Matthews.
6. A Case of Intrauterine Scarlet Fever. R. M. Liddell and C. E. Tanyge.

1. **Gas Gangrene as Seen at the Casualty Clearing Stations.**—Cuthbert Wallace says that gas gangrene is still a very striking feature in the surgery of the present war. Two very interesting papers have recently appeared by d'Este Emery and Kenneth Taylor, and if the two theories of the disease as given by these men are compared it will be found that they differ mainly in the part played by the gas. Taylor thinks that it plays an important part; d'Este Emery denies this, and believes that the bacteria toxins are the important factor. Taylor believes that the disease is mainly one of the muscles; d'Este Emery thinks that this is a mistake, and that it is only the fact of the bacteria being able to produce gas by the aid of the muscle sugar that leads to this assumption. These two views reflect somewhat different conceptions of the disease, but it seems probable that both observers have some right on their sides. The author's own impressions of the disease as seen at the front and gathered elsewhere may be briefly stated as follows: (1) It is rare to meet gas gangrene without a muscle injury. (2) It is chiefly a disease of the muscles, and is rarely dangerous unless muscle is involved. (3) The lesion in its early stages may be described as a longitudinal one. (4) It is rare to find all the muscles of a segment of a limb involved, save in a segment distal to one in which the main blood supply has been cut off. (5) The muscles affected are in the first instance the wounded ones. (6) Muscles contained in rigid compartments, such as the anterior tibial group, are especially prone to die if wounded. (7) There is but little tendency for the infection to pass from one muscle to another. (8) The infection is further advanced in the muscles than in the intermuscular areolar planes. (9) The muscles become resonant from the presence of gas long before they become prepitant to the finger. (10) The presence of gaseous crepitation does not necessarily mean microbic infection. (11) Crepitation is usually a comparatively late phenomenon, and is due to the escape of gas into the areolar and subcutaneous tissue. (12) In an infected limb a vascular lesion will be followed by the death of the muscle or muscle group, which death would not have followed in an uninfected limb. (13) In an infected limb there are several conditions of the muscles. (14) The microscopical appearances of muscle dead from cutting off its blood supply are different from those of a muscle dead from infection. The striation is present in the former and absent in the latter. (15) The bacteria are between the muscle fibers and not in them. (16) Microscopical examination suggests that the gas may find its way between the muscle fibers in front of the bacterial invasion. (17) In dead infected muscles the fibers are separated from one another. In the treatment of gas gangrene the circulation should be helped in every way. The bad effects of tight bandages must be insisted upon. In cases in which hemorrhage into a limb is continuing there is no doubt as to the advisability of finding the bleeding point. If the artery is a main one an attempt should be made to suture instead of ligate the vessel. Suture is worth while trying in a vessel locally thrombosed from the effect of trauma. In dealing with gas gangrene in a wounded segment of a limb and deciding on the advisability of amputation, it should be borne in mind that it is usually only the wounded muscles that become gaseous and that incision or ablation of such muscles is often sufficient to arrest the disease.

4. **A Case of Ulcerating Granuloma Successfully Treated by Intravenous Injections of Antimony.**—George C. Low and H. B. Newman describe this lisease, which

they state is a true venereal disease but has nothing to do with syphilis or the usual venereal diseases. It is very common in British Guiana, Brazil, and other parts of South America, and resembles in some ways the type of change seen in lupus or rodent ulcer. It is believed to be of protozoal origin. The case which the authors report was cured by the intravenous injection of antimony. The first injection consisted in 1 grain of antimony dissolved in 2 ounces of normal saline injected directly into the vein, the same vein being used time after time for the different injections. In all, fifty-three injections were given at intervals of three or four days. The dose was raised from 1 to 2½ grains after the first three weeks. It is suggested that a judicious combination of antimony and the *x*-ray would be worthy of trial and might shorten the length of the treatment.

5. **Lamblia Infections in Men Who Have Never Been Out of England.**—A. Malins Smith and J. R. Matthews report three cases of Lamblia infection, two of which certainly and the third almost certainly were contracted in England. These cases are recorded in view of the prevalent idea that infections of *Lamblia intestinalis* are associated with residence abroad. They were discovered in the routine examination of stools conducted at the Liverpool School of Tropical Medicine. In commenting on these cases the authors observe that it is almost impossible now and will shortly become quite impossible to offer any evidence as to whether *Lamblia* is indigenous in England. The presence of the very numerous cases of returned soldiers carrying *Lamblia* will make it impossible to state whether any future case is of native origin.

6. **A Case of Intrauterine Scarlet Fever.**—R. M. Liddell and C. E. Tangye report the following case as being unusual. Four of five children in a family, during a recent outbreak of scarlet fever in a small village, were removed to an isolation hospital on May 26. On June 6 the mother was delivered of a child which was found to be desquammating freely over the whole of the trunk and limbs, and the urine showed distinct traces of albumin. These features were so typical that it was decided to report the case as one of scarlet fever. The mother is positive that she had a severe attack of scarlet fever when 10 years of age. It would seem that the fetus was infected some time prior to May 26, and that the mother escaped infection through the protection of her previous attack. Presuming the fetus to have been infected from the children in the family, the period elapsing between the infection and the peeling stage must have been only a fortnight. The writers quote authorities who raise the question of the possibility of such an occurrence, but hold that while the rarity of the condition may be somewhat against the diagnosis, the clinical facts were so striking as to make them worthy of note.

Le Bulletin Médical.

September 21, 1916.

Decalcification Consecutive to the Traumatisms of War.—"J. J." states that while the osteotrophy of accidents to workingmen has been well studied by radiography, the forms due to projectile traumatisms have hardly fixed the attention. However, Surgeon-General Delorme has just caused to be published a memoire on this subject. The characteristics of this calcification are connected solely with the radiograph examination. This characteristic is the great translucency of the bones. The articular lines are well preserved, which evidence is valuable for the exclusion of ostertis. The short bones are much more prone to suffer than the long ones. These osteotrophies are of great frequency, but at present but little is known of the date of supervention, duration, pathogeny, and respective influence of defective nutrition and innervation. Between ostertis and ordinary osteoporosis or decalcification there are these differences: The latter is uniform, while in ostertis the changes are irregular. The suppression of the articular line in ostertis has already been mentioned. In osteoporosis the trabecular architecture of the bone is preserved, while in ostertis the reverse is true. For the treatment of decalcification as a result of firearms, there are as yet no strict indications. Electricity used with the aim of stimulating nervous influence is without benefit. Antisyphilitic remedies given to syphilitic subjects are also without effect. Recalcification is the theoretic remedy, and lime salts are being given inwardly. Good results are not yet forthcoming.

On the Control of Medical Thermometers.—According to "J," who is giving a synopsis of a meeting of the Academy of Medicine, the accuracy of the clinical thermometer leaves much to be desired. The French formerly obtained all their supplies from Germany, because in the latter country they can be made at a price which defies all competition (they sold at from 0.4 to 0.66 francs a piece). At present the old German supply has been superseded by goods from Switzerland, England, and the United States, sold at a much higher figure. A committee of the Academy, having been appointed to investigate this subject, reports that the new thermometers often lack a guarantee of exactitude, which makes possible grave errors of diagnosis. There should be some authorization for official control, so that the instruments cannot be used unless tested carefully beforehand. This could be effected completely by encouraging a national industry, made possible only by a special tax which should be lowered to such a degree that the present selling price should be but slightly advanced. The control should be carried out through activities of the Conservatoire des Arts et Metiers.

La Presse Médicale.

September 14, 1916.

Wide Primary Subperiosteal "Esquillectomie" in the Treatment of Fractures by Artillery Projectiles.—The word esquillectomie, which has come into extensive use during the present war, has no exact equivalent in English. In the older treatment of splintered fractures every effort was made to save fragments of bone and allow them to heal in, even often to nail or wire them in. While the word "esquille" is equivalent in English to splinter, the latter suggests a small, pointed fragment, while in "esquille" in the present sense there is no limit as to size. Since in military injuries detached fragments of bone may soon become necrotic, the operation of removing them might be regarded as akin to sequestrotomy. Leriche writes at length on the evil influence exerted by small splinters of bone revealed only by radiography. These are very irritating and may arouse a latent infection. To remove them is therefore a step in prophylaxis. The author reports fourteen fractures of the diaphyses of the bones of the forearm and leg. The radiograph revealed the presence of detached fragments which would surely have become necrotic. In a number of cases these pieces of bone were removed as foreign bodies, covered with dirt or shreds of clothing. In the main, however, under local anesthesia (ethyl chloride) suppuration had begun and the author, with much pains, removed all detached fragments. The suppuration could have been prevented had the fragments been removed at the first dressing. The removal of large fragments, as in the tibia and

femur, was effected by the subperiosteal route. Instead of becoming infected the broken bones under radiographic control could be seen to unite tolerably well under callus formation. Conservative surgeons fear various kinds of mischief, and especially pseudarthrosis, but the author's results show that this fear is unfounded. The same is true of the dangers of ostertis. The residual periosteum does much to enhance union. Leriche would establish a rule to use this operation in all fractures of artillery origin, in the interest of normal, aseptic healing.

Dysentery and Dysenteriform Diarrhea. — Giroux states that of 150 cases of diarrhea treated by him, 40 were of the familiar type, 117 were examples of so-called dysenteriform diarrhea, while 3 were choleriform. But 5 cases ended fatally. In the dysenteriform column, convalescence was always announced by a urinary crisis—a profuse diuresis after a period of scanty prine. An associated phenomenon was bradycardia. In 3 patients the dysenteriform type was associated with paratyphoid. Both kinds of bacilli were present (dysentery, paratyphoid B.) In the other cases the *B. dysenteriæ* could not be detected. The first case ended fatally. In regard to treatment, serum is given only when the dysentery bacillus is present or the clinical syndrome perfect. But this serum often seems defective in the most typical cases of dysentery. Under such circumstances we can only give emetine, which, generally speaking, gives prompt and good results. In other words, the dysentery is essentially anieboid, with occasional coincidence of the bacillus of bacillary dysentery.

Journal de Médecine de Bordeaux.

September, 1916.

Iodine and Gas Asphyxiation.—Boudreau is a partisan of iodine in the treatment of many infections—fevers, infectious enterities, etc. He has been testing it with truly remarkable results on victims of gas asphyxiation He had long regarded the drug as the heroic remedy for pulmonary affections, including tuberculosis. Lesions from gases comprise bronchitis, congestion of the lungs and bronchopneumonia, in association with failure of the general health. Iodine exerts a salutary action on all these lesions, and the sequelæ which they furnish, and tends to prevent the evolution of tuberculosis. The author believes that iodine can to a certain extent conserve some of the living tissues which would otherwise soon be sacrificed to disease. The drug also possesses antitoxic powers which combat the toxic blood states induced by these gases. Thus it can prevent the secondary eye changes. The author would treat a case of gas poisoning just as he would a case of pulmonary tuberculosis; and such treatment should be both progressive and intensive. The tincture should be given in any fluid vehicle—milk, for example. It may even be placed in any drink which the patient uses—even beer. The initial dose is very small—a drop or two in each glass or cup of fluid taken. The dose on the second day should not exceed 2 drops, the next day 3, and so on. The number of doses should reach 5 to 8 daily. There is no maximum. Some of the author's consumptives have consumed as much as 600 drops of the tincture in 24 hours, and over 60 drops may be taken as a dose. This medication may be maintained for months. Hernoptysis is no contraindication. The main aim of the author appears to be to secure a general trial of iodine therapy in victims of gas poisoning, based on his personal experience. Results of others are not mentioned.

Cancer of the Vertebræ.—"J. R." gives an abstract of a valuable study on this subject by Montanaro of Argentina. Three cases are reported in great detail with superb illustrations. In all cases the growths were intrinsic. The first symptons were very painful radicular neuralgia. These were aggravated by heat or cold, were boring or lancinating, and were worse at night; often they were so severe as to prevent walking. Radiography revealed nothing precise. Study of lumbal punctates had indicated hyperalbuminosis and hyperleucocytosis. Other symptoms were those common to cord compression (paraplegia, atrophy, abolition of reflexes, troubles of urination).

Thymic Disturbance in the Adult.—George H. Hoxie relates the history of a number of cases in which the condition had been diagnosed as neurasthenia or myasthenia. This group of cases has in common enlargement of the thymus, shortness of breath and extreme weakness, but shows no gross pathological changes. Variability of the pulse and blood pressure, subnormal temperature, and atony of the gastrointestinal tract, in patients showing no evidence of organic disease, are additional symptoms pointing to the endocrine disfunction. The dulness is usually noticed when percussing the manubrium sterni. If the dull area extends out a half inch or more on either side of the manubrium, and if the manubrium is duller than the corpus, one should proceed with differential tests. Gentle percussion rather than the stronger type is necessary to bring out a body so closely adherent to the posterior surface of the bone. Under such ordinary percussion the dull area is that of a triangle with its base just below the interclavicular notch and its apex between the junctions with the sternum of the second and third ribs. The aortic dulness does not reach as high as the center of this area and does not lie as symmetrically under the sternum. An intrathoracic thyroid might give a similar dull area, but this could usually be found to extend above the interclavicular notch and move with the act of swallowing. Aneurysms of a size sufficient to cause substernal dulness would give also a thrill of pulsation. The fluoroscope should be used to verify all cases in which the percussion would indicate thymic enlargement. In making this examination, when one sees a mass in the sternum, one should keep in mind the questions: "Does it have a movement of its own? Does it have a definite form through which the bones are seen more indistinctly?" The treatment of the condition demands rest and forced feeding, with attention to the emunctories and the environment. The medical treatment calls first for the use of arsenic in heavy doses. It would seem as if the thyroid gland furnished the best material to permit the thymus to sink back into quiet. This the author has worked out by trying the various glandular extracts. He says one would suppose that the adrenal extracts were of particular value, but thus far this has not been clinically verified.—*New York Medical Journal.*

Acute Abdomen Following Trauma.—G. B. Kunkel summarizes his article as follows: Do not hold lightly any trauma of the abdomen, but watch carefully and treat expectantly. Do not wait for a patient to bleed to death. If a hollow organ is suspected to be perforated, operate at once. Operation delayed over eighteen hours in a case of perforation gives a very grave prognosis. Purgatives have no place in an acute abdomen. Let the severe pain, tenderness and rigidity be the red flags to place you on guard and guide you to a happy issue in the recovery of the case. Do not forget that a delay of twelve hours in perforation can place the balance against your patient. Do not mask symptoms by morphine. Diagnose speedily.—*International Journal of Surgery.*

Insurance Medicine.

Association of Life Insurance Medical Directors.—The twenty-seventh annual meeting of this Association will be held in New York on Wednesday and Thursday, October 25 and 26, 1916. The following papers will be presented: Address by the president, Dr. Franklin C. Wells, on "The Functions and Scope of the Medical Department"; "Conservation Work and Life Insurance," by Dr. Thomas H. Willard; "Life Expectancy Following Operation on the Gall-Bladder," by Dr. Charles H. Mayo; "The Need in Medical Selection of Standards by which to Measure Borderline Risks," by Arthur Hunter, Esq., and Dr. Oscar H. Rogers; "The Best Way to Obtain Better and More Careful Medical Selection from the Examiner in the Field," by Dr. William R. Ward; "The Best Way to Get an Examiner to Use the Sphygmomanometer," by Dr. P. E. Tiemann; "Urine Examinations," by Dr. David N. Blakely; "The Importance of Glycosuria in Life Insurance," by Dr. J. Allen Patton; "Selection of Women," by Dr. T. H. Rockwell; "The Heart Beat and Its Irregularities," by Dr. Laurence D. Chapin.

Relative Frequency with Which Obesity Is Found Associated with Different Diseases.—In a paper read before the Assurance Medical Society in London Dr. F. Parkes Webber discussed this question. Among the most recent statistical data bearing on the point are the following:

During the years 1913 and 1914 an Italian assurance company, Istituto Nazionale delle Assicurazioni, rejected 308 obese candidates. In 36.38 per cent. the obesity was apparently without complications; in 21.75 per cent. it was associated with glycosuria; in 10.38 per cent. it was associated with nephritis; in 7.18 per cent. it was associated with albuminuria; in 5.84 per cent. it was associated with heart trouble; in 5.19 per cent it was associated with arteriosclerosis; in the remaining cases there were various complications, such as syphilis, alcoholism, bronchial catarrh, etc. (I. Romanelli, *Il Policlinico,* August 8, 1915.) The following statistical table was obtained from the Life Assurance Data of the "Viktoria" office in Berlin: (Bruno Moses, "Die Fettleibigkeit in ihrer Beziehung sur Lebensdauer und Todesursache." Berlin, 1906, p. 23.)

Cause of Death.	In All Assured Persons, Per Cent.		In the Corpulent, Per Cent.
	During the Three Years 1900-1902.	During the Three Years 1903-1905.	
Acute diseases of the respiratory organs	11	12	11 1
Chronic diseases of the respiratory organs (pulmonary tuberculosis)	17	14	5.4
Diseases of the heart	13	14	18.9
Diseases of the kidneys	...	...	...
Apoplexy	9	9	13.8
Malignant tumors	Not given	8.3	9 8
Diseases of the liver	Not given	2.1	4 4
Diseases of the blood	0.8	1	1.5
Alcoholism	1.5	1	0 2
Surgical diseases (erysipelas)	5	1	3 9

The following table shows the percentage of deaths among 26,222 dying from all causes, classed as overweights and underweights (i. e. 20 per cent. variation from normal). It is from the experience of the Connecticut Mutual Life Insurance Company, 1846 to 1895, inclusive, quoted from Shepherd in Green's "Medical Examiner."

Cause of Death.	Underweight (Per Cent. of Deaths).	Overweight (Per Cent. of Deaths.)
Tuberculosis	22 0	1.9
Rheumatism and gout	1.1	2.2
Diabetes	0 0	3.5
Nervous diseases	14 0	23.0
Heart disease	6.0	15.5
All circulatory diseases	7.8	17.9
Pneumonia	12.0	6.5
All respiratory diseases	16 4	9.0
Digestive diseases	7 5	8.5
Kidney diseases	5 2	9.7

G. M. Low, in an article on "Extra Rating as a Statistical Problem," quoted by Greene, gives the following table showing the number of actual and expected deaths among obese persons:

Cause of Death.	Actual Deaths (Stout Persons).	Expected Deaths (Healthy Males).	Percentage of Actual to Expected.
Diseases of the urinary organs	6	3	200
Diseases of the digestive organs	14	8	175
Diseases of the circulatory organs	10	7	143
Diseases of the respiratory organs	12	9	133
Diseases of the brain and nervous system	16	14	114
Diseases of uncertain seat (tumor)	1	3	33
Zymotic diseases	8	10	80
Sudden and violent deaths	3	4	75
Tuberculous diseases	0	8	0
Causes not classified	4	2	200

The following table of causes of death in regard to fatness or leanness of the assured is from Arthur Hesse, "7066 Todesfälle der Basler Lebens-Versicherungs-Gesellschaft," Leipzig, 1899:

General Nutrition When Accepted for Life Assurance

Cause of Death.	Lean.		Medium.		Corpulent.	
	Total.	Per Cent.	Total.	Per Cent.	Total.	Per Cent.
Infectious diseases	48	15.64	179	58.31	80	26 05
Cancer	106	16 56	391	61.10	1.43	22.34
Tuberculosis	389	23.61	1,077	65.35	182	11.04
Pneumonia	82	17 71	291	62.85	90	19.44
Emphysema and bronchitis	57	17.33	201	61.09	71	21.58
Pleurisy	17	18.77	52	60.46	17	19.77
Diseases of the circulatory organs	69	11 79	322	55.05	194	33.16
Diseases of the digestive organs	66	14.05	246	57.61	121	28.34
Diseases of the nervous system	46	12.07	217	56.96	118	30.97
Apoplexy	43	8.81	249	51.03	196	40.16
Diseases of the kidneys	33	12.36	136	50.94	98	36.70
Articular rheumatism	13	11 93	61	55.96	35	32.11
Diabetes	6	9.09	24	36.36	36	54.55
Obesity	3	2.03	40	27.08	105	70.94
Alcoholism	9	7 09	57	44 88	61	48 03
Suicide	22	14 38	104	67.97	27	17.65
Senile debility	46	19.49	131	55.51	59	25 00
Miscellaneous and uncertain	43	11.20	186	48.44	83	21 61
Total	1,092	16 13	3,964	58.53	1,716	25 34

E. H. Kisch, writing on "Fettsucht," in "Eulenburg's Real-Encyclopädie der gesammten Heilkunde," Vienna, 1895, says that in 19 necropsies on corpulent persons who had died suddenly the causes of death were found to be acute edema of the lungs in 12 cases, cerebral hemorrhage in 6 cases, and rupture of the heart in 1 case. In autopsies on corpulent persons whose death was not sudden, Kisch found that in nearly two-thirds of the cases of fatty heart, cardiac hypertrophy and dilatation were likewise present; in many cases, sometimes in relatively young individuals, arteriosclerosis was associated with fatty heart. One-third of the subjects died from cerebral hemorrhage. In nearly all the cases there was some pathological change in the kidneys, varying from passive congestion to granular atrophy. In half the cases there was fatty liver.

Book Reviews.

Muscle Training in the Treatment of Infantile Paralysis. By Wilhelmine G. Wright, Boston Normal School of Gymnastics, 1905; Chirurg.-orthopäd. Klinik of Prof. Dr. A. Hoffa, Berlin, 1908; Assistant to Robert W. Lovett, M.D., Boston. Second edition. Price, 25 cents. Boston: Ernest Gregory. 1916.

This is a very practical and timely treatise on the reconstructive treatment of the paralysis following poliomyelitis. Dr. Lovett is one of the recognized authorities on the after treatment of this malady, and Miss Wright's methods have been developed in accordance with his teachings and are the result of her experience during many years of association with him in orthopedic work. The little book cannot fail to be helpful to every physician who is called upon to advise in the case of a victim of this crippling disease.

Surgical Nursing and Technique. A Book for Nurses, Dressers, House Surgeons, etc. By Charles P. Childe, B.A., F.R.C.S. Eng. Lieut-Col. Royal Army Medical Corps (Territorial), Senior Surgeon, Royal Portsmouth Hospital, Medical Officers in Charge of the Surgical Division, 5th Southern General Hospital, Portsmouth. Price, $2.00 net. New York: William Wood and Company, 1916.

In Surgical Nursing Mr. Childe has produced an extremely useful manual. The first edition was issued under the title of "Operative Nursing and Technique" and proved very popular. It deals wholly with operative nursing and is mainly intended for the large class of Sisters and nurses who find themselves saddled with the great and interesting responsibilities of modern operative nursing, either in hospitals or private homes or houses. The second edition has been brought thoroughly up to date and contains a chapter on nursing in military hospitals. The book may be strongly recommended to nurses as a practical and clear exposition of their surgical duties.

On Modern Methods of Treating Fractures. By Ernest W. Hey Groves, M.S., M.D., B.Sc. (Lond.), F.R.C.S. (Eng.); Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital; Late Hunterian Professor of the Royal College of Surgeons of England; Major R.A.M.C. in charge of the Surgical Division of the 21st General Hospital, British Expeditionary Force. Octavo of 286 pages with 136 illustrations. Price, $2.75 net. New York: William Wood and Company, 1916.

This is a book of much scientific interest. The handling of the subject is for the most part along general lines and about one-third of the text is concerned with the description of the author's experimental work on animals and the deductions, comments and conclusions based thereon. The author has aimed "to show that the various methods of treatment should all be brought into our service as occasion requires, instead of being regarded as independent, rival, or mutually destructive systems; and, secondly, to emphasize the necessity for mechanical accuracy and efficiency in dealing with what after all is largely a mechanical problem."

In the introductory chapter entitled: "The myths of yesterday and the problems of today," Groves suggests that in comparison with the development in other fields of surgery the treatment of fractures has lagged behind; and that the common practice of today is probably more like that of a thousand years ago in this department than in any other. He pays a tribute to Bardenheuer, Lucas-Championnière, and Lane, who have been pioneers in getting us away from what he calls the methods of medieval surgery in the case of broken bones. Among the myths is the idea that the average fracture is "set" in the sense that the fragments are placed in accurate apposition and alignment when we speak of "setting" the bone. The *x*-ray has shown that old ideas on this point needed to be revised. Other so-called "principles" in the classical treatment of fractures by immobilization come in for ridicule or caustic criticism.

After discussing the relation of the *x*-ray to the treatment of fractures, the relation between form and function, and other matters, he proceeds to the discussion of fracture treatment under present day conditions. The new methods are grouped under three main divisions and several sub-divisions. The main divisions are: I. Methods of Massage and Mobilization; II. Extension Methods; III. Operation Methods. These latter involve the exposure of the seat of fracture, the direct reduction of the deformity, and fixation by wire, plates, screws, pegs, or grafts. Each method is discussed in detail and one gets a good general idea of their uses and limitations, the one remarkable exception being that almost no space is devoted to the consideration of the value and technique of applying the bone graft, a method that, in this country at least, has been used extensively and bids fair to supersede many of the operative methods to whose consideration Groves devotes a considerable portion of his book. There are many suggestions of great value to the skilled surgeon and many of the devices which Groves has originated or adapted are worthy of general adoption in properly selected cases and should be beter known.

While, as we have intimated, this is a book that will appeal especially to the operating surgeon who is interested in the scientific aspects of the subject, there is much that will also appeal to the general practitioner; and none can fail to have a better appreciation of the problems of fracture treatment after reading it.

Gynecology. By William P. Graves, A.B., M.D., F.A.C.S., Professor of Gynecology at Harvard Medical School; Surgeon-in-chief to the Free Hospital for Women, Brookline; Consulting Physician to the Boston Lyin-in Hospital. Large octavo of 770 pages, with 303 half-tone and pen drawings by the author and 122 microscopic drawings by Margaret Concree and Ruth Huestis, with 66 of the illustrations in colors. Price, cloth, $7.00 net. Philadelphia and London: W. B. Saunders Company, 1916.

In writing the work the author had in view its use both as a text-book and as a work of reference. This is not always a happy combination because the needs of the undergraduate and the practitioner are generally so dissimilar; but because of the division of the work into three parts, each more or less independent of the others, the reader of one class who is looking up a subject is not obliged to read what is intended for the other. This will be better understood when we state that Part I, of 135 pages, deals with the physiology of the pelvic organs and the relationship of gynecology to the general organism; Part II, of 375 pages, "is designated primarily for the undergraduate student who is taking his initial course in gynecology," and includes a description of those diseases that are essentially gynecological; while Part III, of 225 pages, is devoted exclusively to the technique of gynecological surgery.

In each section the subject matter is taken up in logical fashion and the various subdivisions in the discussion of any particular subject are made at once apparent to the reader by the judicious employment of various sizes of heavy-faced type. As far as possible the author has omitted extended textual descriptions when the points in question could be as well or better shown by illustrations with appropriate legends. This applies especially to the microscopic appearances of normal and pathological tissues and to the section devoted to operative technique.

The Dream Problem, by Dr. A. E. Maeder, of Zurich. Authorized translation by Drs. Frank Mead Hallock and Smith Ely Jelliffe, of New York. Price, 80 cents net. New York: The Nervous and Mental Disease Publishing Co., 1916.

This little book presents another view-point of the dream problem. Freud looks upon the dream as the representation of an unfulfilled wish and lays stress upon the activities of the repressing mechanism which he calls the endo-psychic censor. Stekel sees bisexuality in every dream and also thinks that the thought of death appears somewhere in it. Adler sees in the dream an abstracting, simplifying endeavor to find a protective way for the ego-consciousness out of a situation which threatens a defeat. Dr. Maeder, however, sees in the dream a possible solution of the problem confronting the individual and therefore ascribes a constructive rôle to it. He attaches a greater importance to the manifest dream content than Freud does. The dream, he says, is perhaps the primitive work of art. It is prospective as well as retrospective and points the road for the patient to follow. It has a preparatory arranging function belonging to the work of adjustment. This preparing function is Maeder's contribution to the study of dreams and has been severely criticized, especially by the Vienna school. The translation reads very smoothly which is always a triumph in an English rendition of German psychoanalytic material. Like all the works in this monograph series, this book is published with paper covers which makes it necessary to rebind if it is to see much use.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 5, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

The Management of Poliomyelitis with a View to Minimizing the Ultimate Disability.—Dr. ROBERT W. LOVETT of Boston presented this paper. (See page 705.)

Dr. SIMON FLEXNER said that the subject of Dr. Lovett's most excellent paper was one that should properly be discussed not by a pathologist, but by an orthopedic surgeon, from the point of view presented, though it was a pleasure to him to be asked to open the discussion because he had followed with interest the work of Dr. Lovett in Boston and in Vermont in which he had carried into effect principles and methods of after-care of the paralyzed which appeared to be an improvement over older methods of treatment. Dr. Lovett had based his views on the pathology of the disease which was the logical way to approach the subject; and he had done the speaker the honor to employ in his description conceptions and explanations which the latter's studies had been responsible for. The basis of the modern conception of poliomyelitis was that it was an infectious disease in which the paralysis was merely an incident and an accident and by no means a necessary part. The percentage of cases in which paralysis occurred was not yet established, but it was probably much lower than had been previously believed. Had the pathology of the disease been worked out originally in artificially infected animals, this confusion would never have occurred. Nevertheless, Wickman had discovered clinical types of the affection in which paralysis never occurred. But experiments on animals and the employment of lumbar puncture both showed that, whether or not paralysis occurred, changes took place in the cerebrospinal membranes and fluid which indicated implication of the meninges in the pathological process. In many cases no invasion of the substance of the brain and spinal cord occurred. When invasion did take place, it was through the lymphatic structures about the blood-vessels which became infiltrated with cells—usually of lymphoid type. In a proportion of cases the process went on further than this; but it was common that when so much involvement had arisen, actual infiltrations occurred in the nervous tissues—the grey matter of the cord especially but also the white matter in far less degree and not only the anterior grey matter of the cord, but the posterior also and the intervertebral ganglia which were among the earliest structures to show lesions. The infiltrative process damaged the nervous tissues and thus interfered with function in two main ways: the cellular invasion of the sheath of the blood-vessels obstructed the lumen and reduced the flow of blood; the cellular and fluid exudate pressed on the nerve cells and fibers. In this way alone disturbance of function leading to paralysis of muscle groups might be produced. This class of pathological changes was subject to complete reversion. Once the infectious process was arrested, as it was by the developing immunity principles, resolution of the exudate occurred and function was restored. This change was noted clinically quite frequently in cases in which paralysis of members disappeared in a few days or weeks. But another severer lesion might occur. The virus of the disease might attack and severely injure or actually destroy nerve cells. When the cells of the anterior horn were thus injured and became neuritic, they were quickly invaded by phagocytes which brought about their disintegration. This process was not reversible; its effects were therefore permanent. Commonly the two classes of changes were united in one person, so that partial, but not complete recovery of function took place. The muscles presided over by the lost nerve cells were, of course, for the time being paralyzed. The theory on which Dr. Lovett was proceeding in this instance was to reeducate the nervous system in such a manner as to open new paths along which impulses might pass from the brain to the muscles. On account of the many connections between neurons, there would not seem to be anything anatomically impossible involved in the concept. The proof must lie in the results achieved by the educative methods which he described. In concluding, Dr. Flexner called attention to the fact that the pathological processes, being what they were, tended to reversion. Hence recovery was the outcome to be looked for and expected, its extent being determined by the degree of the reversionary process to which the paralysis was due. Hence any form of treatment not distinctly prejudicial would be followed inevitably by some improvement. This improvement tended to occur during the early weeks or months following the attack; the paralytic residue, after this process was exhausted, was that attributable to severer injury or destruction of nerve cells. The restoration of this further loss of function, when it was accomplished, might be the result of the reeducative methods which had been described.

Dr. EDWARD C. ROSENOW said that Drs. E. B. Towns, G. W. Wheeler, and himself had studied the present epidemic, both in Rochester, Minn., and here in New York at the New York Hospital, from the standpoint of the elective localization of bacteria from the tonsils and throat and from lesions in the central nervous system. The technique used was similar to that employed by him in studies on the elective localization of bacteria in various other diseases, including diseases of the nervous system. They had found in the tonsils, especially in patients over three or four years of age, a surprisingly large amount of infective material, though these patients showed none of the subjective or objective signs of tonsillitis. In all of seventeen cases in which the tonsils were removed after death and carefully sectioned there were found from one to fifteen abscesses, usually at the base along the capsule, but not communicating with the surface. They contained a peculiar opalescent material containing large and small mononuclear cells, polymorphonuclear leucocytes, and often large numbers of diplococci of the usual size; occasionally there were some small forms, fusiform bacilli and micrococci. Adenoids removed from four patients at autopsy showed similar abscesses. The ages of these patients ranged from seven months to twenty-four years. Owing to the presence of large numbers, and often in almost pure form, of a streptococcus which produced paralysis in animals, rabbits, guinea-pigs, dogs, cats, and monkeys, and to the low virulence of the bacterial flora in these patients, they felt with Dr. Roper that tonsillectomy was justified in those patients in whom there was persistence of fever, irritability, lack of appetite, and little or no improvement in the paralysis, or those in whom the paralysis was slowly extending. This had been done under light anesthesia in eleven cases, and in no instance was there any sign of acute tonsillitis. In most of them a large amount of pus and cryptic material was found during the tonsillectomy. Numerous cross-sections of the extirpated tonsils revealed pockets similar to those found in the tonsils in the fatal cases, but which were smaller and fewer in number. None of the patients were made worse by the operation; indeed, most of them showed improvement soon after the tonsillectomy, and in several instances the results were strikingly favorable. In the light of these facts it was possible that unrecognized foci in the lymphoid tissue of the throat were an important factor in determining the severity of the initial paralysis and especially in preventing the usual early improvement. The localized foci probably afforded the entrance way of the organisms having an elective affinity for the central nervous system. The number of cases in which tonsillectomy was performed were, of course, too few to warrant the drawing of positive conclusions, but they were highly suggestive. The experiment had proved, however, the presence in the throat, in the tonsils, and in the central nervous system, in epidemic poliomyelitis of a peculiar streptococcus which produced in animals a flaccid paralysis similar to that observed in patients afflicted with poliomyelitis.

Dr. FREDERICK TILNEY said they were greatly indebted to Dr. Lovett for showing them what could be done in the after-care of this disease. There were certain details which interested him particularly. It was well known that there was a focus of intensity of inflammatory activity in the central nervous system, and that this determined the degree of paralysis. They had no means at the present time of combating the inflammatory process in this focus in the acute stage of the disease. It might be that serum did some good, and experience seemed to show that it was of some benefit in the preparalytic stage and in the ascending, bulbar, and meningitic types of the disease. The first thing was to determine where the focus of inflammation had been in order that the muscles most affected might receive attention. With electric reactions this might be shown best, and the electric reaction should be taken at the outset in every case since it was not only important in di-

agnosis and prognosis but equally so in treatment. Some said that active treatment should begin when acute symptoms disappeared; others that it should begin six or eight weeks after the onset. The disappearance of tenderness was the best guide as to the time when it was advisable to institute treatment. This might occur by the end of the fourth week, but if tenderness still persisted treatment should be deferred. The usual forms of treatment (immediate after-care, not surgical treatment) were exercise, electricity, massage, and support. Electricity seemed to have fallen into disrepute because some had obtained poor results, but it should be remembered that in many instances electricity had been applied unscientifically; sometimes but one battery had been used at home by the patient. The faradic current should not be used, for it was absolutely of no use in the case of profoundly paralyzed muscles and it partially tetanized paralyzed muscles, which was exceedingly fatiguing. The most beneficial type of current was the sinusoidal, and this could be used to advantage provided certain details were observed. It should not be applied unless the limb was first massaged and heated by means either of a hot pack or the calorescent lamp; otherwise the contraction of the muscles caused by the electricity was painful. At the end of three or four weeks one could begin to give warm baths to which a considerable amount of salt had been added. While the patient was in the bath voluntary movements might be attempted which would be assisted by the buoyancy of the salt water. Efforts directed toward the reeducation of the muscles might be begun as soon as the patient could get up and about; this was usually about the fifth week. There should be individualization in the muscle reeducation and the treatment should be carried out at stated intervals every day for a long time. Braces, splints, plaster casts, etc., carefully and properly applied, were indicated when a limb was in malposition or when a paralyzed muscle was unduly stretched, and this treatment should in every instance be combined with the use of electricity, massage, etc. These various means constituted the type of treatment that every case was entitled to, and without such a combination of treatment and its persistent application for a long period of time no child could be said to have had a full opportunity for completely normal restoration.

Dr. Charlton Wallace said the medical profession owed much to Dr. Flexner and his associates for what had been taught them regarding poliomyelitis. All who had children had been afflicted during the past few months with hysteria because of this disease which they did not know how to control. He had nothing to say about the pathology and histology of the disease, but would confine his remarks to the treatment. Each case of poliomyelitis presented its own problem and was an individual study. A prerequisite for the proper care of these cases was a knowledge of muscular anatomy and mechanism. It was well to beware of those who were not properly trained in anatomy and the mechanism of the muscles. Treatment was to be considered when the acute stage stopped, but there was no telling how long the acute stage might last; it lasted as long as the acute inflammatory process in the spinal canal continued, and this was as long as there existed any tenderness in the joints. There should be no treatment during the acute stage, unless to prevent toe drop, except the serum treatment. After the acute stage orthopedic treatment should be instituted. Dr. Wallace said that some cases had come under his observation in which the tenderness persisted for three or four months, and in these cases the patient should be kept in bed. A bed suitable for a patient with paralysis of the shoulders and back muscles should have no springs, but should consist of a mattress on a wooden platform, so that there should be no sagging, the aim being to keep the body as well as the extremities in a horizontal plane. It was important that orthopedic treatment be supplemented by general hygienic care, and this was the duty of the family physician. If anything was to be said about braces it would be to disagree with what had been said, for in his opinion no patient having had poliomyelitis should be allowed to go about without braces. The brace was to prevent deformity and to avoid the stretching of weak muscles and so that the pull of strong muscles would not produce contractures. Walking should be encouraged as soon as the patient could stand and get about, as it trained the muscles to functionate again. Dr. Wallace said they owed something to Dr. Teschner for an article published in the *Annals of Surgery* of November, 1899, in which he advised muscle training, but warned that it would not cure a patient, but was simply an aid toward restoration of power. In some cases coming under his experience in which muscle training had been employed and parents had been led to believe it would do all the work, the deformity which resulted had been the greatest he had ever seen; there had been the most severe lateral curvature after this treatment. Therefore if one used muscle training it must be done with the greatest care and caution and support should be used where it was needed. One should take advantage of every aid that could be used in treating these patients without permitting oneself to be misled in regard to anything. Operative treatment should not be undertaken until four or five years had passed except to correct contractures and deformities. Where there was a dangling foot it might perhaps be operated on in from two to two and one-half years after the onset of the disease. The removal of the astralagus and the displacement backward of the foot, combined with the transplantation of active tendons, was the procedure used in this condition. Several cases coming under his observation had been helped by comparatively early operation; they were less troubled by cold and frostbite in the winter. Frostbite which had occurred before the operation did not recur the winter following the operation. In patients who seemed to have no calf muscle at all he had seen the calf muscle develop under treatment. With proper braces, proper care, and persistent treatment one might get improvement if one was patient and could control the parents and persuade them to wait and watch.

Dr. Godfrey R. Pisek said he begged to disagree with Dr. Lovett in his statement that he was presenting nothing new this evening. We must acknowledge that his scientific method of muscle testing would add valuable facts to our conceptions of poliomyelitis and place the treatment on a more rational basis. Dr. Lovett brought a glad note of optimism—an optimism based on results obtained and recorded. As one of the jury listening to his statistics Dr. Pisek said he would vote that Dr. Lovett had proved his case. Dr. Wallace had discussed this paper from the orthopedic standpoint; he wished to take this opportunity to say a few words on the duty of the pediatrist. The pediatrist was mainly concerned with the acute and convalescent stages, and it would seem that upon him devolved the task of sifting out the large mass of data gathered during this epidemic, particularly from the clinical standpoint; establishing, if possible, a symptomatology for the acute stage. Seventy per cent. of the cases were easy to diagnose; the other 30 per cent. were not so readily diagnosticated, while the so-called abortive or nonparalytic types were baffling in the extreme. Another duty that was before them was the analysis of the great number of cases observed in the city, so that they might have a rational basis for their treatment. The laboratories were at work and some were offering new etiological factors that certainly opened up new avenues of thought. The serum treatment, except in the very early hours of the disease, had lost the support of those who used it with great hope and who had the largest opportunity to watch its effects. Dr. Roper reported for the New York Hospital Annex that there were no drugs whatever used, nursing care only being employed (except in one case of serum treatment), and yet in this hospital the mortality was lower than that reported for the city. The specific treatment must wait upon the pathologists and epidemiologists, but meanwhile the management must be worked out in relation to the pathological processes of repair and absorption which took place even after the infection had occurred. Emphasis should be placed upon the counsel of the essayist—precision, efficiency, and persistence in the treatment. The public, owing to the courageous stand of the Health Commissioner, had been awakened to their responsibilities. The orthopedic institutions of the city would not have room efficiently to care for the large number of cases discharged from the hospitals. The ordinary dispensary was not fitted or qualified to do so. There was need for immediate action on the part of the Association of Outdoor Clinics to the end that a uniform standard of equipment might be established, that follow-up work be enforced so that the patient might be constantly encouraged, and the necessarily long course of treatment, as Dr. Lovett had so admirably shown, might be persisted in, restoring to usefulness many who would otherwise remain crippled for life.

Dr. Foster Kennedy said that there was nothing that had not been said better than he could say it. Dr. Lovett spoke of the attitude of the neurologist and of balancing the advantages of the brace and electricity. There could never be an even balance, because electricity at its worst was not much more harmful than an

incantation while braces could be destructive. Neurologists for years had striven against the splinting of palsied legs. If a rigid apparatus was placed on a muscle that already had a damaged innervation it made that muscle more atrophic and recovery more difficult. Passive movements and massage constituted proper treatment, but when given only two or three times a week they were useless. It was only reasonable to give them for five or ten minutes five or six times a day. If the mothers were taught in the dispensaries how to give this treatment better results would be obtained among the children of the poor than among the children of the rich who received treatment at less frequent intervals. Dr. Kennedy said he spoke only to emphasize the convictions of most neurologists as to the best means of getting results in these cases and to urge the necessity of continued massage and passive movements for a long period of time and many times a day. If this was carried out there would be less deformity and fewer braces, and still fewer operative procedures would be required.

Dr. Abraham Jacobi said that he had seen this disease occasionally for the past sixty years and what he had heard about it to-night had not been at all uniform. He had not seen any cases during the epidemic this summer, but had seen a number of cases in the epidemic of 1907. He thought the disease as it appeared in sporadic cases was about the same years ago as at the present time. The cases usually had the following description: A baby was put to bed apparenty well and was taken up in the morning paralyzed, with from two to four sets of anterior spinal nerves involved. The course of the disease, as a rule, was as follows: The child was badly paralyzed at first; it was better in five or six days. The improvement during these first days was rapid, then less rapid for five or six weeks, and that was the end of the improvement. One case coming under his observation was an exception to this; in this case the child was treated by the galvanic current, some 600 or 800 applications having been made over a period of years. This child finally got well. Dr. Jacobi said that if he had anything to say about the treatment of this disease it was that one should not undertake any form of treatment unless it could be extended over a number of years.

Dr. Herman C. Frauenthal said that in the application of electricity, the massage oil or talcum must be removed before the electricity was applied. To be successful with electricity the galvanic current must be used. The faradic current was not definitely standardized and the sinusoidal was not to be depended upon. The galvanic current always gave contraction in an increasing or decreasing amount and it was the only current that could move muscles that were partially paralyzed. All currents had a value in the hands of the man who understood their effects. Muscle training could not be applied until the child was about three years of age. A good way to reeducate muscles was to have the child make a movement with the normal limb and then to endeavor to imitate it with the affected limb.

Dr. Lovett, in closing the discussion, said he had been much interested in the free discussion and in the different opinions expressed. He felt, however, that at the present time the situation was such that it was better to emphasize the matters upon which they could agree than those upon which they differed.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held in Washington, D. C., May 11 and 12, 1916.

(*Concluded from page 657.*)

Immunity Results Obtained from the Use of Diphtheria Toxin-Antitoxin Mixtures and the Use of the Schick Test.—Drs. William H. Park and A. Zingher of New York City presented this paper, based upon a series of over one thousand cases, that had been actively immunized with diphtheria toxin-antitoxin. These susceptible individuals were selected by means of the Schick test out of a total of about 10,000 children and adults in 10 different institutions. The mixtures of toxin-antitoxin that were used for immunization were either neutral (66-70 per cent. L + to each unit of antitoxin) or slightly toxic (80-90 per cent. L + to each unit of antitoxin) to the guinea-pig. The dose was varied from 0.5 c.c.-1.0 c.c., and the number of injections from one to three. The injections were made subcutaneously at intervals of 7 days. The local reactions at the site of injection were generally mild; in the older children and adults, the redness and swelling were more marked. General symptoms, like malaise, and temperature of 100°-102° F. were noted in 10 to 20 per cent. of the cases; in a few the temperature reached 104° F. The symptoms lasted 24 to 48 hours, and then rapidly subsided. Both local and general symptoms were especially evident in those who showed a susceptibility to the protein by giving a combined pseudo and true Schick reaction. No harmful after effects were noted in several thousand injections. The retests with the Schick reaction showed that only 30-40 per cent. became immune 3 weeks after the first injection, about 50 per cent. at 4 weeks, 70-80 per cent. at 6 weeks, and 90-95 per cent. at 8 to 12 weeks. The best results were obtained with the full immunization, consisting of 3 injections of 1.0 c.c. each, given at weekly intervals. The duration of the active immunity was studied in a group of children that were followed up for over 1½ years; these cases showed that the active immunity persisted for at least that length of time. It is possible, that the immunity induced by the injections of toxin-antitoxin started a continued cellular production of antitoxin, which would have otherwise appeared much later in life. From their results Park and Zingher concluded that it was advisable to immunize children soon after the first year of life, so as to afford them a protection against diphtheria at a time when the disease was most dangerous. In addition such young children, by not having any hypersensitiveness to the bacillus protein, showed very mild local and constitutional symptoms after the injections. An immune child population could thus be developed with the result that fresh clinical cases would be prevented and the bacillus carrier would probably soon disappear as a hygienic factor in our communities. Interesting and parallel results were noted in guinea-pigs and horses. Guinea-pigs were fairly resistent to active immunization with diphtheria toxin-antitoxin, and in that respect they showed an almost complete parallelism to the positive Schick cases among human beings. After injections of toxin-antitoxin, an antitoxic immunity developed slowly from the 6th to 8th week. Horses, on the other hand, as a rule corresponded in their behavior toward small doses of toxin-antitoxin to human beings, who were naturally immune. They both gave a ready response, even after a single injection of toxin-antitoxin, and showed a distinct increase in the antitoxin content toward the end of the first week. Occasionally, a horse was found that had no antitoxin in the control bleeding; such animals responded slowly to small doses of toxin-antitoxin. It was probable that the tissue cells of the naturally immune human beings and the majority of horses had acquired the property of giving a quick and easy response to the stimulation of diphtheria toxin. The use of the Schick test in the selection of susceptible children for immunization and in controlling the results of the treatment was justified by the great clinical accuracy which the test had shown during a period of several years in the separation of the susceptible from the immune individuals. The test should be carried out properly with a fresh toxin solution, and the results read daily, for a period of 72-96 hours. The pseudo-reactions should be controlled with heated toxin, or recognized by their rapid disappearance after 72 hours. It was only those individuals who gave the more marked local reactions after the injections of toxin-antitoxin. In conclusion Park and Zingher stated that the Research Laboratory of the New York City Department of Health would supply those who were connected with institutions, and interested in taking up the work, both the toxin for the Schick test and the toxin-antitoxin for immunization.

Anaphylactic Food Reactions in Dermatology with Special Reference to Eczema.—Dr. Albert Strickler of Philadelphia spoke of the relation of diet to various diseases of the skin. Fourteen food products were tried out. The method of injection employed was the endermic one, and the dose used was one-tenth of a c.c. In all, four diseases were studied—eczema, urticaria, acne and psoriasis. In conclusion, he said the anaphylactic food tests were of value in the etiologic diagnosis and in the treatment of various diseases of the skin. These reactions found their greatest value in eczema. In chronic urticaria, acne and psoriasis the tests were disappointing. As yet our experience was too limited to draw any definite conclusions.

Comparative Studies of the Wassermann and Hecht-Weinberg Reactions in Syphilis, with Special Reference to Cholesterinized Antigens.—Dr. JOHN A. KOLMER of Philadelphia stated that the Hecht-Weinberg test utilized the complement and natural anti-sheep hemolysin of the human serum. The primary object of this study was to determine if this test was more delicate than the Wassermann reaction conducted with cholesterinized extracts. The Hecht-Weinberg tests were conducted after the modification of Gradwohl, by which the hemolytic activity, and accordingly the proper dose of sheep cells to be used for each serum, was determined according to the amount of a 5 per cent. emulsion of sheep cells hemolyzed by a 0.1 c.c. of serum. The same three extracts were used in the Hecht-Weinberg and Wassermann tests, namely, an alcoholic extract of human heart reinforced with 0.4 per cent. cholesterin; an alcoholic extract of syphilitic liver, and an extract of acetone insoluble lipoids of beef heart. All extracts were titrated for the antilytic and antigenic units in both systems, respectively. With sera collected twenty-four to forty-eight hours previously, 93 per cent. were found to contain sufficient complement and anti-sheep hemolysin to permit the conduct of the Hecht-Weinberg test. In 82 per cent. of the sera the results varied and in this manner: in 15 per cent. the Wassermann was negative and the Hecht-Weinberg test positive. Of these reactions, the positive Hecht-Weinberg tests were largely correct and occurred mostly with the sera of syhilitic persons under vigorous treatment; in 3 per cent. the Wassermann was positive and the Hecht-Weinberg was negative, and all of these occurred with the sera of persons in the latent and tertiary stages of syphilis. With the sera of persons known not to be syphilitic, the Hecht-Weinberg test showed about 10 per cent. falsely positive reactions; most of these reactions occurred with the alcholic extract of syphilitic liver, and fewest with the extract of acetone insoluble lipoids. All of these sera yielded negative Wassermann reactions with all antigens. The Hecht-Weinberg test was found unreliable in the diagnosis of syphilis on account of the tendency to yield proteotropic reactions; it was more delicate, however, than the Wassermann test, and had its greatest value in a negative reaction as a control on treatment with the sera of known syphilitics. In conducting the Hecht-Weinberg test, alcoholic extracts of syphilitic liver were found least, and extracts of acetone insoluble lipoids best suited for this technique.

Studies in the Epidemiology of Lobar Pneumonia.—DR. A. R. DOCHEZ of New York presented this communication. He said studies had been made of pneumococci isolated from individuals suffering from lobar pneumonia and had shown that the majority of these organisms fell into definite biological groups. In view of these constant differential characters of the pneumonococcus, it had been deemed advisable to study the pneumococci occuring in normal mouths. It had been commonly assumed that infection in pneumonia was autogenic, and occurred from invasion of the lungs by pneumococci habitually carried in the mouth. If this was so one would find the same types in the normal mouths that occurred in disease. Examination of a series of normal individuals showed this not to be the case. The two types of pneumococci responsible for the majority of severe cases of lobar pneumonia were not found in the normal healthy mouth, except in such instances as where the individual harboring of the organism had been in intimate association with a case of lobar pneumonia. When such a condition existed, the organism found in the normal mouth invariably corresponded in type to that found in the lung of the diseased individual. These studies made it probable that the majority of cases of pneumonia were dependent either on direct or indirect contact with a previous case.

CAPTAIN EDWARD B. VEDDER of Washington, D. C., said they had thought for a number of years that they knew all about pneumonia. They had learned a long time ago that perhaps a large proportion of normal individuals carried the pneumococcus in the sputum. Of course, it was plain that if they suddenly became chilled and their resistance was greatly lowered that they would develop pneumonia. This was a very comfortable theory. This was nobody's fault and they did not have to do anything about it except to die when their turn came without making too much fuss. Now, Doctor Dochez and his associates came along and told them that this was like other things they had learned; it was all wrong. Now, if Doctor Dochez was right, and the speaker was inclined to think that he was, the question was "What were they going to do about it?" Treatment with the anti-pneumococcic serum seemed to be a little discouraging in view of the fact that it would be a long time before the practicing physician would recognize the different types of pneumococci as he ordinarily met them. This was a difficulty that could be obviated by co-operation with the laboratories. But this entailed delay. In any case, prevention was much more important than cure, and it was right here that Doctor Dochez's paper opened up a most hopeful vista. It meant that every case of pneumonia might be traced directly to a previous case, either directly or indirectly. It meant that from a sanitary point of view pneumonia must be treated just like any other infectious disease in which the infecting agent was transmitted by the buccal secretions of those affected, and that the present widespread prevalence of pneumonia was due to the present policy of *laissez faire*. When the various boards of health finally came to life, as they probably would in from one to twenty years, they might expect the following measures: (1) Notification of all cases of pneumonia. (2) Prompt visitation by a health officer, collection of specimens, and laboratory diagnosis of the type of organism present, in the patient and in the contacts. (3) Isolation of the patient and of any contacts who harbored the type of pneumococcus found in the patient. (4) A negative culture requirement before the patient or carriers were permitted to mingle with the community.

The Localization of a Streptococcus in Animals from a Case of Recurring Neuritis and Myositis.—Dr. EDWARD C. ROSENOW of Rochester, Minn., presented this contribution which he summarized as follows: A streptococcus having peculiar properties was isolated from the dead pulp of the left upper first molar in the region where the attacks of pain usually began. The streptococcus was also demonstrated in the sections isolated from the infiltrated deep fascia and muscles of the left side of the neck. A similar streptococcus was isolated from the pharynx and stool. This streptococcus was proved to have elective affinity for the pulp of teeth, dental nerves and muscles in animals. It was repeatedly isolated from and demonstrated in the experimental lesions in animals whose blood was sterile; the lesions were again produced on injection and the streptococcus again isolated. Many animals appeared to be in pain, and one rabbit had marked swelling and tenderness over the left upper jaw. This affinity was proved absent in the diphtheroid and *B. fusiformis* also isolated from the pulp of the tooth, and in the streptococcus broth culture filtrate. Streptococci from other sources rarely caused lesions in the pulp of teeth and dental nerves. The phagocytic power of the patient's blood following the attack over the strain from the tooth was twice that of comparable normal blood. These results would appear to warrant drawing the conclusion that the attacks of pain in the face in this patient were due to a streptococcus infection of the sheaths of the dental nerves, and that the pain, swelling, tenderness and spasm of the mucles of the neck were due to myositis and fibrositis—the result of infection by this streptococcus. The demonstration of living streptococci in the pulp of the tooth and in the fascia of the muscle during quiescent intervals was significant, and might explain the recurrence of the attacks. The cavity in the tooth containing the dead pulp originally infected from the mouth, judging by the character of the filling and the bacterial flora, was quite unable to heal for mechanical reasons. This appeared to afford a culture medium for the growth of the streptococcus. From stimulation of the defensive mechanism in the patient during the attacks, active growth appeared to be held in check and the symptoms disappeared in consequence, only to reappear later from recurrence of active growth and localization of the streptococci when immunity was low. The improvement in the condition of the patient since the extraction of the tooth appeared to be due to the removal of this focus and to prolonged artificial stimulation of the defensive mechanism by means of the autogenous vaccines, which it was hoped would lead to the destruction of all the streptococci in the muscle and dental nerves, and result in the ultimate recovery of the patient. However, the isolation of the streptococci from so many places would probably make recovery difficult.

DR. GEORGE W. WHEELER of New York stated that streptococci were usually classified according to their

effects in bloodagar plates, as hemolytic or non-hemolytic. The non-hemolytic varieties had been further classified according to their fermentation reactions with different sugars, but wide variations were found by these methods, due to the variations in the organisms themselves and to chemical changes in the sugars during the process of sterilizing the media. None of these differential methods gave any clue as to what the streptococci would do when they were in the animal body. Doctor Rosenow's work began where these methods ended. His original idea was that organisms growing in the human body had certain delicate, transient, biological activities which were soon lost when the bacteria were grown on artificial media. In order to demonstrate these activities, the organism must be transferred from the human organism to animals, the original culture from the patient being used for inoculation, and the lesions in these animals studied. Animal inoculation with recently isolated brains, grown under certain definite conditions, showed that the lesions produced in the animals were very often similar to those in the patient from whom the organisms were obtained. Whether this was merely a coincidence or a specific affinity which the organisms had for certain tissues could only be determined when a great deal of experimental evidence of this kind had been presented and carefully examined. Control animals were necessary to rule out the possibility of the lesions being spontaneous. In work which he had done according to the methods described by Doctor Rosenow, with streptococci from nine cases of arthritis and endocarditis, lesions were found in the joints of animals in 75 per cent. of the cases; in muscles in 63 per cent.; in the heart in 55 per cent., while in other organs lesions were relatively infrequent; the appendix, 6 per cent.; the stomach, 11 per cent.; the brain and cord, 6 per cent.

Dr. E. C. Rosenow of Rochester, Minn., in closing the discussion, said that he preferred using the terms "green producing" and "hemolyzing streptococci," instead of streptococcus viridams and hemolytic streptococcus, because there appeared to be numerous variants of each strain, particularly of the former, and because one might be transmuted into the other. He expressed his appreciation of the work done at the Rockefeller Institute on the classification of the pneumococci and the observations made on them. In his hands the pneumococci showed, as in those of Doctor Cole and Doctor Dochez, fixed characters when grown in the usual way, but when the pneumococci were placed under special environment they lost their specific glutinating reactions and took on new features, and they might be converted even into hemolyzing streptococci. The demonstration of living streptococci in the muscles during the quiescent period was of importance and in accord with similar findings in ulcer of the stomach, chronic rheumatism, cholesystitis, etc., because it showed that not too much should be expected from the removal of the primary focus in these diseases which were characterized by exacerbations and quiescent intervals, and served to explain these exacerbations and remissions.

A Note Concerning the Specificity of Pneumococcus Types. — Drs. A. P. Hitchens, E. K. Tingley, and George Hansen of Glenolden, Pa., reported this case. They stated that the horse in question had been under treatment for several months with a pneumococcus corresponding in serological reactions with Neufeld type 1. The last injection was given about one month before death, and the bleeding subsequent to this showed that the potency of the serum of this horse was such that 1,100,000 c.c. of the serum would protect a mouse against a fatal dose of pneumococci of the homologous type. Blood culture three days before the death of the horse showed the presence of a pneumococcus not corresponding in type with that with which the animal had been injected. The pneumococcus recovered was still under examination. It did not correspond with type and was not the mucosus. It did, however, bear strong resemblance to some strains of pneumococci obtained from equine infections. Autopsy of the animal showed pulmonary consolidation and inflammation of the mucous membranes lining the respiratory passages.

Studies in Typhoid Fever.—Dr. A. L. Garbat of New York presented this contribution. He first considered the complement fixation test after prophylactic immunization and compared it with the agglutination test. As a result of these investigations, he makes the following summary: In contrast to the strong agglutination test a positive complement fixation test after prophylactic typhoid immunization was not a regular occurrence, as it was during or after typhoid fever. This point might be an aid in deciding for or against the diagnosis of typhoid fever in an inoculated individual still having a positive Widal and ill with a suspicious typhoid and negative blood culture. A positive complement fixation test was obtained most often after three injections with a polyvalent vaccine; two injections with this same vaccine or three injections with the single strain (Rawling) gave hardly any complement fixation. He presented a study of duodenal cultures in typhoid fever. He stated that of every 10,000 apparently perfectly healthy residents 2.3 per cent. were typhoid carriers and that 55 per cent. of all typhoid cases were due to carriers, either directly or indirectly. Of every 100 typhoid cases three to six became carriers. This made it evident that the ideal prophylaxis in typhoid fever was the detection of the typhoid carrier. A questionnaire sent to various hospitals for the purpose of finding out what and how many institutions examined the urine and stools of their typhoid patients before discharging them showed that of twenty-four institutions nine examined the urine and stools before discharging patients; eleven institutions disregarded such examinations entirely. There were many difficulties which they all had with the stool examinations. For this reason the writer had devised a method of collecting bile from the duodenum by means of the Einhorn duodenal tube. He had found that this was a simpler and more reliable method for the detection of typhoid bacilli than stool examinations.

Doctor Garbat presented a third study with reference to convalescent typhoid serum in the treatment of typhoid fever, based on his experience with three cases. All three cases were very acute, and in all the serum from convalescent typhoid patients had been employed with distinct benefit. The writer believed it was worth while to try this form of serum therapy.

Dr. A. H. Sinclair of Honolulu, Hawaii, said he was prone to believe that, after the use of typhoid vaccine, if typhoid fever occurred, there must have been something wrong either with the vaccine itself or with the technique of its employment. He did not believe that any patient who gave a positive Widal after typhoid fever could again contract the disease. The isolation of the bacilli from the blood or from the stools showed the applicability of the complement-fixation test.

Dr. George H. Robinson of Glenolden, Pa., related an experience with a small number of cases of typhoid fever, in which it seemed that clinically the well-fed cases gave fewer typhoid carriers than the starved cases.

Dr. Abraham Zinger of New York said that during the past eighteen months at the Willard Parker Hospital he had been giving convalescent fresh whole blood by means of intramuscular injections in scarlet fever cases. Distinct benefit was noted in toxic cases after injections of blood obtained from patients who were three to four weeks convalescent. If it should be proved that convalescent blood had therapeutic value even as late as six months after the disease, then the opportunity of employing this treatment would be much greater. Convalescent blood could be used not only in diseases that resulted in a more or less permanent immunity, like scarlet fever, typhoid and measles, but also in diseases that were followed by only a short protection, like ervsipelas and pneumonia. The blood in these cases should be obtained from donors not more than two to three weeks convalescent. Doctor Zinger said he had used intramuscular injections of normal blood in late septic cases of scarlet fever, in which the toxemia was no more in evidence. Such blood was not given for any specific action, but for its general stimulating and nutritive value.

Doctor Garbat, in closing the discussion, said that all the cases at the German Hospital were fed by the high caloric method; the physicians had practically abandoned the starvation treatment. Whether typhoid carriers occurred more frequently in those with high caloric value or in these under the so-called starvation treatment he did not know.

Friday, May 12—Second Day.

The Standardization of Antimeningitis Serum by Animal Protection Tests. — Dr. George H. Robinson of

Glenolden, Pa., presented this paper. He stated that the variable ability to produce agglutinins and complement fixing bodies had been noted among horses under antimeningococcic treatment. An animal protection test seemed desirable as a measure of the potency of the serum. A sixteen-hour old culture of meningococci on serum dextrose agar was necessary for the test. Suspended in fresh guinea pig serum and diluted three times with 0.85 per cent. salt solution most strains were virulent for white mice. If antimeningococcic serum was injected two hours previous to the infection of the cocci, considerable protective power could be demontrated. The amount of serum used had been invariably 0.5. Culture was used in 0.5, 0.25, 0.12, etc., amounts. By this method the amount of protection afforded by different sera very closely paralleled the extent of the treatment the horses had received. Agglutinating and complement fixing powers showed no correlation with protective power. The test was specific in that different strains of meningococci could be distinguished as well as the gonococcus. As a routine measure all freshly isolated strains of meningococci were tested with a polyvalent serum, and those against which the serum did not protect were incorporated into the treatment of the horses. The polyvalency of antimeningitis serum was of extreme importance. If the amount of immune serum necessary to protect against one minimum lethal dose of living culture be considered as a unit, a uniform standardization of antimeningitis serum was obtained. Such a standard meant more to the physician, and was a better test of the therapeutic efficiency of a serum than test *in vitro*.

An Analysis of a Series of Cases Changing to Wassermann Positive after a Negative Period of Twelve Months or Over. — Dr. LOUIS A. LEVISON of Toledo presented this report. He said he had collected sixteen cases fulfilling the conditions mentioned in the title. Six of these patients had been treated at least in part by the writer, and of these only one was treatd from the start. The idea that a single negative Wassermann after treatment meant a cure of syphilis was entertained by many physicians despite its utter lack of basis in fact. The cases cited showed that a patient with syphilis might not be cured or have his disease process arrested even after the Wassermann had been negative for twelve months. There was more than passing significance in the fact that practically all these cases were late or advanced when they were competently treated. They received mercury either in small or inefficient amounts, some not at all, at the time when treatment could have been of value. The Wassermann reaction had a definite value as a guide to treatment, but care should be taken in dismissing a patient from treatment and observation on the strength of a Wassermann negative period which had not lasted longer than from twelve to eighteen months.

A Stable Bacterial Antigen with Special Reference to the Meningococcus Antigen. — Dr. GEORGE HANSEN of Glenolden, Pa., presented this communication. He stated that various methods had been recommended for the standardization of antimeningococcus serum. No method so far devised was considered satisfactory. There had recently been a return to the complement fixation, not because it was supposed that complement fixing antibodies had any exact relationship to the therapeutic value of the serum, but because the method was fairly accurate and served to identify the serum with the various types of meningococci with regard to polyvalency. An antigen, which might be distributed to various laboratories, and which would remain unchanged under the varying conditions therein, would remove one source of variation in results. Furthermore, such an antigen might have great value in the case of other bacteria, as for instance, the gonococcus. Cultures for the preparation of dried meningococcus antigen were grown on salt free agar. The growth was collected in distilled water, an equal volume of alcohol was added and the mixture centrifuged at high speed. The bacteria was further dehydrated by repeated washing with alcohol and finally with ether. The resultant mass was dried and preserved *in vacuo* over phosphorus pentoxid. For use weighed amounts of antigen were ground in a mortar and suspended in physiological saline solution. The usual preliminary titrations and controls were set up to be certain that the reactions were specific. The dried antigen had been checked up against its homologous serum and a large number of heterologous sera and had been found to yield specific results.

The Clinical Significance of the Wassermann Test. — ARTHUR F. COCA of New York, read this paper. He said the Wassermann reaction was a biochemical test; that as it was performed with reagents whose chemical constitution was practically unknown, some of them being relatively very unstable bodies. The Wassermann "mixture" was subject to considerable variations dependent upon the particular method or modification of the original technic used and also upon the manner of standardizing the different reagents, as well as upon the quality of the antigen preparation available. On account of the above mentioned technical variations as well as on account of factors heretofore uncontrolled a considerable want of uniformity in the results of the Wassermann test existed. There had yet to be recorded a series of parallel tests carried out by different observers on the same sera in which the results agreed throughout. As had been pointed out by Uhle and MacKinney, the disagreements were more common in just the cases in which the need of reliable information was greatest. The results of the Wassermann test were further vitiated by the fact that it was being performed by an ever-widening circle of superficially informed and uncontrolled "techicians." It had been clearly demonstrated that the positive Wassermann reaction was not specific for syphilis. It occurred not only with some regularity in other conditions, but also sporadically in many others. Analysis of its relations to the therapeusis of syphilis showed that in the great majority of instances the result of the test did not influence the course of specific treatment. The use of the Wassermann test as a legal criterion of eligibility for marriage must be unconditionally opposed.

Serum Reactions Following Treatment with Sensitized and Non-Sensitized Bacteria.—Dr. G. H. SMITH of Glenolden, Pa., presented this contribution. He stated that work he had been doing toward the determination of the mode of reaction induced by immunization with sensitized and non-sensitized typhoid antigens gave the following results: (1) The agglutinating titre of the sera obtained indicated that the non-sensitized antigen was more efficient. The difference, however, was slight. Agglutinins appeared earlier in the course of the treatment if a non-sensitized antigen was used. (2) Sera produced by treatment with non-sensitized antigen were more active in complement fixation tests. (3) In the case of the opsonic and bacteriotropic indices the differences in values obtained were not of great significance, either in degree or in the rate of production. (4) The degree of leucocytosis produced with the two types of antigen indicated an essential difference. The animals receiving sensitized antigen responded with a greater production of leucocytes, the response after each injection being increasingly greater, and the increase occurring after a shorter interval of time than in the animals receiving non-sensitized antigen.

Prophylactic and Therapeutic Inoculations in Certain Affections of the Respiratory Tract.—Drs. GEORGE W. ROSS, H. K. DETWEILLER and J. C. MAYNARD of Toronto presented this communication, in which they express the opinion that so-called "common colds" might be due to a variety of microorganisms, such as the *B. rhinitis*, *B. influenzae* of Pfeiffer, *M. catarrhalis*, the pneumococcus and various streptococci. The question arose as to the likelihood of symbiosis occurring among these organisms, increasing their parasitism. There was recently an epidemic of "cold" in Toronto, during which a whole batallion of soldiers quartered there were unfitted for duty because of this epidemic. The writers prepared vaccines from many strains of different organisms isolated. Sixty-two soldiers were inoculated with these vaccines, receiving from one to six inoculations. The results were very gratifying, and warranted the suggestion that this method might at least be applied to the control of such epidemics in institutions where large numbers of people were in close contact.

The Diagnosis and Treatment of Septicemia. — Dr. OSCAR BERGHAUSEN of Cincinnati read this paper. He said the essential feature of septicemia was the multiplication of infecting organisms within the blood current. The termn "bacteriemia" was not descriptive of any special pathological condition. It would be far simpler to speak of infections due to ordinary organisms of suppuration, as either "toxemia" or "septicemia," meaning by the latter term that the organisms had begun to multiply in the blood current. Pyemia was simply a complication of septicemia.

They had made blood cultures in fifty cases having symptoms resembling clinically septicemia. Fifty-seven per cent. of these cultures were positive, the streptococcus being the prevailing organism, although the staphylococcus was occasionally found, or a bacillus of the colon type in terminal infections. Of twenty-three patients with a positive blood culture, 74 per cent. died and 26 per cent. recovered. Of seventeen patients with a negative blood culture, 35 per cent. died and 65 per cent. recovered, showing that the percentage lacked only nine of being reversible. This showed the value of blood culture in suspected septicemia cases, not only in the diagnotic, but also in the prognostic sense. In the positive cases they had also the means for preparing an autogenous vaccine to assist nature. The total white count varied from 7100 to 25,000 in the patients who recovered; from 7000 to 30,000 in those who died. Ordinarily in this series of cases a low white count indicated a bad prognosis. However, a low white count might be found in patients with a severe type of septicemia and still recovery might quickly follow. The differential white count, on the other hand, was of the greatest importance. When the polymorphonuclear count approaches 90 per cent., particularly when the total white count was low, the prognosis became grave. They looked upon such a relationship as due to overstimulation of the mechanism of immunity. In only two of the patients who recovered was the polymorphonuclear count above 85 per cent.; in both of these, owing to the long continued infection, a severe grade of secondary anemia had developed. The blood picture was important because we were enabled thereby to determine the presence or absence of a severe grade of anemia or of acute leucemia. In most of these cases the antistreptococcic serums obtainable on the market had been employed before the writer saw the cases; in none was a cure reported. In several instances a marked drop in the temperature followed the use of the serum, but this was only a temporary response. In thirteen of the cases autogenous vaccines were employed in addition to the regular symptomatic treatment, and of this number seven recovered. This series of cases included seven cases of streptococcic septicemia, twelve cases of puerperal sepsis, six cases of purpura hemorrhagica and twelve atypical cases, all due to trivial wounds, surgical procedures, or localized septic processes, and three cases of septicemia following abdominal operations. In true septicemia the prognosis depended upon the state of health of the individual, the length of time the infection had existed, the type of organism causing the infection and the complications which might develop. The longer the course of the disease the more favorable was the prognosis. A negative blood culture and a polymorphonuclear count below 85 per cent. spoke for a favorable outcome. The patient should be treated as a consumptive, at least he should be given plenty of fresh air. He should be fed as generously as possible without deranging the digestion. The hot pack was indicated in septicemia marked by high temperature and erythema and in the absence of the more serious complications with stimulation before or after the pack. We might employ digitalis in the beginning to enforce the heart's action, though we could not thereby prevent the onset of endocarditis. Of the antipyretics quinine was the most important; it should be used in small doses and often. Bacteriocidal medication had been, on the whole, practically useless. Apparently good results had been obtained by hypodermoclysis. Antistreptococcic serum had little antitoxic and bacteriocidal value. Their experience had been limited to the use of autogenous vaccines and they believed their continued use was justified. The indications for surgical intervention when a pyemic abscess had developed were well known. Spinal puncture was indicated when symptoms of meningismus developed. The patient should be carefully watched during convalescence.

Treatment of Tuberculosis Pulmonalis by Tuberculin. Dr. A. N. SINCLAIR of Honolulu, Hawaii, presented this communication. He related his experience with tuberculin in the Leahi Home for Consumptives which had convinced him of the value of this agent. Out of 309 cases treated without the use of tuberculin in the four years prior to the adoption of the tuberculin treatment 27.2 per cent. of all cases treated were either arrested or were able to return to their former occupations, while out of 506 cases treated during the next four years with tuberculin 50.1 per cent. were enabled to resume their former occupation.

He had also found with reference to the efficacy of the tuberculin that there was an almost constant rise and fall of the average weight line parallel to the state of freshness of the diluted tuberculin. He had used this weight line to check up the potency of the tuberculin injected from week to week. In discussing the reasons for the failure of many others to get satisfactory results with tuberculin, he stated that he believed this was entirely due to lack of attention to details, to the omission or commission of some vital factor that appeared of minor importance. The essayist stated that he never had occasion to go above 1/300 mg. and rarely over 1/500 mg., instead of doses 1000 times as large (2 mg.). Next to the opsonic index the best control for the dosage was that first suggested by Sutherland; although, without desiring to detract from him the honor of this discovery, the writer had used a similar control at the Leahi Home for a number of years before this was published. This control was what might be termed the temperature reaction after injection. The main points to bear in mind were the day after the injection on which the highest temperature was reached, and whether or not normal was reached by crisis within twenty-four hours or by lysis. There were seven reactions which he recognized and in accordance with which he regulated the dosage. If the reaction was highest after 72 hours and there was no fall to normal after 72 hours tuberculin should be discontinued. A delayed reaction or continued high temperature indicated an inability to absorb the tuberculin and the dose must be decreased or halved, if continued. He usually began with 1/3000 mg. given weekly and increased by 1/3000. Another factor which he had taken into consideration was the amount of albumin in the sputum. A high albumin content, or one increased since the last dose of tuberculin, threw the decision towards decreasing or discontinuing the tuberculin; a low albumin content, or a decreased one, gave confidence in either repeating or increasing the dose. Tuberculin should never be given haphazard or by rule of thumb, experience alone enabled one to gauge the amount that should be given.

The Value of Tuberculin in the Treatment of Tuberculous Lymphnoditis.—Dr. GEORGE P. SANBORN of Boston presented this paper. He stated that this report was based on a series of sixty selected cases of lymphnodular tuberculosis treated in the Department of Vaccine and Serum Therapy of the Boston City Hospital, and a few of them in private practice. This group of cases included such as had developed under good conditions of hygiene and in which surgery was not primarily indicated and they therefore furnished fairly ideal experimental conditions. The feeding, housing, and general condition of these patients made possible the use of tuberculin as the one method of treatment without injustice to the patient. All cases received inoculations of bacillus emulsion, the initial dose in children being 1/50,000 to 1/25,000 mg.; in adults, 1/20,000 to 1/10,000. Both human and bovine tuberculin were used. The initial dose was sufficiently small to produce no subjective symptoms. The inoculations were given immediately beneath the skin so that the intensity of the reaction could easily be observed. Where the local reaction was considered suitable, dosage was usually held the same until its intensity became less. Dosage was then increased. Calcified and caseated glands could not be reduced by tuberculin and had been referred to the surgeon after a course of tuberculin had been given. Long continued tuberculin treatment might render the surgical problem of extirpation difficult. The results of tuberculin treatment in this series of cases might be summarized by stating that there was diminution in the size of the nodes in 83 per cent. of the cases; one or more nodes broke down in 33 1/3 per cent.; one or more lymph nodes developed during treatment in 20 per cent. of the cases; surgical procedures were necessary in 11 per cent.; there was a gain in weight in 60 per cent. In the possibilities of being favorably influenced by tuberculin, patients under fifteen years of age appeared to have the advantage. A demonstrable improvement had been observed in at least 83 1/3 of the cases treated. Recurrence took place in eight cases in this series.

Clinical and Pathological Observations on the Dangers Encountered in Certain Technical Procedures Frequently Used by Serologists and Clinicians.—Dr. H. S. MART-

LAND of Newark presented this paper, which gave a résumé of the contraindications, dangers and accidents met with in lumbar puncture, intraspinous and intracranial injections, intravenous medications, blood transfusions, etc. The observations of the author were based on clinical and pathological data, from over 1,500 autopsies at the Newark City Hospital. The paper included the presentation of pathological specimens.

Intravenous Therapy; The Use of Sensitized Bacterins Intravenously, Especially in Pneumonia.—Drs. WILLIAM EGBERT ROBERTSON of Philadelphia, Pa., and CLAUDE P. BROWN and ALLEN G. BECKLEY of Glendolen, Pa., presented this communication, which was read by Dr. Robertson. He stated that up to the present time bacterins had been given therapeutically most frequently in chronic, localized infections, less often in general infections. Treatment had usually been with the non-sensitized type and the mode of administration had been subcutaneous. Very little clinical use had been made of the intravenous administration of sensitized bacterins. Because sensitized bacterins, from a theoretical standpoint, would seem to give a quicker response in the production of immune bodies, and because with the intravenous mode of administration an immediate action of the bacterin might be secured with no attendant local reaction, the authors had employed serobacterins intravenously in a series of cases. One case of typhoid, treated in this way, gave very severe reactions after injections of the bacterin. Satisfactory recovery was made. Severity of reaction after the intravenous use of sensitized bacterins was typical in typhoid cases in general and was much more pronounced than in pneumonia treated in the same manner. In eleven cases of pneumonia two procedures were followed, some patients being given a polyvalent bacterin composed of sensitized pneumococci alone, others a mixture of sensitized pneumococci, streptococci, and staphylococci. Those receiving the pneumococci alone experienced no sharp reaction, while those receiving the mixed bacterin reacted with chill and subsequent rise in temperature accompanied by a marked change in the total white count and polynuclear increase. Of the eleven cases treated ten made a prompt recovery. The eleventh case, which terminated fatally, was complicated with nephritis. In the cases treated no detailed attempt was made to study the type of the infecting organism, but of seven cases in which this was done, three were of type I, three of type II, and one of type III. In preparing the pneumococcus bacterins, seven strains, including the three fixed types, were used. These were sensitized with the serum of goats and sheep, immunized against the various types.

Officers Elected for the Ensuing Year. — President, Dr. Richard Weil, New York City; vice-president, Dr. John A. Kolmer, M. D., Philadelphia, Pa.; treasurer, Dr. Willard J. Stone, M. D., Toledo, O.; secretary, Dr. Martin J. Synnott, M. D., 30 So. Fullerton Avenue, Montclair, N. J.; council, Dr. Arthur F. Cock and William H. Park, New York City.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

KENTUCKY STATE MEDICAL BOARD.

June 13, 14, 15, 1916

ANATOMY

1. (*a*) Describe the spinal cord, and (*b*) give its length, weight, points of beginning and ending in the spinal canal.
2. How many pairs of nerves are given off from the spinal cord?
3. (*a*) Locate and describe Peyer's glands, and (*b*) state where they are largest and most numerous.
4. What blood-vessels carry blood from the heart to and from the lungs?
5. Give the origin and distribution of the great sciatic nerve.
6. Describe the lymphatics of the liver.
7. Locate and describe the small intestine; state where it begins, where it terminates, and name the divisions.
8. Describe the esophagus, its structure, length, place of beginning and termination.
9. Name, locate and describe the bones of the arm and forearm.
10. (*a*) What bones form the pelvis, and (*b*) state the difference between the false and true pelvis.

PHYSIOLOGY.

1. Describe the medulla oblongata and discuss its functions.
2. Describe the digestion and assimilation of proteins.
3. Tell what you know of (*a*) the manufacture, (*b*) functions and (*c*) final disposition of white blood corpuscles.
4. Give in detail the functions of the kidneys.
5. Give the structure and functions of bone marrow.
6. (*a*) Discuss the essentials in the ventilation of a school room, (*b*) a bed room, and (*c*) the dangers of, and (*d*) tests for impure air.
7. (*a*) Differentiate between striated and non-striated muscles. (*b*) Give examples.
8. (*a*) Describe the sympathetic nervous system. (*b*) Give its functions.
9. (*a*) Describe the development of the humerus. (*b*) Of the temporal bone.
10. (*a*) Describe the most important vestibule of the body, and (*b*) give its functions.

BACTERIOLOGY.

1. (*a*) Describe in detail the method of immunizing a person against typhoid fever. (*b*) What is the dose for a child weighing 50 pounds?
2. (*a*) Describe the Widal reaction. (*b*) Give its value as a diagnostic symptom in typhoid fever.
3. (*a*) Describe the diphtheria organism; (*b*) its staining characteristics. (*c*) Give method of detecting diphtheria carriers.
4. Describe the organism of syphilis.
5. (*a*) Describe method of securing specimen for examination for malaria. (*b*) Differentiate the three varieties of the malarial organism.
6. Differentiate the ova of (*a*) *Ascaris lumbricoides*, (*b*) hookworm, (*c*) *Oxyuris vermicularis*.
7. How would you identify gonococci?
8. Give method of staining sputum for tubercle bacilli.
9. Describe the tetanus bacillus.
10. Describe the meningococcus.

ANSWERS.

ANATOMY.

1. "The *spinal cord* is the elongated portion of the cerebrospinal axis contained in the spinal canal. Its length is about sixteen to eighteen inches, extending from the medulla above to the lower border of the first lumbar vertebra below, where it terminates in the cauda equina by a slender prolongation of gray substance, called the conus medullaris. It presents two enlargements, the upper or cervical, extending from the third cervical to the second dorsal vertebra, and the lower about the position of the second or third dorsal vertebra. It is divided into two lateral halves by the anterior and posterior median fissures, united in the center by the commissure. The lateral portions are again subdivided by the antero-lateral and postero-lateral fissures into the anterior lateral and posterior lateral columns, and posteriorly a narrow fissure separates the posterior median column from the posterior median fissure. The gray substance occupies the center of the cord, and is arranged into two crescentic masses connected together by the gray commissure. The posterior horn forms the apex cornu, from which arises the posterior root of the spinal nerves. The anterior horn is thick and short, and affords origin to the anterior root of the nerves. The gray commissure contains throughout its whole length a minute canal the central canal, or ventricle of the cord, continuous above with the fourth ventricle." (Young's *Handbook of Anatomy*.) The spinal cord weighs about one and a half ounces.
2. Thirty-one pairs of spinal nerves are given off from the spinal cord.
3. *Peyer's patches* are aggregations of solitary glands, measuring from about half an inch to three inches in length; they are found mainly in the ileum, but also occur in the duodenum, and jejunum; they are situated lengthwise in the intestine, and are located opposite to the mesenteric attachment. Each patch is surrounded by a group of the crypts of Lieberkühn. There are said to be from 30 to 50 of these patches in the human intestine. As a rule, they have no villi on their surface.
4. The *pulmonary artery* conveys the venous blood to the lungs. The *pulmonary veins* convey oxygenated blood to the heart. The *bronchial arteries* supply blood for the nutrition of the lungs.

5. *The great sciatic nerve* arises from the sacral plexus, and passes out of the pelvis through the great sacrosciatic foramen, below the pyriformis muscle; it extends down the back of the thigh, passing between the great trochanter of the femur and the tuberosity of the ischium; at the lower third of the thigh it divides into the internal and external popliteal nerves. It supplies the hip-joint and the biceps, semitendinosus, semimembranosus, and adductor magnus *muscles*.

6. "*The lymphatics of the liver* are numerous, and consist of a superficial and a deep set. The former pass in various directions. Thus a large number go to the hepatic glands in the lesser omentum; others pierce the diaphragm and finally end in the right lymphatic duct; others (a few) go to the lumbar glands. As regards the deep set, some following the hepatic veins and inferior vena cava, end in the thoracic duct; others, following the portal veins, end in the hepatic glands. The efferents from the hepatic glands in the lesser omentum accompany the hepatic artery, and end in the celiac glands." (McLachlan and Skirving's *Applied Anatomy.*)

7. The *small intestine* is situated in the abdominal cavity. It begins at the pyloric end of the stomach, in the epigastric region and ends at the ileocecal valve in the lower part of the right lumbar region. Its average length is about 23 to 25 feet. It is divided into three portions, the duodenum, the jejunum, and the ileum. The duodenum is the first part of the small intestine, it is about ten inches long, and extends from the pylorus to the left side of the body of the second lumbar vertebra. The jejunum and ileum form the coils of the small intestine and are covered by the great omentum; they form the remainder of the small intestine, the upper two-fifths being the jejunum and the lower three-fifths the ileum; there is no line of demarcation between these two parts. The coils of the jejunum and ileum are suspended from the posterior abdominal wall by the mesentery. The wall of the small intestine is composed of four coats, a serous, muscular, submucous, and mucous.

8. The *esophagus* is a muscular canal, about nine or ten inches long, and extending from the lower border of the pharynx (at the upper border of the cricoid cartilage) to the stomach. It passes down along the front of the spine, through the superior and posterior mediastina, through the esophageal opening in the diaphragm, and ends in the cardiac orifice of the stomach (opposite the tenth dorsal vertebra). It is generally in the median line, but it curves to the left at the root of the neck and again at the esophageal opening in the diaphragm. It is composed of a general fibrous covering on the outside, then a muscular coat consisting of two layers, an outer longitudinal layer and an inner circular layer; inside this is a submucous coat of areolar tissue; and the esophagus is lined by a mucous coat which is covered by stratified squamous epithelium.

9. "The HUMERUS, or arm-bone, the largest and longest bone of the upper extremity, consists of a shaft, head, neck, greater and lesser tuberosities, and lower extremity.

"The *shaft*, cylindrical above, flattened and prismoid below, becomes twisted in the middle, and presents: A rough triangular surface about the middle of its outer surface for insertion of the deltoid muscle, and a musculo-spiral groove for the musculo-spiral nerve and superior profunda artery, on each side of which arise the external and internal heads of the triceps muscle.

"The *upper extremity* presents—the head, forming nearly a sphere, projecting upward, backward, and inward, articulating with the glenoid cavity; the anatomical neck, immediately beneath, is slightly grooved for the attachment of the capsular ligament; greater tuberosity, external to the head and lesser tuberosity, with three facets from before backward for attachment of supraspinatus, infraspinatus, and teres minor muscles; lesser tuberosity, smaller but more prominent than greater, is anterior to head, for the subscapular muscle; bicipital groove, passes downward and inward between the two tuberosities and lodges the long tendon of biceps; the anterior bicipital ridge, bounds the groove in front and receives insertion of pectoralis major muscle; the posterior bicipital ridge receives the latissimus dorsi and teres major; the surgical neck, including the head, neck, and both tuberosities; a rough impression near the center of the inner border for the coraco-brachialis muscle; nutrient canal, below and directed toward the lower extremity.

"The *lower extremity* presents from within outward the following: Internal condyloid ridge, extending upward from the condyle; internal condyle, more prominent than external, gives origin to the flexors and pronator radii teres; epitrochlea, an eminence separating the trochlea from the internal condyle; trochlea, a pulley-like articulating surface for greater sigmoid cavity of ulna; coronoid fossa, a small depression bounding the trochlea in front, and receiving the coronoid of the ulna in flexion; olecranon fossa, a larger depresssion behind, and receiving the olecranon process of ulna in extension; supra-trochlear foramen, sometimes formed by perforation of one fossa into the other; radial head, or capitellum, a smooth, rounded eminence articulating with cup-like depression on head of radius; external condyle, less prominent, gives origin to the extensors and supinators; external condyloid ridge, extending upward on the shaft from the condyle.

"It *articulates* with three bones—scapula, radius, and ulna. (Young's *Handbook of Anatomy.*)

"The RADIUS is a long bone, shorter than the ulna, situated on the outer side of the forearm, the upper end small, the shaft slightly curved, and the lower end expanded to form part of the wrist joint. It consist of shaft, upper and lower extremity. The *shaft* is prismoid, slightly curved, and presents: An *internal border*, sharp and prominent, for interosseous membrane; an *anterior border*, marked at its upper third by an *oblique line*, for attachment of flexor longus pollicis, supinator brevis, and flexor sublimis digitorum; *anterior surface*, affords attachment above for flexor longus pollicis, below for pronator quadratus, and presents at the junction of middle and upper two-thirds a *nutrient foramen* directed upward; *posterior surface* gives attachment at upper third to supinator brevis, and at middle third to extensors of thumb.

"The *upper extremity* presents: *Head*—a cup-like cylindrical cavity, for articulation with capitellum of humerus, and on its side an articulating surface for lesser sigmoid cavity of ulna and orbicular ligament, which nearly surrounds it; *neck*, the constricted portion below the head; *bicipital tuberosity*, below and to inner side, divided by a vertical line into a rough surface posteriorly, for attachment of biceps tendon, and smooth surface anteriorly for bursa.

"The *lower extremity*, large, expanded, and quadrilateral, presents: *Carpal articular surface*, smooth, concave, triangular depression divided by an antero-posterior ridge into an outer facet for scaphoid bone and inner for semilunar; *sigmoid cavity*, a shallow concavity at inner side of carpal end, for articulation with ulnar head; *styloid process*, projects obliquely downward from the external surface, for attachment by its apex to external lateral ligament of wrist-joint, and by its base to insertion of supinator longus muscle. Its outer surface is marked by two *grooves* for extensors of thumb. The *posterior surface* of the lower extremity is also marked by three *grooves* from without inward for the following: Ext. carpi radialis longior and brevior in first, ext. secundi internodii in second, and ext. indicis, ext. communis digitorum, and ext. minimi digiti in third. This surface has also attachment of posterior ligament of wrist."—(Young's *Anatomy.*)

"The ULNA is a long bone to the inner side of the forearm, and consists of a shaft and an upper and lower extremity. It forms the greater part of the articulation with the humerus, but does not enter into the formation of the wrist-joint, being excluded by the interarticular fibro-cartilage.

"The *shaft* is prismatic above, smooth and rounded below, and presents: *Anterior surface*, gives attachment to the deep flexors and pronator quadratus; *nutrient foramen* on anterior surface, directed upward toward the elbow-joint; *posterior surface* marked above by an *oblique line* for part of supinator brevis, above which is smooth triangular surface for anconeus muscle, and the lower third for extensor muscles of the thumb; *external border*, sharp in middle two-thirds, for attachment of interosseous membrane.

"The *upper extremity* is large and irregular, and presents: *Olecranon process* (head of elbow), projects upward and forward, its apex being received into the olecranon fossa of the humerus in extension of the forearm; its upper border has rough impression for the triceps muscle; its lateral borders are grooved for external and internal lateral ligaments; coronoid process, smaller than olecranon, projects forward from anterior surface, being received into coronoid fossa of humerus in flexion. Its *supper surface* forms part of the great sigmoid cavity. Its *under surface* has rough impression for insertion of brachialis anticus, and has, at its junction with the shaft, the *tubercle of the ulna* for the oblique ligament. Its *outer surface* is the lesser

sigmoid cavity. Its *inner surface* gives attachment to the internal lateral ligament, and the flexor digitorum sublimis, flexor profundus digitorum, and one head of pronator radii teres. *Greater sigmoid cavity* is a large, semi-lunar depression between the olecranon and coronoid processes, divided into two unequal lateral parts by an elevated ridge. It is continuous on the outer side with the lesser sigmoid cavity and articulates with the trochlear surface of the humerus. *Lesser sigmoid cavity* is an oval, concave, articular depression, external to the coronoid process, for articulation with the head of the radius. Its prominent extremities give attachment to the orbicular ligament.

"The *lower extremity* is small and cylindrical and presents: *Head*, an external, rounded, articular process, for the triangular fibro-cartilage below and the sigmoid cavity of the radius externally; *Styloid process*, projects from the posterior and internal part of the extremity, its apex gives attachment to the internal lateral ligament of the wrist, and it is marked at its root by a depression between it and the head, for attachment of the fibro-cartilage; *groove*, upon the posterior surface, for passage of extensor carpi ulnaris It articulates with two bones—humerus and radius." (Young's *Anatomy*.)

10. The *pelvis* is formed by the two ossa innominata, the sacrum and the coccyx; each os innominatum is made up of ilium, ischium, and pubis.

The *false pelvis* is that expanded portion of the pelvis above the iliopectinal line and the upper margin of the symphysis pubis. The *true* pelvis is the part beneath this plane. It is smaller, and has more perfect walls than the false pelvis.

PHYSIOLOGY

1. The *medulla oblongata* is the lowest part of the encephalon, and is continuous below with the spinal cord. It extends from the lower margin of the pons to the lower margin of the foramen magnum. It lies in the basilar groove of the occipital bone; its dorsal surface is between the cerebellar hemispheres. It forms the lower part of the floor of the fourth ventricle. It is about one inch long, half inch wide, and half inch thick. It has anterior and posterior median fissures, which are continuous with those of the spinal cord.

The *functions of the medulla oblongata* are: (1) It is a conductor of nervous impulses or impressions from the cord to the cerebrum, from the brain to the spinal cord, also of co-ordinating impulses from the cerebellum to the cord; (2) it contains collections of gray matter which serve as special nerve centers for the following functions or actions; respiration, salivary secretion, mastication, sucking, deglutition, speech production, facial expression; it also contains the cardiac and vasomotor centers.

2. *Proteids* are digested in the stomach (by the pepsin of the gastric juice) and in the small intestine (by the trypsin of the pancreatic juice).

During digestion the proteids are split up into proteoses, peptones, polypeptides and amino-acids. The amino-acids are believed to be taken as such by the epithelial cells and carried to the blood of the portal capillaries. Another view is that in the intestinal epithelium the amino-acids are built-up again into proteins such as are found in the blood. There are three theories of the further history of the proteids. According to one of them (the theory of Voit), "the protein of the tissues, living or organized protein, is to be differentiated from the absorbed circulating protein. It is only in this circulating protein, which is assumed to be present in the fluids of the body, the blood and lymph, that catabolic changes take place. These changes take place under the influence of the living cells. The more resistant organized protein is not supposed to undergo catabolic changes. If any of it does, it is cast off into the fluids of the body, and thus becomes circulating protein, undergoing catabolic changes in precisely the same manner. It is obvious that a small part of the absorbed protein must be utilized to replace the waste of the organized protein and to subserve the process of growth. This portion is termed tissue protein." (Lyle's *Physiology*.)

3. *White blood corpuscles* are *formed* in the spleen, lymph glands, and lymphoid tissue; also from other white cells by direct cell-division in the blood stream; the eosinophiles may be derived from the bone marrow. Their *fate* is uncertain: it has been asserted that they are converted into red blood cells; they play a part in the formation of fibrin ferment; they are sometimes converted into pus cells. Their *functions* are (1) to serve as a protection to the body from the incursions of pathogenic microrganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

4. The *functions of the kidney* are: (1) To secrete (or excrete) urine; (2) to regulate the reaction of the urine; (3) the formation of hippuric acid; (4) regulation of the composition of the blood plasma by excretion of abnormal or toxic substances; and (5) the production of an internal secretion. The mechanism of the *secretion of urine by the kidneys* is twofold: (1) By filtration, most, if not all, of the fluid is eliminated, and also inorganic salts; this depends upon blood pressure, and takes place in the glomeruli. (2) By cell activity and selection, in the cells of the convoluted tubules, the urea, and principal solids are eliminated.

5. BONE MARROW. "*Red marrow* is the connective tissue which occupies the spaces in the cancellous tissue; it is highly vascular, and thus maintains the nutrition of the spongy bone, the interstices of which it fills. It contains a few fat-cells and a large number of marrow-cells. The marrow cells are ameboid, and resemble large leucocytes; the granules of some of these cells stain readily with acid and neutral dyes, but a considerable number have coarse granules which stain readily with basic dyes like methylene blue. Among the cells are some smaller nucleated cells of the same tint as colored blood corpuscles. These are termed erythroblasts. From them the colored corpuscles of the blood are developed. There are also a few large cells with many nuclei, termed giant cells or myeloplaxes. *Yellow* marrow fills the medullary cavity of long bones and consists chiefly of fat-cells with numerous blood-vessels; many of its cells also are the colorless marrow-cells just mentioned." (Halliburton's *Physiology*.)

6. (*a*) *The essentials in the ventilation of a schoolroom* are that there must be 1,000 cubic feet of space for each individual, that the air in this space must be changed three times in an hour, that the air must be warmed to 60° to 65° Fahr., and that it must be moistened and purified (or at least strained to remove excessive dust. "There is considerable difference of opinion as to the best locations for inlets and outlets, and as the conditions are necessarily different in every case and so many factors are to be considered, it is difficult to lay down any general rules. It should be an aim, however, to have the air well distributed and to have no direct draughts from the inlets either upon the occupants or to the outlets. Usually the outlets should be located near the top of the room, owing to the tendency of the used air to rise, and because, in unventilated rooms, the foulest air for some time after its contamination will be found nearest the ceiling. The products of combustion from lights, etc., will also practically all be in the upper strata of air. If, however, provision is or can be made for a constant and sufficiently strong aspirating force in the outlet ducts, it may be advisable to withdraw the used air from near the floor level and below the inlet openings, though not in too close proximity to them, since in this way a more thorough distribution of the incoming air and a greater dispersion of its contained heat are secured. The location of the inlets should depend on the temperature of the incoming air; if it is cold it should be admitted near the ceiling, so that it may diffuse and be partially warmed before reaching the inmates of the room; if it is warmed it may come in near the floor or below the middle level of the room." (Egbert's *Hygiene and Sanitation*.)

(*b*) In a *bedroom*, for adults, proper ventilation may be secured by having double windows, or double panes of glass, with an opening at the bottom of the outer and at the top of the inner one, so that the fresh air may enter in an upward current; or by placing a board under the lower sash so that fresh air can enter in the middle.

(*c*) The *dangers of impure air* are: Drowsiness, headache, digestive disturbances, mental dullness, and disease or liability to take disease. The chief danger to health is in the increase of carbon dioxide, the presence of crowd-poison, dust, irrespirable gases, and bacteria.

(*d*) The relative amount of carbon dioxide in the air is taken as an indication of its purity; not because the carbon dioxide is itself harmful in the amounts generally encountered, but because it is readily estimated and is a fair indicator of the purity of the air.

Pettenkofer's method of determining the percentage of carbon dioxide in the air: A large cylindrical con-

tainer of known capacity, say, 15 liters, is filled with the air to be examined; a known volume of barium hydroxide is then added and shaken up with the air. The carbon dioxide combines with the barium hydroxide to form a barium carbonate, which is insoluble, and also incapable of acting upon an indicator. The barium hydroxide employed is of known strength, *e.g.*, it may be of such strength that 1 c.c. of the solution neutralizes 1 c.c. of carbon dioxide at normal temperature and pressure. If then we find that 10 c.c. of the barium hydroxide has been neutralized by the carbon dioxide present in the air, we know that 10 c.c. of carbon dioxide is present in 15 liters or 15,000 c.c. of the air examined.

7. *Voluntary muscle* is more or less under the control of the will, does not contract rhythmically, does not evince peristalsis; *involuntary* muscle is not under the control of the will, it is rhythmical in its contractions, and is also characterized by peristalsis.

Further, *voluntary* muscle is striated, has long narrow fibers with cross striations and many nuclei beneath the sarcolemma. *Involuntary* muscle is nonstriated, has spindle-shaped fibers, one nucleus centrally located, and no sarcolemma. The great exception is cardiac muscle, which is involuntary and also striated. *Voluntary muscle* is found in all the skeletal muscles, pharynx, diaphragm, larynx, external ear, and eye. *Involuntary muscle* is found in the alimentary tract from the middle third of the esophagus to the anus, in the ducts of glands, in the trachea and bronchial tubes, within the eyeball, the internal urinary and genital systems, circulatory (except the heart) and lymphatic systems, and the capsules of some organs.

8. "*The sympathetic nervous system consists of* (1) a series of ganglia connected together by a great ganglionic cord, the gangliated cord, extending from the base of the skull to the coccyx, one gangliated cord on each side of the middle line of the body, partly in front and partly on each side of the vertebral column; (2) of three great gangliated plexuses or aggregations of nerves and ganglia, situated in front of the spine in the thoracic, abdominal, and pelvic cavities respectively; (3) of smaller or terminal ganglia, situated in relation with the abdominal viscera; and (4) of numerous fibers."—(Gray's *Anatomy.*)

Function: It has a controlling influence over the secretion of most of the glands, the lacrimal, the salivary, the sweat glands, the glands of the stomach and intestines, the liver, the kidney, etc.; it presides over the circulation by regulating the caliber of the blood-vessels and the action of the heart; it influences respiration; and, all involuntary muscles, those of the digestive apparatus, of the genitourinary system, of the hair follicles (pilomotor nerves), are under its control to a great extent.

9. *Development of the humerus.* "Ossification occurs from a primary center in the shaft and six or seven secondary centers in the extremities. In the upper extremity centers appear in the head, great tuberosity, and sometimes in the small tuberosity, which, after fusing together, join the shaft about the twentieth year. In the lower extremity centers appear in the trochlea, capitellum, and outer and inner condyles, the three former of which, after coalescing, unite with the shaft in the seventeenth year. The inner condyle forms a distinct epiphysis which unites somewhat later." (Gerrish's *Anatomy.*)

Development of the temporal bone. "The squamosal and tympanic bones ossify in membrane, each from a single center; the petrous portion and styloid process in cartilage, the former from four centers, the latter from two. The fetal tympanic bone forms an incomplete ring, which incloses the tympanic membrane. It is open above with its free ends united to the squamosal. The defect in the ring due to this opening above is known as the notch of Rivinus. Two tubercles, one growing from the front and the other from the back of this ring, meet in the floor of the meatus, enclosing a foramen, which is gradually (though not always) closed, and thus the tympanic plate is formed. At birth the mastoid process, articular eminence, and tympanic ring are flat, the glenoid fossa is shallow, and the hiatus Fallopii opens at the genu of the canal." (Gerrish's *Anatomy.*)

10. *The vestibule of the internal ear.* "The vestibule is situated on the inner side of the tympanum, behind the cochlea and in front of the semi-circular canals. It is somewhat ovoid in shape, and measures about one-fifth of an inch in length. On its outer wall is the fenestra ovalis, closed by the base of the stapes and membrane; on its inner wall is the fovea hemispherica, pierced by minute holes, for the filaments of the auditory nerve and opening of the aqueductus vestibuli; on its roof is a small depression, the fovea semi-elliptica; behind are the five openings of the semi-circular canal, and in front an opening which communicates with the cochlea." (Ashby's *Notes on Physiology.*) The *function of the vestibule*—It is supposed to be concerned with equilibrium.

BACTERIOLOGY.

1. *Method of immunizing against typhoid.* The vaccine is administered subcutaneously over the insertion of the deltoid muscle; the site of the injection should have been previously painted with tincture of iodine; intramuscular injections are to be avoided; after the injection has been given the iodine is wiped off with a pledget of cotton and alcohol; no dressing is needed; the syringe and needle must be sterile; three such injections are given at intervals of about ten days; the dosage for adults (of 150 pounds weight) is 500 million bacilli for the first injection, and 1000 million bacilli for the second and third injections; each of these amounts is contained in about fifteen minims or one cubic centimeter; for a child weighing fifty pounds the dosage should be about one-third of the above, or a little more, for children take the injections very well.

2. (*a*) The Widal test for typhoid fever "depends upon the fact that serum from the blood of one ill with typhoid fever, mixed with a recent culture, will cause the typhoid bacilli to lose their motility and gather in groups, the whole called 'clumping.' Three drops of blood are taken from the well-washed aseptic finger tip or lobe of the ear, and each lies by itself on a sterile slide, passed through a flame and cooled just before use; this slide may be wrapped in cotton and transported for examination at the laboratory. Here one drop is mixed with a large drop of sterile water, to redissolve it. A drop from the summit of this is then mixed with six drops of fresh broth culture of the bacillus (not over twenty-four hours old) on a sterile slide. From this a small drop of mingled culture and blood is placed in the middle of a sterile cover-glass, and this is inverted over a sterile hollow-ground slide and examined. . . . A positive reaction is obtained when all the bacilli present gather in one or two masses or clumps, and cease their rapid movement inside of twenty minutes."—(From Thayer's *Pathology.*)

(*b*) Its diagnostic value is believed by some to be great; others place little reliance on it. It may be absent in cases of typhoid fever; it may be present for several months after an attack of typhoid; the reaction may not be obtained till the third week of the disease; it may be present in other diseases or in perfectly healthy persons. The above have all been urged as objections; certainly only positive results have any value at all.

3. The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are non-motile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain with any aqueous solution of an anilin dye, they also stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene blue; Neisser's stain is also recognized.

Diphtheria carriers can only be detected by the finding of the diphtheria bacilli in the secretions of their nose and throat. A sterile swab is rubbed over any visible membrane on the tonsils or throat and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appear as short, thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts. *Methods of culture:* The bacillus of diphtheria grows upon all the ordinary culture media, and can be readily

obtained in pure culture. Loeffler's blood serum, particularly with the addition of a little glucose, is an admirable medium for the rapid growth of this bacillus. The medium should be alkaline and not less than 20° C.

4. Syphilis is due to infection by the *Treponema pallidum*, also called the *Spirochæta pallida*. This is a slender spirillum, with regular turns, the curves varying in number from three or four to twelve or even twenty; it is about 4 to 20 mikrons long, actively motile, with a fine flagellum at each pole; it is flexible, hard to stain, and has not been cultivated on artificial media. How it divides is not known. It stains best with Giemsa's eosin solution and azur.

5. *In examining for malaria:* "Prepare some perfectly clean and very thin cover slips, and remove all traces of grease. Cleanse the skin of the finger-tip or ear with soap and water, and then with alcohol and ether. Make a *small prick* in the skin. Wipe away the first drop of blood, leaving a perfectly dry surface, so that subsequent drops will not run. Squeeze out a tiny drop about the size of a large pin's head. Touch the apex of this drop with the center of a cover glass, and immediately drop it, face downward, on a perfectly clean slide. Make several such preparations, and reject all those in which rouleaux are present. It is absolutely essential that the red corpuscles should lie flat. Examine with a 1/12 immersion lens and rather feeble illumination. Look in the red corpuscles for the presence of small black specks, often rod-like and showing slow movements of translation. These are surrounded by clear areas. One may also see in the center of some of the red cells clear ameboid areas which show no pigment. Rosette forms may also be visible. These forms of the parasite are always present in cases of malaria which have not had quinine. Other varieties are only met with in some chronic cases. Of these there are two chief forms: (1) The crescentic, (2) the flagellated. These are easily recognized. The crescentic bodies are highly refractile, rather longer than a red blood corpuscle, and about 2μ in diameter. Particles of pigment may be recognized in the parasite and also in some of the ordinary leucocytes."—(Hutchinson and Rainy.)

TERTIAN.	QUARTAN.	ESTIVO-AUTUMNAL.
Cycle in man 48 hours.	3 days.	24-48 hours.
Ameba in red cell active.	Sluggish.	Smaller than tertian.
Decolorizes red cell rapidly.	Slowly.	Hemoglobin deeper in tint.
Causes red cell to swell.	Size preserved or diminished.	Red cells shrivel.
Outlines not sharply defined.	Sharp.	
Pigment in fine granules, abundant, in motion.	Coarser, fewer.	Pigment in fine peripheral granules, not often in motion.
Spores 15-20, usually 18, small.	6-12, larger.	Small, 6-30, usually 18.
Flagella more numerous.		Less numerous.
Ring forms common, early, more distinct than those of estivo-autumnal.		Common, ring and disk form less distinct.

—(Thayer.)

6. The *ova* of *Ascaris lumbricoides* "are elliptical with a thick (4μ) transparent shell and an external albuminous coating which forms protuberances; the ova measure 50μ to 70μ in length, 40μ to 50μ in breadth; they are deposited before segmentation; the albuminous coating is stained yellow by the coloring matter of the feces, but it is sometimes absent. The egg cell is unsegmented, it almost completely fills the shell, and its nucleus is concealed by the large amount of coarse yolk granules."

The *ova* of *Ancylostoma duodenale* "appear to have a single contour. Under high powers this appears double, but they are the outer and inner surface of the true (chitinous) egg-shell. Internal to this is the extremely delicate yolk-envelope, a kind of skin secreted by the egg cell around itself for protection. The eggs are oval, with broadly rounded poles, 56μ to 61μ by 34μ to 38μ. In *fresh* feces they contain four granular nucleated segmentation masses of the ovum separated by a clear space from the shell."

The *ova* of *Oxyuris vermicularis* "are oval, asymmetrical, with double-contoured shells, and measure 50μ to 55μ by 16μ to 25μ; they are deposited with clear, non-granular tadpole-like embryos already developed." (From *The Animal Parasites of Man*, by Fantham, Stephens, and Theobald.)

7. *Gonococci* are recognized by their form (diplococci), their location (intracellular), and their staining properties (eosin and methylene blue, and being decolorized by Gram's method); they are exceedingly difficult to cultivate, and this feature renders differentiation from the *Micrococcus catarrhalis* easy, inasmuch as the latter grows readily on simple culture media.

8. To demonstrate the existence of *tubercle bacilli* in the sputum: The sputum must be recent, free from particles of food or other foreign matter; select a cheesy-looking nodule and smear it on a slide, making the smear as thin as possible. Then cover it with some carbolfuchsin, and let it steam over a small flame for about two minutes, care being taken that it does not boil. Wash it thoroughly in water and then decolorize by immersing it in a solution of any dilute mineral acid for about a minute. Then make a contrast stain with solution of Loeffler's methylene blue for about a minute; wash it again and examine with oil immersion lens. The tubercle bacilli will appear as thin red rods while all other bacteria will appear blue. The tubercle bacillus is rod shaped, is from 1½ to 3½ mikrons in length and about one-third to one-half a mikron in breadth, is a strict parasite, is not motile, and has no flagella. It is slightly curved, does not form spores, is not liquefying; is nonchromogenic; is aërobic; it resists acids; it grows well on blood serum; stains well by Ehrlich's, Ziehl-Neilsen's, or Gabbett's method; it is Gram-positive.

9. *The bacillus of tetanus* is characterized by its peculiar spore, formed at one end of the bacillus and giving it the appearance of a pin; it is purely anaërobic, and cannot be developed at all in the presence of oxygen. It generally comes from the soil, and is found in penetrating wounds. It appears in two forms, the spore-bearing form, as described above, and the vegetative form, which is a short bacillus with rounded ends, and which may occur singly or in pairs, or may form long filaments. It grows in gelatin stab cultures in the middle of the medium and the colonies look something like a fir tree; its growth is slow, and a disagreeable odor is at the same time emitted. In bouillon, it grows near the bottom of the tube, and produces gases.

10. The *meningococcus* is a small, non-motile, non-flagellate coccus; it does not form spores, does not liquefy gelatin, is aërobic, and pathogenic; it appears in diplococcus groups, and may be found within or outside the cells; it stains readily with the ordinary anilin dyes, but is Gram negative. It grows readily upon meat infusions, and especially so on media to which ascitic fluid or blood serum has been added.

(*To be continued.*)

Antirabic Service of the Pasteur Institute in Tunis for 1915.—The total number of cases treated was 443, from which number must be deducted twenty-three (fifteen cases in which dog was not shown to be rabid and eight who abandoned treatment). There were five deaths of patients under treatment, due to severity of infection or late arrival at the institute. The total number thus far treated at the latter is 5,711, with eighteen deaths. The animals had homes in about one-half the cases, the others being strays. The large number of pet animals is difficult to explain. In only forty cases was diagnosis made by inoculation. In sixty-two the veterinary diagnosis was made, and all other animals were merely suspects.—*Archives de l'Institut Pasteur de Tunis.*

Pellagra.—Jelks concludes an article on this subject as follows: "We never saw a pellagrin in this country until a few years ago, yet there are in the State of Mississippi alone perhaps 5,000 cases to-day, at least 3,500 of which have been reported this year. Many cases are not reported as pellagra at all. There are perhaps 50,000 cases of pellagra in this country to-day and the disease is increasing at an appalling rate. It is a fact that usually the skin symptoms, upon which so many rely for a diagnosis, are late symptoms, or may escape entirely the casual observer. Certainly we must learn to make diagnosis of pellagra or rather the condition upon which depends this misnomer, and late symptom.—*Pacific Medical Journal.*

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HYDROLOGY IN MILITARY PRACTICE.*

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"THE old order changeth," and nowhere will the change be more noteworthy than in the attitude of travelers and health-seekers toward European spas. American and English tourists will some day seek again the Continental watering-places, but it is safe to predict that a generation will pass before they flock to Teutonic resorts as in the past. We shall never hear of a British King visiting Homburg again, and it is doubtful if Americans will spend their millions annually in Karlsbad, Wiesbaden, and Nauheim for years to come. British watering-places will undoubtedly have a revival, and the innumerable French spas will surely gain immensely in popularity with all English-speaking travelers. This is but natural, and it does not require a prophet to foretell it.

In England a systematic effort has been made in the last year to afford wounded and invalid soldiers and sailors the benefits of spa treatment at home.

A committee of the Royal Society of Medicine has been charged by the War Office with this service, and has carefully examined its resources with this end in view. The peculiar adaptation of each one of the forty-five different resorts has been stated in a report recently issued, and consequently their doors have been opened to thousands of soldiers and sailors invalided home. No doubt the soldier who is sent to Buxton, Harrogate, or Bath will be more fortunate than his comrade who finds himself in the best of London hospitals unless he needs the special skill of some metropolitan consultant. Even the remedial uses of air and water may often overbalance the skill of the best specialist.

It is the intention to distribute cases wherever the best treatment can be afforded, and it is found that the spas and other bathing establishments in Great Britain afford special advantages for after-treatment.

The surgical affections which are amenable to treatment in this manner include contusions and bruises, sprains and strains of joints, fracture near joints with immobility, fractures imperfectly healed, unresolved effusions, fractures with osteitis and necrosis (obstinate cases), wounds unhealed and painful scars, cases where arterial circulation is locally deficient, as from the effects of pressure or frost-bite, and, finally, cases after operation.

Ills Spas May Heal.—Among the medical affections appropriate for spa treatment are rheumatic disorders, fatigue fever and muscular rheumatism, or subacute fibrositis, all of which are liable to follow fatigue and exposure; sciatica and lumbago, convalescence from rheumatic fever, chronic articular rheumatism, synovitis, and degenerative arthritis.

Among the circulatory disorders are defective peripheral circulation, cardiac dilatation, Graves's disease, and tachycardia.

Nervous diseases form a very important class, including the condition of nervous shock resulting from traumatism, mental shock or operation, neurasthenia and psychasthenia, irritative conditions with excitement and insomnia, and melancholia. Then, also, the palsies, both central and peripheral, the atrophies and the terrible cases of peripheral neuritis and kindred afflictions which Drs. Mitchell, Morehouse, and Keen cared for during our own great war. Then comes the long list of digestive, hepatic, respiratory and cutaneous disorders. The committee has indicated appropriate climatic and hydrologic treatment, and the particular places where these can be afforded.

I have recently received from Dr. Charles W. Buckley, of Buxton, an account of the treatment afforded soldiers at that famous spa. In his letter he says:

> It will perhaps be best if I first describe what is being done here. Buxton, with Bath and Harrogate, is doing very much the same in the matter, while the smaller spas, Droitwich, Woodhall Spa, Llandrindod, Strathpeffer, etc., are using their resources so far as they go.
>
> In Buxton the large mineral-water hospital known as the Devonshire Hospital, which has 316 beds and a complete installation of baths, has placed 200 beds at the disposal of the military and naval authorities for the treatment of rheumatic disorders and such other conditions as are likely to benefit by the Buxton climate and special forms of treatment. About 1,500 patients have been treated so far, with a very large proportion of cures. Very few cases of wounds are received, and only those in which massage or similar treatment is required for the treatment of stiffness, nerve injuries, etc. A fair proportion of cases of nerve shock are sent, but, except in the milder forms, would be better treated in institutions more especially devoted to that class of case. The great bulk of the cases are rheumatism, articular or fibrous (muscular), sciatica, gonorrheal and traumatic arthritis, and what is known as "Flanders foot," a form of frost-bite due to standing in trenches up to the knees or higher in cold water.
>
> There is also a Red Cross hospital of fifty beds; the cases are of similar type, but with a larger proportion of men sent to convalesce after wounds. They have their balneological treatment at the municipal bathing establishment. In both hospitals, while mineral-water treatment, baths, douches, etc., is the chief therapeutic measure, massage and electrotherapy, especially ionization, are employed.
>
> The Canadian Red Cross Society has just established a hospital of 300 beds in the town for the treatment of special cases similar to those dealt with at the hospitals already referred to, but it is expected that cases of nerve shock will receive special consideration at this hospital. It will have its own electrotherapeutic establishment, but will send cases for mineral-water treatment to the municipal establishment. It will be staffed by officers of the Canadian Army Medical Corps,

*Read at the thirty-third annual meeting of the American Climatological and Clinical Association at Washington, May 9, 1916.

but for the special treatment by the mineral water two local practitioners have been given honorary commissions in order that their special experience may be available. I have the honor to be one of these.

For officers requiring treatment special arrangements have been made for their accommodation at hotels, etc., in the town. They receive free treatment at the baths and free medical attendance.

Both at Harrogate and Bath the mineral-water hospitals have been largely or entirely given over to soldiers, but as they are both smaller than the Buxton hospital they do not accommodate so large a number of military cases, I believe. In Bath there is also a Red Cross hospital and a V. A. D. hospital; there is no essential difference, I think, between these two organizations; there is also a small hospital for officers. Primarily these hospitals are for cases likely to receive special benefit from the spa in question, but, as in the case of Buxton, wounded soldiers are received as well. A large hospital of 500 beds is about to be opened at Combe Park, near Bath, and staffed by the local doctors, but this will be for wounded soldiers and not for special bath treatment. At Harrogate the Grand Duchess George of Russia maintains a private hospital, and there are also hospitals under the V. A. D. system on the same lines as those already referred to. In the smaller spas the mineral-water hospitals are also in use for soldiers, supplemented by small V. A. D. hospitals.

We have no hydrological institutions in this country strictly comparable with those in the States. The so-called hydropathics are often no more than pensions or hotels with a small equipment of baths and simple forms of douche; a few of these have taken soldiers for special treatment, but I cannot give you any details beyond what you will find in the small book published by the Health Resorts Sub-Committee of the Royal Society of Medicine, which you already have.

Yours sincerely,

CHARLES W. BUCKLEY.

France is sending her wounded as far as Biarritz and Nice and the neighboring Riviera, and we hear that Vichy and Aix-les-Bains are full of soldiers "taking the cure" until able to join the ranks again, if need be. One of the great sources of reputation of Aix was the remarkably good results achieved in affections of the joints and in supplementing the work of the military surgeon. The soldiers of Napoleon went there, and recovered and fought again in later campaigns.

I have recently received from Dr. Margnat, of Vichy, who is now in command of a field ambulance, a letter in which he describes the efforts which the sanitary corps is making to afford balneologic treatment to the troops in the present war. The spas in France which are receiving sick and wounded soldiers by direction of the War Office are Amélie-les-Bains, Barèges, Bourbonne-les-Bains, Bourbon-l'Archambaut, Vichy, and Plombières. In Algeria they are utilizing Hammam R'hira, Bains de la Reine, and in Tunis, Hamman Lif. In cases where the springs belong to the Government, the soldiers sent for treatment are under the rules in force in military hospitals; but in other cases arrangements are made with the private owners for the use of the establishment as may be required.

Mineral spring hospitals receive, first, soldiers and sailors on active service; next, soldiers and sailors on non-active service, either invalided or retired, and, finally, officials in the Colonial, Customhouse, or the Forestry Service. Cases sent for treatment are subject to selection by Army surgeons, and are restricted to those in which ordinary means of treatment have been used during a sufficient length of time without success. They may therefore be considered chronic cases.

At Vichy the thermal military hospital, which is assigned to the soldiers' balneologic treatment, has about 300 beds. It is open from May 1 to September 15. This interval is divided into six seasons: (1) from May 1 to 21, (2) from May 24 to June 13, (3) from June 16 to July 6, (4) from July 9 to 29, (5) from August 1 to 21, and (6) from August 24 to September 13.

The military patients are distributed beforehand between these different seasons; they must all arrive on the same day and leave on the same day as well.

The interval of two days between each period is used for cleaning and disinfecting the hospital.

In the hospital itself there is a bathing establishment where the patients take their cure of baths and douches. Like the patients in civil life, they drink at the "buvettes" belonging to the Government.

The soldiers' cure is directed by military doctors specially appointed by the sanitary corps, but generally not belonging to the station.

With its 300 beds the military hospital in Vichy provides treatment for thousands of patients.

The other stations capable of receiving soldiers have less important organizations, and with the exception of Amélie, which has three, they do not all possess a special establishment for soldiers. Plombières, Bourbon l'Archambaut, Barèges use the civil establishments for treating the military patients.

The treatment at Vichy is indicated for digestive troubles, dyspepsia, rheumatic and gouty gastralgia, enteritis and chronic colitis, liver and spleen engorgements (especially after malaria, hepatic colics, uricæmia, uric lithiasis, gout, renal colics, arthritism, obesity, and diabetes).

Barèges and Amélie-les-Bains for old painful wounds, old fistulous wounds, retracted muscles, old joint diseases, local tuberculosis with no infection of the lungs, indolent ulcer, cutaneous herpetic trouble, inveterate syphilides.

Bourbonne-les-Bains and Bourbon-l'Archambaut for lymphatism and scrofula, chronic rheumatism, sciatica, muscular atrophy, traumatic arthritis, stiffness of the joints.

Plombières for visceral rheumatism, gastralgia, enteric dyspepsia, chronic dysentery, painful engorgement of the liver, painful cystitis, sciatica, neuralgia, traumatic neuralgias.

In the present war the spas have played a very important rôle, but at the same time a very complex one. They are serving a useful purpose for the wounded owing to their many hotels, and for their physiotherapeutic resources in the treatment of troubles consequent upon wounds. The thermal military hospitals afford the balneologic treatment proper to each station, so that now soldiers can follow balneological treatments not only in the abovementioned spas, but also at Neris, Aix, Salies-du-Béarn, le Mont-Dore, Uriage, Luchon, Châtelguyon, Cauterets, Dax, Argelès, etc.

Dr. Margnat says he has no statistics of the results obtained from balneological methods. But from a few particulars which have been procured, balneotherapy, with douche massage and hot baths, has given excellent results in a series of wounds and stiffness of the joints, especially in muscular troubles.

Hypertonic baths, such as those of Salies-du-Béarn, have been extremely favorable to wounds slow to heal, and Neris's hyperthermal baths to acute articular rheumatism.

Vichy, with its extensive bathing establishment (douches, massage, mineral baths, Zander institute), has contributed to the recovery of an incalculable number of wounded.

The rôle of the balneologic treatment of troops having taken part in the war will certainly not be over with the latter. We anticipate an organization after the war which will utilize all resources to remedy as much as possible the diseases and infirmities of warfare.

I am informed that at Karlsbad there are about 3,000 soldiers sick or wounded. Of the medical men usually in practice at that spa only two are reported to be left, and these are over 70 years of age. The use of the baths is probably, therefore, in the hands of attendants or military surgeons.

Dr. Heinrich Kisch, of Marienbad, is credited with having proposed fifty years ago that the Bohemian health resorts should be accorded neutrality in war time. He made this proposal when war between Austria and Prussia was threatened:

"It was considered at a parliamentary sitting in Prague, December 7, 1866, and the Government was asked to further the project. Count Forgach, then Governor, lent his aid. In August, 1867, there was an international conference in Paris on the aid societies for wounded soldiers. Dr. Kisch sent a pamphlet to all who took part to persuade them to use their influence in favor of the idea and to decide that a supplementary article should be added to the articles of the Geneva Convention. Surgeon-General von Langenbeck spoke in favor of Kisch's proposal in the Paris Conference, and requested that all health resorts should be regarded as neutral within the area of war.

"During the long period of peace nothing was done about it. In 1912, during the Balkan War, Dr. Kisch took the matter up again. The president of the Austro-Hungarian Association of Health Resorts addressed a memorandum to the Foreign Secretary of State and asked his support in this matter. Meanwhile, in August, 1914, the great European War broke out. The Foreign Ministry replied that the matter was being given serious consideration. The law of December 26, 1912, permits the utilization of health resorts for military purposes in case of necessity. According to the Geneva Convention of July 6, 1906, military hospitals are protected, as are also institutions in health resorts which are employed for the military health service. Against declaring health resorts in general as neutral, said a high official of the Ministry of War, there are circumstances which must be very thoroughly considered.

"Dr. Kisch is a man of perseverance, and has not given up hope of being able to realize his idea after the war. He thinks that this war has proved the important rôle played by the health resorts in curing wounded and sick soldiers, and that this fact will lead after the termination of the war to repeated negotiation of his proposal. He believes he will live to see his idea accepted. In this case he said to an interviewer that Goethe's words will prove to be true: 'Was man in der Jugend gewünscht, bietet das Alter in Fülle' (That which one has wished for in his youth, age offers in fullness)."—*Journ. Amer. Med. Assn.*, April 29, 1916.

Bath Trains.—It is interesting to note that bath trains are now used by the armies in the field. These are in use in Austria and Hungary, and also in Serbia; doubtless, also, in Germany and France. They are provided with sterilizing equipment, usually a refrigerator car into which steam is introduced. When baths are required the hot water is obtained from the locomotive. One of these trains has two cars with thirty bath-tubs each, two tank cars to supply the water, one car for undressing, four freight cars with clean linen, a sleeping car for the personnel of the train, and two or three cars for the disinfection of clothing. This arrangement permits 1,200 men in the course of ten hours to take a shower bath and have all their clothing thoroughly sterilized.

Even in the trenches it is possible to have needle shower baths. Cablegrams announce that the Philadelphia Committee of the American Ambulance has forwarded ten portable needle shower baths fighting on the Verdun battle front. They are much in demand, and 150 more are requested. Each bath outfit costs $120, and the needle spray is operated by means of pumps.

Combined Methods.—In addition to hydrologic forms of treatment, well-equipped spas provide massage, local dry heat by means of special electrically heated apparatus, and active and passive exercises by Zander apparatus. Electrotherapy also occupies an important place in the combined method of treatment.

In some of the larger French hospitals, notably the Grand Palais in Paris, which has been converted into a military hospital with 2,400 beds, all these measures are successfully applied. An experienced hydrologist from one of the French spas is in charge of that department. There is also a large outpatient service, where soldiers, chiefly officers, from all parts of Paris are treated; but the reports would indicate that better results are obtained with the in-patients, probably because daily treatment, sometimes extending over months, is required, just as we observe it in the case of physical treatment applied in civil practice.

According to Drs. Fox and McClure, local hydrological treatment is employed in a special manner for wounded limbs, especially for trophic lesions resulting from prolonged suppuration, chronic œdemas, swellings of the peri-articular tissues, and fractures of the articular ends of bones, and painful and adherent cicatrices. Such applications prepare the way for massage and movements, and render them easier and less painful. The arm or leg is placed in a local bath of running water (*balnéation à l'eau courante*). The temperature is hyperthermal, ranging from 40° C. to 46° C. and gradually increasing, and the duration from twenty to thirty minutes. The current is rotatory, of a strength that can be varied at will, and it can also be directed to any part of the limb. Such applications produce extreme vaso-dilatation and increased arterial circulation. In addition to these familiar effects, which are well seen in the treatment of stiffness and fatigue fever by hyperthermal baths, it is believed that "whirl baths," as they may be called, have a special action due to the movement of the water. The hydromassage, added to their high temperature, appears to have a marked sedative effect in relieving pain, and also promotes the lymph circulation and diminishes the effusions and swellings of soft parts. This form of bath therefore accelerates the retrogression of sub-inflammatory conditions. The same effects are not observed from baths of similar temperature in still water. Whirl baths are now always given before manual or mechanical treatment, and increasing importance is attached to them. At the annexe of the Grand Palais in five months 2,124 preparatory treatments in *eau courante* were given.

American Hydrological Resources.—It occurred to me that we ought to draw some lessons from European experience and make an inventory of our own resources, and at least see where we would stand in case we should be involved in a serious war. Conditions in the United States are very different from those in Europe, where, for the most part, the great spas are owned by municipal or national governments. I asked the Surgeon-General of the United States Army whether the subject of the use of spas for soldiers had ever been considered, and he replied that, as far as he was able to ascertain, no similar arrangement as, for instance,

that organized in England had ever been contemplated by the Medical Department.

Aside from the reservation at Hot Springs, Arkansas, which for over eighty years has been owned by the United States, and the wonderful thermal springs of the Yellowstone National Park, as yet unprovided with any medical establishment, the Government owns no spas. The State of New York, however, at an expense of over a million dollars, has acquired valuable springs and surrounding property in Saratoga, and is engaged in a praiseworthy effort to equip this spa for the general use of the public. This valuable property is now under the direction of the New York State Conservation Commission, and it is destined, we hope, to have a new era of usefulness.

We come, then, to the privately owned spring resorts where balneologic or hydrotherapeutic treatment, or both, is given.

In Maine we have Poland Spring, twenty-five miles from the sea-board. It has a small hydrotherapeutic department, and it is the only notable spring resort in New England. It has a capacity of about 600. In New York, besides Saratoga, already referred to, we have Sharon and Richfield Springs, Glen Springs, with its special treatment for cardiac cases, and Clifton Springs.

In Pennsylvania, Bedford Springs, about 300 miles from the sea-board; in Virginia, Hot Springs, Healing Springs, and Warm Springs, with a combined capacity of about 1,000, and an excellent equipment for balneologic treatment; the hydrotherapeutic equipment of the Chamberlin at Fort Monroe on Chesapeake Bay. The capacity of this resort is about 500, and it is on Government property. In West Virginia the White Sulphur Springs, thoroughly equipped, and with a capacity of about 1,200. This resort is about 250 miles from Washington and 300 miles from Chesapeake Bay.

In Indiana, French Lick, with a capacity of 1,000, well equipped with bathing facilities. Distance 600 miles from the sea-board.

In Michigan there is Mount Clemens, with numerous bathing establishments utilizing the saline sulphur water. Battle Creek Sanatorium, provided with a complete hydro-therapeutic department. Distance 628 miles from New York.

In Arkansas there are numerous establishments utilizing the thermal springs and a Government hospital for officers and enlisted men. Distance about 1,000 miles from the Atlantic sea-board.

Still farther west we have Glenwood Surings, in Colorado, and Arrowhead, Paso Robles, Napa Soda Springs, Paraiso Hot Springs, Klamath Springs, and other minor resorts. It is impossible to mention even the names of others, but they are for the most part open during the summer, and not very extensively or scientifically equipped. These resorts, however, would prove useful in case of operations on our Pacific coast.

It would be necessary in case of hostilities involving any considerable number of troops to have convalescent camps at which soldiers recovering could remain under military supervision until ready to rejoin. Because of expense and difficulty of undertaking long railway journeys, it is probable that the spas near our coasts would play a more prominent part than those far in the interior.

In the United States, as in England to-day, it would be doubtless possible to arrange for the use of privately owned spas for military purposes if that should ever be necessary.

There are some methods employed in European spas not very extensively used in this country. We do not make so much use of mud baths, of inhalations, and intestinal irrigations. These methods of treatment, common in European spas, especially on the Continent, are used to a very limited extent in the United States. Such measures require a special equipment, and probably will come into greater use in the future.

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AGITOPHASIA ASSOCIATED WITH AGITOGRAPHIA.

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AGITOPHASIA is a condition of excessive rapidity of speech in which sounds or syllables are unconsciously omitted, slurred, mutilated, swallowed, or in any way imperfectly uttered, causing at the same time the speech accent to become distorted. The defect may be apparent or latent; that is, occurring from the first efforts at speech or appearing during the course of the development of speech. It is due to a pathological condition of the nervous system, usually the brain, and occurs in children up to the age of fourteen but occasionally persists to adult age.

It is of prime importance for normal speech that there be a coordination between the intended thought to be uttered and the word to be used. For conversational speech definite complete thought is necessary before the speech organs are set in motion for the desired words or sentences. It is always essential that there should be a complete personal supervision so that the desired words and sentences are correctly used.

In agitophasia, however, the mental action is so rapid and the desire to speak is so excessive that the speech organs cannot keep pace, there being a disproportion or a form of ataxia which is apparent, showing an incoordination between the desire to talk and the motor skill. In other words, one's ideas are so profuse and rapid that it is a physical impossibility for the vocal organs to express them clearly and distinctly in speech. The normal time correlation between speech and thought is lost. There is usually a pronounced lack of concentration; attention to what is heard is so superficial that on repetition many words are distorted, swallowed, and mutilated. This condition of agitophasia is sometimes referred to as spluttering, cluttering, tumultus sermonis, logorrhea, pararthria, and paraphrasia præceps.

Pathologically the motor speech area, Broca's convolution, is involved, so that motor vocal memories are distorted. There is an involvement of the nerves of some of the association or, projection

tracts running to the nuclei of the nerves governing the muscular action of the speech mechanism. Most cases of agitophasia are complicated by agitographia, a defect of writing which is similar to the speech defect present in the patient; that is,

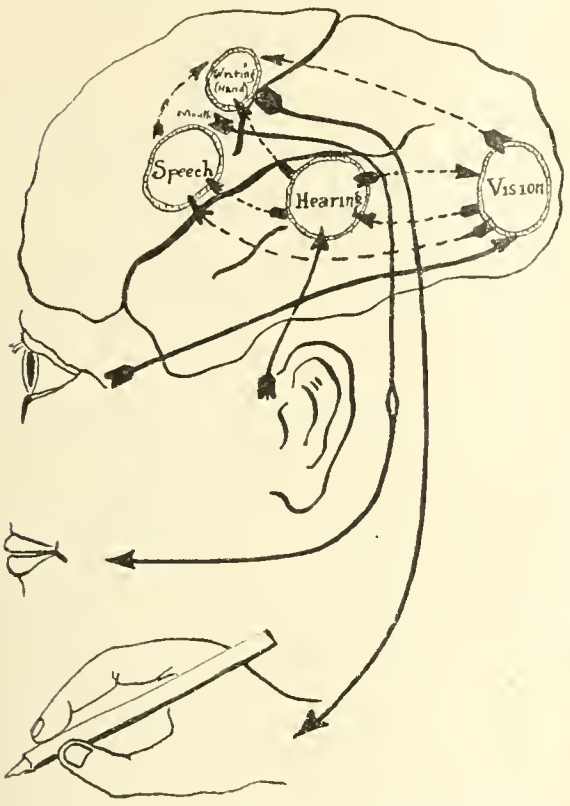


FIG. 1.—Diagram illustrating the speech zone of the left hemisphere. This scheme shows the centers involved in the mechanism of speech and the interrelationship between speech and writing.

just as the patient distorts and mutilates letters, syllables, and words in speech, he does the same when writing letters, syllables, and words. The reason for the presence of this writing condition is readily explained. The graphic motor word memories, being acquired last, are the least deeply imprinted and most easily disarranged. These memories are closely associated with the motor vocal memories, not alone through cerebral location but through function as well, this being exemplified when learning to write. On considerable practice we unconsciously repeat inwardly what we write.

Gutzmann states that there is a defect in the "ideogenic center," resulting in lingual ataxia. It is logical to deduce that this same condition exists in the writing, resulting in graphic ataxia. The ideation of a written or spoken word is based upon the association of the component syllables. If silent thought omits syllables and words in the construction of sentences they cannot be expressed in writing; therefore an impairment of this function of association naturally results in a pathological state, not only of spoken language but of written language as well.

Those who are feeble mentally very often show agitophasia to a marked degree. Mental coordination is lost, resulting in a torrent of half-articulated words on attempts at speech with normal tempo, although articulation is perfect when slowly performed.

The condition is either congenital or acquired (injuries, tumors, etc.). Retarded acquisition of speech and stuttering may be causative factors, and, as previously mentioned, according to Gutzmann, there is a defect in the "ideogenic center."

The psychic behavior of those suffering from agitophasia is shown in their restlessness and hasty disposition. They are impulsive, irritable, and sen-

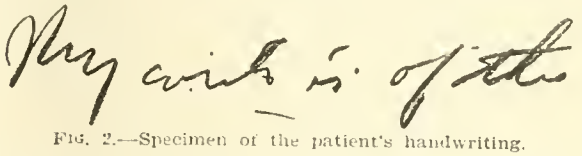


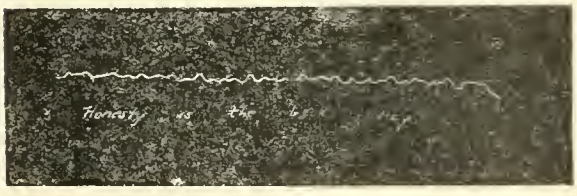
FIG. 2.—Specimen of the patient's handwriting.

sitive, and any disturbing influence is conducive to an exaggeration of their condition, leading to moroseness, melancholia, etc.

In these cases it is rather interesting to note that speech in the form of dramatic recitation or

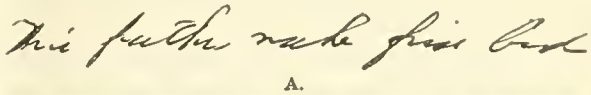
A.

B.



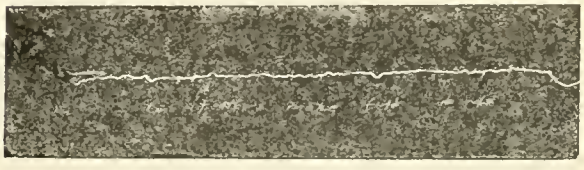
C.

FIG. 3.—Kymographic tracings of the forearm muscles; A, specimen of the patient's writing; B, kymogram of the patient; C, kymogram of a normal person.



A.

B.



C.

FIG. 4.—See explanation of Fig. 3.

singing is good, being almost normal. This no doubt is due to the fact that a new form of thought is not required, because through former repetitions correlation between thought and expression (speech) is almost undisturbed. Reading is more

or less disturbed according to the difficulty of the words.

The peculiarities of writing known as agitographia will be best illustrated through the cita-

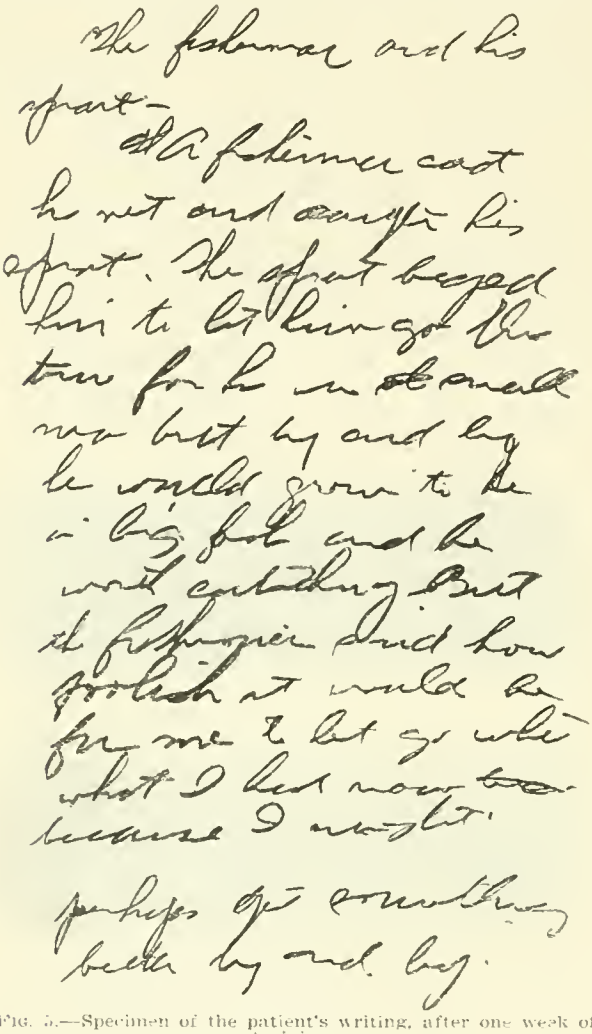


FIG. 5.—Specimen of the patient's writing, after one week of training.

tion of a case which recently came under my observation:

A young man, twenty years of age, was referred to me for treatment by an instructor in writing. This patient being fairly well educated was able to do general clerical work in an office except for one factor—his writing was barely decipherable. He, therefore, in order to improve his condition, decided to take a course in penmanship. Although he faithfully followed instructions he did not seem to make much progress. His instructor was unable to understand why an intelligent young man, like his pupil, should not show improvement. His writing bore the same characteristics that he had when he entered his class four months ago. He came to the conclusion that there must be some definite reason for the pupil's non-progress and since his attention was attracted to the fact that the young man's speech was abnormal, he referred him to me.

I found that he was suffering from the condition summarized above—agitophasia—which was complicated by agitographia. Just as in speech, he mutilated and swallowed sounds and syllables so he practically did the same thing in writing by the omission of letters or parts of the letters comprising the various words. We know that through the perfection of sensorimotor reflexes (both cutaneous and muscular) acting through the spinal cord, writing becomes almost automatic; but in this case, this perfection was interfered with. The following is a specimen of writing which was taken at the patient's first examination:

The patient states that when his father was a young man he had a habit of talking rapidly, which gradually disappeared in later life. There was never an abnormal writing condition present. His brother, the only other male member of the family, on the contrary, always suffered from agitographia, but never from agitophasia. The mother and three sisters never showed any signs of either condition. It is rather interesting to note that the condition affected only the male side

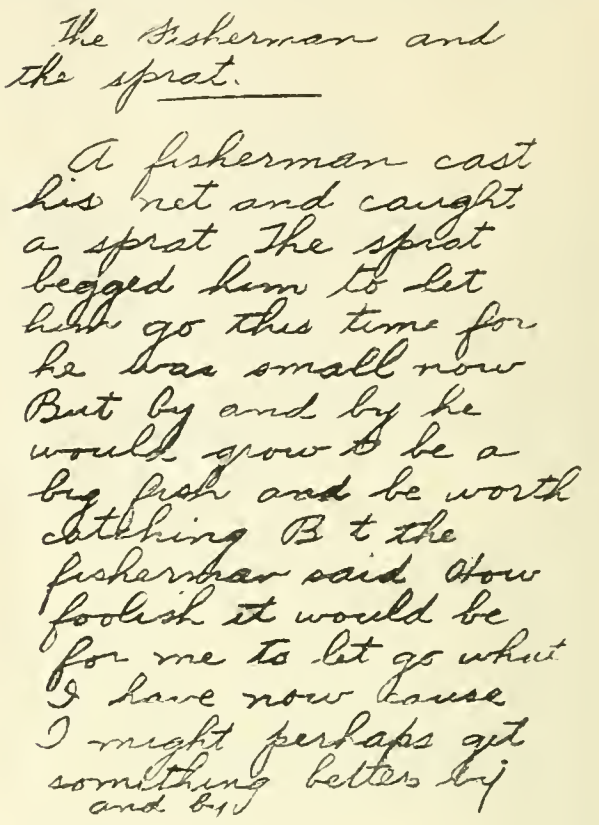


FIG. 6.—Handwriting of the same patient as shown in Fig. 5 after six weeks of training.*

of the family. The patient does not give a history of any condition since his childhood that could be connected directly or indirectly with his present state. No history of convulsions. He is in good health, mentally alert, but rather nervous and excitable. His speech and writing difficulties he has had since childhood. In his speech, when a sentence assumed a complicated form, his mind sometimes became so confused that he would offend against the grammatical and syntactical construction, inasmuch as he would repeat words or exchange them for others.

In his writing this did not occur, but he would, for example, disjoint syllables or letters—that is, he would miss a part of a letter, as the second curve of the letter N. He would half form letters in his hurry to get to the next letter and commit a few other vagaries which can be better understood by examining his style of penmanship than by reading the explanation. (See Fig. 2.)

His physical examination reveals no apparent abnormalities in development. Eyes—pupils regular, equal, central, react to light and accommodation, vision normal. Ears—negative. Mouth—teeth and gums in good condition; teeth in a state of lingual occlusion. Palate—high-arched and rather narrow. Tongue and throat—negative. Pharynx and larynx—normal. Laryngeal examination shows no evidence of spasmodic condition. Nose—nasal obstruction on right side due to the presence of a spur on the septum. Breathing—shallow, irregular, and of the costal type. Superficial and deep reflexes—normal, no abnormal reflexes elicited. Station and gait—normal. Slight ataxia of upper extremities. No tremors.

When writing for an extended period, the patient displayed a fatigue neurosis of the hand which was somewhat different from the condition commonly known as writer's cramp. In writer's cramp we have a spasmodic and disordered condition of the muscles concerned in writing, due probably to a functional perverted activity of the spinal motor centers, leading to disabilities in connection with the act of writing. In the spastic form of writer's cramp a spasm sets in in one or several

*The improvement in his writing kept pace with the improvement in his speech.

muscles that are being used. In some cases the flexors are affected; in other cases the extensors. The spasms may be either tonic or clonic. In the latter case the fingers, hand, or even the whole arm become affected with involuntary jerky movements. The arm aches and is sometimes tender.

In our case of agitographia there was only tension of the muscles of the forearm, which was due to voluntary inhibition in keeping his hand from running away. To quote the patient: "I must hold my hand back, if not, it will run away with the pen." He was unable to write for extended periods of time on account of this excessive muscular tension.

The kymographic tracings (Figs. 3 and 4) show the difference between muscular contractions of this patient's forearm when in the act of writing, and the muscular contractions of the forearm of a normal person when writing. The vibrations seen in the patient's record show definite tension or spasm irregularities. The vibrations seen in the normal person's record do not show spasm irregularities.

The diagnosis of this condition is sometimes confused with that of stuttering or lisping, but a complete examination of the patient readily yields a correct diagnosis.

The fundamental basis of all treatment in cases of agitophasia with or without agitographia is the inculcation of a sense of rhythmical slowness, both in speech and writing. This is best accomplished through suitable pedagogic exercises. High-frequency treatment, faradism, etc., are very beneficial. Surgical conditions present should be attended to. In the case cited, a right nasal spur was removed, giving the patient normal breathing.

In conclusion, if these cases are observed and diagnosed, especially at an early age, they readily respond to proper treatment; consequently, agitophasia, associated with or not associated with agitographia, can be classed under curable conditions.

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ARTERIAL HYPERTENSION; SYMPTOMS, SIGNIFICANCE, SEQUELÆ AND MANAGEMENT.*

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The importance of a discussion of cardiovascular disease will scarcely be questioned. At a time when we point with pride at the lowering death rate from diphtheria, meningitis and tuberculosis the mortality from cardiovascular-renal disease is steadily, even alarmingly increasing.

All of the time allotted to the discussion of this topic might with profit be devoted to any one of the subheads appearing in the title. However, it will perhaps be of more practical value to consider rather briefly all aspects of the subject.

We cannot really cope with the problem of hypertension until the underlying or real cause is determined. Nevertheless, by early detection and intelligent management we can usually prolong life and relieve more or less completely many distressing symptoms. We do not know how long hypertension can exist before symptoms are manifest, but apparently the factors which result in cardiovascular disease may operate for many years without sign or symptom.

Symptoms.—There are certain complaints which should immediately suggest the possibility of hypertension. These may be referable to the heart or to the kidneys; they may be cerebral in type or general in character. Headache and irritability, too often in a woman attributed to the "change of life," may in reality foreshadow a grave calamity, as a case I recently saw in consultation demonstrates.

Case I.—The patient, an unmarried woman of forty-eight, had had a stroke of apoplexy about twelve hours previously and died shortly after our arrival. She had always been exceptionally well, except that for several years she had been subject to *severe headaches* which were especially apt to come on *in the morning*, and for the past year she had been *irritable* and hard to get along with.

While many cases of hypertension are not accompanied by headache it is nevertheless a frequent symptom and is very often most marked on awaking.

The irritability of this patient quite naturally had been attributed to the menopause through which she was passing. It is worthy of note that both her *mother* and *maternal grandmother died of shock* at about sixty-five. Moreover *the patient's* next youngest *brother* aged 43, who denies syphilis, had a *slight stroke* of apoplexy a year ago.

It has long been known that certain families are prone to cardiovascular disease, and it is incumbent upon the physician to impress upon all members of such families the importance of having their blood pressure taken at least once a year, as there may be few or no symptoms though the disease is making steady progress. While it should be the routine to take the blood pressure on all patients it is especially important in that unfortunate group of sufferers we refer to as neurasthenics. An hemoptysis or an epistaxis may be the first symptom to send the patient with hypertensive disease in search of medical advice.

Case II.—A little over a year ago I saw a man aged forty in consultation who eighteen months previously, when apparently in good health, began to bleed from his nose. Notwithstanding that he received the usual treatment for *epistaxis*, the hemorrhage persisted for over two weeks and then, after subsiding for a time, recurred again. He was finally given injections of rabbit serum. About this time it was discovered that his systolic blood pressure varied from 190 to 215, and that his urine contained considerable albumin.

Case III.—A man of forty-eight was seen with Dr. Hanley in Stafford Springs. Five months previously he had had a *pulmonary hemorrhage*. He had been in good health previously, except (and please note the exception), that for the past *two years* his *endurance* has *not* been as *good* as formerly, and for several months he had noticed a *tightness across* his *chest* on extra exertion. Not alarming symptoms seemingly, but really of grave import, as four days following the hemoptysis the left side of his body became paralyzed. This hemiplegia cleared up completely, but was shortly followed by several other attacks. His systolic pressure varied from 190 to 240.

An interesting group are the patients who from time to time have attacks of spasm of the cerebral arteries.

Case IV.—For several years I had under my care an old lady over seventy who had a number of attacks of convulsions involving one-half of the body which were followed by more or less complete hemiplegia that

*Read at the meeting of the Litchfield County Medical Society, held at Winsted, April 25, 1916.

usually cleared up within thirty-six to forty-eight hours. Spirits of Glonoin dropped on her tongue—5 to 10 drops—would always stop the convulsions.

Another patient of advanced years, a gardener by occupation, had many attacks of paralysis, but frequently he would be at his work in the garden a few days later.

It is of interest that in neither of these cases was apoplexy the cause of death. The former died of sepsis from a bed sore following a fractured hip, and the old gentleman from an acute nephritis following prostectomy.

Sleeplessness, especially in the early morning hours, is often dependent upon vascular change and merits careful investigation. Dyspnea on exertion or paroxysmal and precordial pain occurring in a patient of middle age should always suggest cardiovascular disease. While directly attributable to failing cardiac muscle it is as a rule but part of a widespread vascular pathology.

Of about equal significance, though not so widely appreciated, are the digestive disturbances developing in individuals past fifty, often plethoric in type, who have hitherto enjoyed good digestion. They complain of a fullness and "pressure" below the sternum, are usually flatulent and most uncomfortable after their heartiest meal.

Nycturia and especially nocturnal polyuria are strong evidence against the integrity of the kidneys. Mention should also be made of visual disturbances and general indefinite wandering pains. Not infrequetly an orthopedist is consulted because of painful feet and legs.

As my practice does not include obstetrics, I have had no personal experience with the blood pressure readings in pregnancy, but their value has been thoroughly established. It has been demonstrated that hypertension frequently antedates the symptoms of toxemia and the appearance of albumin in the urine. Accordingly the physician who does not ascertain the arterial tension of his pregnant patients is not doing his full duty.

Case V.—A few months ago a young married woman was referred to me by her physician because of an *annoying cough*. No signs of pulmonary disease were found, but her systolic blood pressure was 280, diastolic 170. She had been pregnant three times. During the first pregnancy she was in excellent health and gave birth to a healthy, though not robust child. During the second pregnancy she developed a nephritis, and was blind for several days. This pregnancy was interrupted before the eighth month. No blood pressure readings were taken. It was again necessary for the same reason to interrupt the third pregnancy. Following this pregnancy the urine had cleared up and for this reason the patient had been assured her kidneys were all right.

The woman with hypertension and toxemia during pregnancy should be kept under very close observation for a month or two after confinement. Frequent blood pressure readings should be made and when the tension remains high we must conclude that a nephritis exists. Such a patient should not become pregnant again, as it is very probable that a toxemia will occur with possibly a fatal outcome.

Hypertension is so predominantly a condition of middle life and old age that we are not apt to realize that it is sometimes present in childhood. During the past year I have had four children with hypertension under observation. Two complained of morning headaches, but in the other two there were no symptoms. All were heredosyphilitic.

It is important to remember that the symptoms of an advanced nephritis in an old man may be due to the back pressure from an enlarged prostate which will promptly clear up after prostectomy.

Nature and Significance of Hypertension.—The blood pressure consists of *an essential pressure* which is required for life to be maintained and *an incidental pressure* which is dependent upon the different physiological processes and the various activities of our daily lives. The normal systolic is the essential plus the incidental, and for men and women of middle life is 150 and 140 respectively. Though dependent upon a number of things, the systolic pressure represents chiefly the cardiac force. The diastolic pressure is about 80 mm. lower than the systolic and is a measure of the peripheral resistance.

We are not yet in a position to say very much about the pulse pressure, that is the difference between the systolic and diastolic pressure, but the determination of the diastolic pressure is of great importance, as sometimes we find it considerably raised when the systolic pressure shows but little variation from normal. It is not so easily affected by various influences as the systolic pressure and is, in the absence of an incompetent aortic valve, a better indication of the condition of the arteries.

When the walls of the arterioles throughout the body have lost their elasticity and the lumen is diminished, the essential pressure must rise in order that the circulation be properly maintained. In the early days of blood pressure estimation this fact was lost sight of and attempts were made to get the pressure "normal" not realizing that the normal for the man with a granular kidney was higher than for his more fortunate fellow whose kidney was healthy.

Over and above this essential pressure is the incidental element that depends upon the normal functions of the body and the stress of our daily life. Sudden exertion, great and constant mental application, fits of anger, straining at stool, running for street cars, hurrying up stairs, etc., all raise our systolic pressure and the more or less constant recurrence of these sudden elevations of the pressure results in damage to the arteries, *especially if in the past they have been the seat of an inflammatory process.* As sclerosis develops the essential pressure rises and so a vicious circle is established.

Before the employment of kidney function tests many patients were seen in whom the kidneys could not be indicted from the examination of the urine, yet at autopsy nephritis would be revealed. As a result of the development of a number of different methods of investigation it has been shown that a persistent hypertension is practically always indicative of change in the kidneys. Even when the picture is that of diabetes, the hypertension is due to an accompanying cardiovascular condition rather than to the diabetes. However, the kidney arterioles are not alone involved, for careful examination has revealed that the condition is a widespread disease of all the smaller arterioles. While definite knowledge is lacking, it seems probable that the pathological process which ultimately manifests itself as hypertension disease has its inception years before symptoms occur.

Though an immense amount of work has been done in an endeavor to find the causal factor of hypertension, there is no definite agreement among clinicians. Alcohol, tobacco, lead poisoning, syph-

ilis, intestinal autointoxication, the acute infections of childhood and chronic foci of infection all have their champions. The first three certainly have no part in the causation of the cardiovascular disease so common among women of comfortable circumstances. No clear case has been made against intestinal autointoxication as the universal cause, though it is possible that it is sometimes a factor.

It is conceivable that a chronically diseased tonsil or an abscess about a tooth of many years' duration might result in arterial disease. In fact, I have been told of a case where the extraction of a tooth and the cure of the abscess was followed by a fall of pressure. Yet nearly every ward patient has pus about his teeth, but only a few have hypertension.

There is some evidence, both clinical and experimental, that the acute infections may cause arterial degeneration which may be followed by a certain degree of sclerosis, yet it has never been established that the pathology started by scarlet fever, diphtheria, etc., will continue to advance for years after the disease has been clinically cured. We do know, however, that the *Treponema pallidum*, whose predelection for the arteries has long been known, quietly and unobtrusively causes widespread destruction of vascular tissue. Markedly sclerosed, even calcarious arteries have been found in children with hereditary lues who have had none of the acute infectious diseases.

However, be the underlying cause what it may, it is very apparent that the stress of life is unquestionably the direct or immediate cause. The death rate from cardiovascular-renal disease is much higher in large cities where the pace is most rapid and higher in this country than in England and Wales, where the life is more tranquil. In fact, in Great Britain the increase has been practically negligible.

Sequelæ.—The best compilation of what surgeons call "the end results" have been made by Janeway. Half of his hypertensive patients had died by the end of five years, and of those living half died during the next five years. That is, only a quarter lived over ten years. Women live on the average longer than men, notwithstanding that they have pressures fully as high. This is probaly due to the fact that they are better able to save themselves when symptoms develop.

Gradual cardiac failure is the cause of death in about 30 per cent. It is important to recognize this group because they must be treated as cardiac cases irrespective of the hypertension.

About 20 per cent. die of uremia, while apoplexy causes death in 15 per cent. Angina pectoris and intercurrent infections each cause death in approximately 7 per cent. of instances. In women death from angina and from edema of the lungs appears to be rare. Apoplexy or uremia is the cause of death in most cases in which pressure is persistently above 200. Angina and, strangely enough, gradual cardiac failure are not apt to follow these very high pressures.

Severe morning headaches, nocturnal polyuria and visual disturbances indicate that death will probably result from uremia, and in about 75 per cent. of cases within six years. Cardiac symptoms, of which dyspnea is the most constant, suggest death from gradual cardiac failure. Janeway found that a rapid and continuous loss of flesh was an unfavorable symptom.

Management.—We may roughly divide our patients into two classes. The first comprising the individuals who come to our office, as their symptoms are not sufficiently urgent to make them give up work. The other group comprises those in whom the disease is further advanced and who are seen at their homes or in the hospital.

In the first group it is particularly important to study each case thoroughly in order that we may ascertain if possible what the incidental factor of the hypertension is. It may be prolonged mental application without adequate periods of relaxation; it may be too many cigars, or it may be too long hours and a general unhygienic régime under which the patient lives.

Inquiry as to his habits should always be very thorough, as a readjustment of his life is necessary, but it should be brought about with the least possible violence. To tell an active business man with moderate hypertension that he must immediately give up all his business is speaking thoughtlessly and unwisely. He will not take kindly to crocheting, neither will he sit under a tree and write sonnets. With care, however, we can usually rearrange his habits so that a great deal of strain is taken off of his arteries.

The "noon hour" should be multiplied by two. After the midday meal, which should be the chief meal, rest in a recumbent position for an hour is desirable. If the patient can sleep a part of that time so much the better.

If the physician explain to an intelligent patient, that as the arterioles lose their elasticity and their lumen diminishes, the blood pressure must of necessity rise to maintain the circulatory balance, he will materially lessen the anxiety that the term high blood pressure occasions. If the physician further explain the incidental factor of arterial tension and enumerate its chief causes he will readily obtain his patient's cooperation, which is so essential in the management of these cases.

The hypertensive individual must first of all stop "hustling." He must school himself to say, "There will be another car in a few minutes" when he is late at breakfast. If he must climb stairs, deliberation should characterize the act. If he be a really remarkable man he may learn to control his temper, for there are few things more injurious to diseased arteries than bursts of anger.

The individual with but a slight degree of hypertension, free from morning headaches, and who is eliminating a good amount of phthalein in two hours (50 per cent. or over) should not be put on a milk diet nor told to give up all meat. A moderate amount once a day is desirable.

It has long been known that overeating is distinctly harmful and it is particularly so in this class of patients. The heaviest meal had best be taken at midday and the supper be simple. The importance of complete relaxation one or two days of each week cannot be overestimated, as fatigue is cumulative. It is important that the patient take several warm baths each week, have a daily evacuation of the bowels and a cathartic once or twice a week, but too active catharsis will be followed by faintness and weakness.

One cannot deduce that because the urine contains no albumin the integrity of the kidney has been preserved. When the amount of urine passed during the night exceeds the amount voided during the day and when the gravity is persistently low or "fixed," one must conclude interstitial changes have already begun. The phenolphthalein kidney

function test is the only one of the function tests that can be readily performed by the general practitioner and it corresponds quite accurately with the more complicated estimations of the non-proteid nitrogen in the blood.

It is important, however, to appreciate that the amount of phthalein eliminated at any time is an estimate of the kidneys' ability to excrete that drug only at that particular time and does not *per se* warrant an absolutely favorable or unfavorable prognosis. The kidneys may improve or the trouble may extend within the next few weeks. It is desirable in all cases of hypertension to ascertain from time to time how the kidneys are functionating, as occasionally the diminution in function may precede serious symptoms.

During the winter months hypertension patients should avoid all unnecessary exposure, as even a mild infection may result disastrously.

Vasodilating drugs are not usually called for and are often harmful. In certain cases they will unquestionably relieve symptoms, but their routine employment as soon as the patient comes under observation should be discouraged. When the tension is very high a prompt venesection may be lifesaving.

I have frequently obtained marked relief from sleeplessness, nervousness and headaches by the use of potassium iodide and mercury either by injections or inunctions, though the Wassermann test was negative.

In the second class of individuals, where the kidney and heart are not longer able to adequately do their work, the patient must be in bed.

Digitalis is nearly always required irrespective of the blood pressure and fears of a higher tension resulting are groundless. Not infrequently a combination of potassium iodide and digitalis will give results not obtainable with either used alone. A low phthalein output and an increase in blood nitrogen regularly accompany this stage of the disease, and the diet should be low in protein and sodium chloride.

If the patient be very edematous only 800 c. c. of milk in twenty-four hours should be allowed (Karrel diet). This has the advantage of being low in protein and sodium chloride.

When compensation is reestablished carefully regulated exercises are to be instituted.

The distressing dyspnea that so often attends the final days of hypertensive patients can be controlled only by morphine. The temporary improvement from a good night's sleep following its use is often very gratifying, and it should not be withheld when the end is near.

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MILK AND COMMUNICABLE DISEASES.*

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An outbreak of communicable disease was traced to consumption of raw milk as far back as 1854. Since that time there has been a large number of epidemics traced to the consumption of raw milk, and in each instance it was found that there was, or had been, a case of specific communicable disease upon the dairy farm where the milk was produced or among employees handling the milk. There is now a large amount of literature on the subject of milk-borne diseases and numbers of epidemics of septic sore throat, typhoid fever, diphtheria and scarlet fever have been found to be due to the use of raw milk which had been infected with the organisms of these diseases.

The work of the British Royal Commission on the Study of Bovine Tuberculosis and that of Theobald Smith, Ravenel, and Park, in this country, have conclusively demonstrated the fact that bovine tuberculosis may be transmitted to man and that from 5 to 15 per cent of all cases of tuberculosis in children are of bovine origin. During the past year and a half there have been reported to the State Department of Health at Albany over 800 cases of communicable diseases causing thirty-seven deaths which were due to outbreaks of scarlet fever, septic sore throat, diphtheria and typhoid fever. In each epidemic the cases occurred largely upon the milk route of one dairy. A careful study of these epidemics has shown in each instance that the cause was due to the presence of an individual affected with one of these diseases upon a dairy farm supplying the milk to the persons who became ill of the disease.

The use of raw milk has not generally been considered in this country as a source of danger, but for many years physicians in Continental Europe have regularly recommended the use of boiled milk for the feeding of children and infants. About twenty-odd years ago there was introduced into this country a change in infant feeding caused by the boiling or pasteurization of milk. As time wore on and the demand for the use of this milk became more widespread, physicians reported unfortunate results and a few cases of scurvy were described among the many thousands of children using it.

With the increasing difficulties of introducing an adequate supply of fresh milk several of the larger milk dealers in our great cities conceived the idea of heating their milk in order that they might keep it for a longer time. These dealers then began to pasteurize their milk. In the pasteurization of ten or more years ago it should be remembered that it was performed by what is known as the "flash system." The "flash system" consists in rapidly passing milk over a heated coil raised to a temperature of 167° or more F. When this system began to be more generally applied, objection was made to it by health boards and physicians, for the following reasons: The health boards objected because they felt that this would enable unscrupulous milk dealers to sterilize filthy and disease-infected milk; and that in milk which had been heated in this manner the lactic acid bacteria would be destroyed and the milk, instead of souring, would become putrid and would be consumed without the consumer knowing that the milk had spoiled, as it would not have the well-known sour taste. Physicians objected on the ground that the consumption of this milk by infants and children would result in large numbers of cases of scurvy. The opposition was nowhere greater than in the city of New York.

Six years ago the city of New York adopted the general chlorination of the entire water supply of the city. This did not produce the expected diminution in the amount of typhoid fever in the Greater City and a more thorough study of the cases of typhoid fever resulted in the discovery of several widespread epidemics of typhoid fever upon the routes of one or more milkmen. By tracing this

*Read at the Annual Conference of New York State Health Officers, Saratoga Springs, June 7, 1916.

milk to its source, cases of typhoid fever and typhoid carriers were found upon the dairy farms which had infected nearly the entire milk supply of one or more dealers. These and other epidemics soon convinced the authorities of the city of New York of the importance of pasteurizing the entire milk supply of the city.

In making a study of the subject it was found that milk pasteurized by the flash system had a certain number of disadvantages. Some of the milk in passing rapidly over the heated coil soon formed a film which varied in thickness so that in some places the stream of milk passing over the coil was subjected to varying degrees of heat. Careful examinations made showed that such a method of pasteurizing did not always destroy the pathogenic bacteria. Later investigation showed that such a high amount of heat was unnecessary in order to destroy all pathogenic bacteria, and it was ultimately found that a temperature of from 142 deg. to 145° F., if maintained for a period of 30 minutes, would entirely destroy all pathogenic bacteria.

Certain objections, however, are still made to pasteurization as follows: (1) Feeding of pasteurized milk to infants may cause scurvy; (2) pasteurized milk has a stale, flat or boiled taste; (3) pasteurization of milk diminishes the amount of cream in a bottle of milk; (4) pasteurization increases the cost of milk; (5) pasteurization devitalizes the milk and reduces its food value. Each and every one of these objections can be readily met.

The mortality records of the city of New York, where over 90 per cent of the milk supply has been pasteurized by the holding method, show no increase in the number of deaths from scurvy. Even if there may be a possible increase in the number of cases of scurvy, it is fairly generally admitted by children's specialists that the danger from milk-borne diseases is far greater than the danger of scurvy, and that by the proper administration of orange juice to infants beginning at the sixth month or earlier, the occurrence of scurvy will be prevented.

The second objection, as to the change in taste of pasteurized milk, has a certain foundation because, if milk be heated to above 155° F., it will have a somewhat boiled or flat taste, but if milk be properly pasteurized within the temperature limits now usually prescribed by cities and States, there will be no alteration in the taste. Simple experiments will readily demonstrate this. Many persons have made the simple test of sampling first raw and then pasteurized milk and have not been able to distinguish between them. Pasteurization properly performed produces absolutely no change in taste. If there is a change in taste it is always found that the milk has been heated to a higher temperature than is necessary.

It has been stated by some observers that there is a diminution in the amount of cream when milk is pasteurized. This complaint is made by the consumer. A complete series of experiments carried out in the laboratory of the New York City Department of Health by Kilbourne showed that there was a diminution in the volume of butter fat, which rose to the surface in milk which had been heated to a temperature higher than is necessary through faulty pasteurization, and that within certain limitations the higher the temperature to which the milk was heated the smaller the amount of cream which rose to the surface. But even at the higher temperature there is a diminution in the amount of cream which rises of only 10 per cent. It should be definitely understood, however, that even though the cream line be diminished there is absolutely no diminution in the fat content of the milk, and therefore no diminution in the nutritive value.

It must be admitted that the cost of machinery and the cost of operating a pasteurizing plant is considerable, but the actual cost is far less than one cent per quart of milk and in some communities in New York State properly pasteurized milk is now being sold at the same rate as the raw product, and the concerns selling this milk are making money from the sale of their product.

A number of experiments have been made in feeding pasteurized milk to young, growing animals. It has been found that calves and other smaller animals, when fed on pasteurized milk, will thrive just as well and gain in weight just as steadily as when fed upon the raw product. An experiment carried on some years ago under the direction of Drs. Park and Holt of New York City in the feeding of infants, showed that infants fed at the breast had fewer cases of illness among them and did better than infants who were fed upon properly modified milk. In two groups of infants fed on modified raw milk and modified pasteurized milk there were fewer cases of diarrhea and fewer deaths among those fed on pasteurized modified milk than among those fed on raw modified milk.

Another interesting fact is that the cities of New York, Boston, and Chicago have for from three to five years had a large majority of their milk supply pasteurized, and during this period there has been a large diminution in infant mortality and in the number of deaths from diarrheal diseases.

Conclusions.—It would seem, therefore, that the chief objection to the pasteurization of milk is that it is a change from the long-continued habit of the use of raw milk and that, although there may be a slight increase in the cost of milk that has been pasteurized, yet the health insurance that is given in preventing a larger number of epidemics of milk-borne infectious diseases is far more important than the small sum paid for this protection.

It must be said, however, that there are still a number of medical men and health officers who contend that pasteurized milk is nothing more than cooked filth, but sanitarians and health officers should insist that pasteurized milk must be pasteurized clean milk and that every precaution should be taken to insure the milk being pasteurized in clean containers. The method of pasteurization should be supervised, for if the milk is improperly pasteurized complaints will come, and they will be made against the whole process of pasteurization rather than at the slip in the method. But if pasteurization is carried on intelligently and under the direction of qualified health officers it will give the quality of milk that the people demand, and will result in a diminution in the amount of communicable diseases.

Practical Value of the Schick Reaction. — Arthur Sprenger concludes that the Schick test is of positive value in determining the susceptibility of a patient to diphtheria, and also in differentiating doubtful membranes of the throat. It shows that in some cases passive immunity is of short duration. The author does not, like others, find that immunity is a familial characteristic. The test insures a saving of antitoxin, for it has shown that less than 50 per cent of children are susceptible to diphtheria. Carriers give a negative Schick reaction.—*Illinois Medical Journal.*

THE ROLE OF DOCTORS' SONS IN THE LINCOLN ADMINISTRATION.*

A CONTRIBUTION TO THE PSYCHOLOGY OF GOVERNMENT.

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THE important part taken by doctors' sons in the regimé of Lincoln does not appear to be generally known, if, indeed, it has ever been recognized. Nor, in the case of most of these participants, do the customary biographical sketches give any indication of the medical parentage.

Except as casually included in medical history and memorials, that side of medical life which may be termed the Sociology of the Profession has been but little studied. Kelly has explored the relation of physicians to botany, and doubtless there have been efforts in one or another direction that deserve mention.

Such a sociology represents a more democratic phase than does isolated achievement or individual prowess. And it might naturally be expected that in America it would have both a larger field and a sounder appreciation than elsewhere. There is now an abundance of material on the sociological side concerning the profession itself. Though in its entirety a large subject, many parts are sufficiently complete in themselves to admit of separate presentation.

In the historic interest of our members, to offset attacks on our calling, and as a genetic study, the gathering of material of this order has a larger warrant than merely to gratify curiosity.

Since the days of the Revolution no period in our country's history has been so stressful, so fraught with danger, and so seriously in need of wise guidance, as that of the Civil War. The leader of that time was Lincoln. The superior quality of his wisdom in action and in the selection of his immediate supporters is recognized. It consequently becomes a matter of deep interest to size up the mental atmosphere of his surroundings, and to see if any clear element is recognizable. That he had a true genius for gathering and utilizing opponents as well as presumable congenials renders any element in his make-up and entourage the more striking.

It is easy to pick out the men who officially and personally stood next to him, distinctly more so than most others, and this group became more pronounced as his administration progressed. At least four of these were his own choice; and doubtless he was consulted about the selection of some of the others. For the present purpose it is only necessary to give an outline sketch of each, sufficient to show his standing, relation and paternity. Most interested readers can fill in much from memory. The cases in point are as follows:

1. Judge David Davis, the private adviser and legal friend of Lincoln, who accompanied him in both these relations on the momentous journey in February, 1861, to Washington, and remained in that capacity unofficially. He had not acquired at that time all the national reputation that came later (U. S. Judge, Senator from Illinois, and in 1881-3 acting Vice-President); yet he proved fully worthy of the confidence placed in him.

In the Republican national convention of 1860 Judge Davis (as delegate-at-large from Illinois) had secured the nomination of Lincoln, and after the election "was a chief councillor of the President."

Judge Davis was a son of Dr. David Davis, a physician of Cecil County, Mo.

2. John Hay, Lincoln's personal private secretary, in later years U. S. Secretary of State. Nicolay, a German by birth, was the chief executive secretary, but Hay was the one in close confidential relations, perhaps more so than anyone else during the full period of Lincoln's administration. He was very young for such a responsible post, only 23 years of age at the start, though admitted to the bar.

Hay was born in Indiana, the third son of Charles Hay, M.D. (1801-84), a native of Kentucky and "a prosperous physician."

3. Then came the Vice-President, Lincoln's running mate in the campaign of 1860, the Hon. Hannibal Hamlin, ex-officio president of the U. S. Senate. His term did not expire until March 4, 1865. Hamlin was a lawyer, had been speaker of the Maine House, M.C., U. S. Senator, and Governor of Maine. Subsequently he was our minister to Spain. He was born at Paris, Me., the son of Dr. Cyrus Hamlin.

Dr. Hamlin was born in Massachusetts (1770), was a practising physician, and at times had filled a number of positions of local responsibility.

4. Solomon Foot (1802-66); never much in the public eye, and now little heard of. Yet as president *pro tem.* of the U. S. Senate (Feb. 16, 1861, to April 26, 1864), as floor leader of that body, head of its most important committees, potentially in line for the Vice-Presidency, and chairman of arrangements for the Lincoln inauguration in 1861, he was an invaluable aid at the transition time and for much of the Lincoln period. He was the most prominent advance agent who held over to the new era, a man of mature years and wide training, who come into his heritage of responsibility on the withdrawal of part of the members.

Foot had been professor of "natural philosophy at the Vermont Medical School, Castleton, 1827-31," lawyer, Speaker of the Vermont House, State's Attorney, M.C. (1836-42 and 1843-7), U. S. Senator (1851-?), and railroad president.

He was a native of Vermont, the son of Dr. Solomon Foot. His father, a physician, born in Connecticut, died when the son was barely nine years old.

The two secretaryships, of State and of War, were at that time unofficially, if not formally, recognized as the leading two cabinet portfolios. In this case the long term of service of the occupants show each to have been *persona grata* to the President. Everyone who recalls that period or is familiar with its history is well aware of the fact that in the general estimation these two men were Lincoln's main reliance and his most representative cabinet heads.

5. William H. Seward, Secretary of State. Seward had previously served as Governor of New York and as U. S. Senator. Though he had been the chief competitor for the Republican Presidential nomination in 1860, he gracefully accepted and admirably filled the statesman's position in Linco'n's cabinet. He was the ranking member of that body, remained through Lincoln's whole administrative career, and subsequently engineered the purchase

*In part from a paper read November 16, 1915, before The Book and Journal Club at Baltimore.

of Alaska. He was born in Orange County, N. Y., the son of Dr. Samuel Swezy Seward.

Dr. Seward came from Connecticut. In later years he "combined medical practice with a large mercantile business."

6. Owing to the peculiar conditions of the time, the cabinet officer next in importance was the Secretary of War. From Jan. 15, 1862, on, this post was filled by Edwin M. Stanton (who had previously been the U. S. Attorney-General in the cabinet of President Buchanan). By the necessities of his very important position, by continuance of service, and by personal association he was, next to Seward, the cabinet officer in nearest affiliation with Lincoln. Stanton was a lawyer by training, born in Ohio in 1815, and the son of Dr. David Stanton.

His father, "a prominent physician," was of Quaker stock, and came from an eastern State. He died while his son, Edwin, was a child, although not until he was some years old.

7. On the legislative side highly important for the administration is the Speaker of the Congressional House. From early 1863 on this position was filled by the Hon. Schuyler Colfax. He was a member of Congress from 1855 to 1869, and subsequently (1869-73) Vice-President of the United States. He was born in New York City, March 23, 1823, the second child of Schuyler Colfax, Sr.

The father was born in New Jersey, Aug. 3, 1792. He married Hannah D. Stryker, April 25, 1820, and died of tuberculosis, Oct. 20, 1822, five months before the son was born. Small wonder that there is a paucity of details regarding the father. An old account states that he studied medicine, and then took a bank position to earn means for starting in practice. Another biography indicates that he studied medicine in 1810-12 with Dr. David Marvin of Hackensack, N. J. Studying medicine with a preceptor instead of at a medical school was the more common way at that time. His widow disclaimed any knowledge of this, except that he and the doctor were old friends. But, as she was speaking long afterward, had been married in her sixteenth year, had but a short married life with him, and that some time after the date assigned for his studying, her lack of information on this point hardly counts. The positive evidence is sufficient to warrant including the name of the son in the present list.

Taken together, the seven men named were, next to Lincoln himself, the leaders in the executive and even the legislative work of the U. S. Government during that period. They were closest to him in official and personal relations, and, with the balance of the cabinet, constituted his special lieutenants, advisers, and administrative guard. It is consequently a notable fact that the seven were all sons of physicians, and this is the more striking as it is without known precedent. Of course, periods of such gravity and far-reaching interest are in themselves rare.

To read theories into or out of history is known to be as unprofitable as theorizing in medicine. Still, we have finally come to the stage in medicine where it is possible to have profitable theories. And the more embryotic science of history may yet find activators.

To offer any generally acceptable explanation of this peculiar occurrence is hardly possible. To say that it was a mere coincidence is the simplest and most customary way. That, however, offers no explanation, and it is against experience and every theory of probabilities.

To suppose that it was definitely planned, as by one mind or some coterie, is quite as improbable. No incentive or reason appears for such a vast scheme. Nor is there any evidence or suggestion of such an effort. Nor, finally, can we see any way by which it would have been practically possible.

A further view comes up that cannot be as readily decided. Everyone is invigorated by a stimulus that appeals to him. Of all the educated and trained classes and in the community, the medical is the only one that in any real analysis stands heartily and with conservative wisdom by the whole people. Did, then, the sentiment, the national and intensely democratic spirit of the time rouse these men, because of their inherent attitude, more than it did others of possibly equal ability in the community?

There is an alternate way of looking at the matter that is rational and appeals more to medical minds. This grouping of prominent men was doubtless accidental, in the ordinary acceptance of that term; that it was so in the psychological sense is hardly imaginable. The drift of circumstances and the compelling necessities of the time had simply forced the selection of those specially suited to the extreme demands of the situation. Because it was involuntary and natural makes the occurrence the more significant.

We can grant that this combination of talent was just a coincidence—and yet draw a long bow. It affords strong evidence—perhaps the strongest possible—of the superior intellectual value of medical training and heredity. And those who attribute thereto an educational quality of basic character may see a direct verification in this development at a national crisis.

Besides his leading official mainstays it may be noted that Lincoln's leading competitors in the national campaigns of the period afford parallel illustrations. Seward has been mentioned above.

8. A leading opponent, both before and in the campaign of 1860, was Stephen A. Douglas, LL.D., United States Senator from Illinois. And it was with Douglas that Lincoln had just previously held the series of public debates that so stirred the nation. On the popular vote at the election Douglas was next to Lincoln, though behind Breckenridge and Bell on the electoral count. "Socially they were on friendly terms," and Douglas even held Lincoln's hat during the inauguration at Washington.

Douglas was born in Vermont, the only son of Stephen Arnold Douglas. The father, "a native of New York State and a prominent physician," died suddenly when his son was two months old.

9. In the campaign of 1864 Lincoln's opponent was George B. McClellan, General-in-Chief, U. S. A. General McClellan was a native of Philadelphia, the son of George McClellan, M.D. Dr. McClellan was born in Connecticut in 1796 and was widely known as a surgeon and professor of surgery.

That all talent of this kind was not exhausted in the first line trenches, to use a phrase of to-day, might be shown by innumerable examples; that, however, would not affect the main "exhibit."

It is natural in this relation to turn back for comparison to that other time of national tribulation, the Revolution. The surprising number of medical men who were signers of the Declaration of Independence has long been a matter of note. There were at least six with medical training, four

of them practitioners. And in close correspondence with this is the fact that the Mecklenburg declaration in 1775 was written by Dr. Brevard, a surgeon.

At the Lincoln period, nearly ninety years later, the mantle of the fathers may be said, professionally speaking, to have descended to the children.

54 Lefferts Place.

LESIONS OF THE FRONTAL LOBES.*

By EDWARD MERCUR WILLIAMS, M.D.,

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Lesions of the frontal lobes, particularly of the mid and prefrontal zones, are always rather obscure in their symptomatology.

The cases presented here, while allowing very little doubt as to the diagnoses, show interesting points, as well as demonstrating how easily one may be misled in considering confusing or obscure signs as due to distal pressure or cutting of transcortical fibres. In two of these patients (B and C) symptoms thus attributed to general pressure or invasion were afterward found to have been caused by an additional growth in one and by two extra growths in the other.

The rapid but late onset of the symptoms in case A, four months after an injury which gave very slight disturbance at the time of the accident, is rather out of the ordinary, and the later course of the disease gave several points of interest, such as voracious appetite, impotence, incontinence of urine and feces, and a peculiar emotional state very difficult to describe accurately. The man had constantly an expression of fear or anxiety and always spoke as though he looked for something unexpected to happen. Just before his operation he was found out on the lawn in his gown and barefooted, although he had not protested against the operation at any time. He simply said at this time that he was afraid, but did not resist further or refuse to be operated.

The confusing picture in case C can be easily understood when knowing of the presence of the two other growths in the prefrontal and opposite parieto-occipital regions respectively. The voracious appetite was a pronounced symptom in all the cases of tumor or hemorrhage, whereas in several cases of frontal lobe abscess, either proven or suspected, but not included in this paper, the loss of appetite was marked, this being in all probability due to the profound toxemia.

In case C this excessive appetite and thirst was so pronounced that the man would cry and scream as though in pain before a nurse could bring him a glass of milk after he had asked for it. No doubt the loss of emotional control had a great deal to do with these outbursts. I later found out that the man had "spells or fits of excessive hunger," as the relatives called it, for a number of years previously.

Frontal ataxia is not very common, but was present in case A and case B, and oddly enough contralateral in one and homolateral in the other, being so marked in the former as to have previously led to a diagnosis of probable cerebellar involvement.

In this series, including the two frontal abscesses and a case of frontal hemorrhage above mentioned, but not described in detail, the optic atrophy as described by Kennedy was not found in any instance. However, there were changes to indicate an older and more advanced process in the involved side in a tumor and abscess and a hemorrhage and a changing of the apparent intensity of involvement in the case with multiple tumors.

Tests of the sense of smell were negative in all cases but one, where there was a definitely greater involvment on the affected side.

This brief series has led me to conclude that a localization as to the side involved in a frontal lesion can be made only guardedly from such signs as slight disturbance of mentality, upset of emotional control, intensity of optic neuritis, or disturbance of smell, unless definite motor or speech disturbances are present. In three instances, not included here, where in addition to the usual general signs of brain tumor and above-mentioned symptoms of frontal involvement disturbance of motor speech was present, an operation failed to reveal any lesion in that locality, unless possibly too deeply subcortical to be found.

Case A.—Farmer, age 40, a patient of Dr. V. B. Knott. Four months previously he had been kicked in the forehead by a horse. He was dazed for a few minutes, then went on with his work. He had several attacks of severe headache and some slight general feeling of weakness, but otherwise no disturbance up to a few days ago, when he began to suffer intensely from headache and he noticed a great increase in his appetite and thirst. He rapidly became impotent, and during several days in the hospital developed incontinence of urine and feces. When walking the man would wander, or totter toward the opposite (left) side, and in his attempts to eat and dress himself and perform finger, nose and heel, knee and pointing tests, the ataxia in the left was very pronounced. There was also a certain amount of weakness difficult to differentiate from ataxia. Double neuroretinitis, possibly slightly more advanced on the diseased side.

The deep reflexes were about normal in the contralateral side (left) and less active in the homolateral, or right side. Plantar reflexes normal. The emotional state has been described, a peculiar expression of fear or anxiety and "far away," or vacant, expression. The patient seemed able to remember and figure well enough, yet he gave one the impression of a certain degree of mental impairment, or dullness. Operation and removal of an old clot from the right, mid and prefrontal region epidural, with complete recovery.

Case B.—Mrs. K., age 35, patient of Dr. R. Q. Rowse. Headache, more or less, for a number of years, but during the last five weeks more constant and severe. Sight gradually diminishing in this time, particularly within the last three weeks. Nausea and vomiting often during this period. The sexual desire is diminished. For some weeks she has eaten and drunk a great deal more than her normal amount. Right ptosis was present for a couple of weeks, clearing up entirely. There seems to be a possible history of slight forgetfulness, but this is very doubtful.

At the time of the examination the patient did not seem to show any particular mental disturbance, except some lassitude easily attributable to the headache and nausea, etc. Left pupil was larger than right and reacted less to light and accommodation. Ptosis was present in the left with paralysis of the other oculomotor muscles on that side. The right internal rectus was also slightly involved. Sight was diminished to almost complete blindness. There seemed to be a slightly better ability to recognize objects as shadows with right eye and in right field of right eye and possibly of left eye. Advanced "choked disc" in both eyes with evidence of an older process of the left. There was ataxia of the left arm and leg as shown by the usual tests, the deep reflexes of both arms were absent, also he knee jerks and the ankle jerks were very weak, more so on the left. Plantar irritation gave normal response on left and a very active upward and inward drawing of the foot on the right. A very slight twitching of the right wrist extensor muscles occurred at intervals of a few seconds, almost constantly. When first tested the sense of smell was gone on both sides, possibly due to acute coryza. Tested two days later,

*Read by title at the forty-second annual meeting of the American Neurological Association at Washington, D. C., May, 1916.

showed a definite difference of the two sides, diminished on one side and almost entirely gone on the side of the tumor (left).

At operation the left prefrontal area was exposed and a tumor resembling a melanosarcoma, but later proving to be a sarcoma, was found involving a large portion of the prefrontal lobe. The patient died in several weeks and the autopsy disclosed an additional sarcomatous growth on the under surface of the right temporal lobe, well back toward the occipital area. This may have had something to do with the indefinite, but suggestive, hemianopsia.

Case C.—Farmer, age 47, patient of Dr. V. B. Knott. About four weeks prior to my examination, patient found right arm and leg partially paralyzed upon awakening. As he had suffered a great deal from rheumatism he attributed it to that and in a few days the condition improved so that he could go about again. I was informed later that the patient had really been more or less handicapped in the use of his right arm for two years or more. The headache, which was pretty severe, also cleared up, as did a partial facial paralysis. He also had a facial paralysis on the left nine years previously. In the last week or so the headache became more severe and patient had nausea and vomiting, not cerebral in type, but increasing in frequency and severity.

In the examination I found the pupils equal and reacting normally. No ocular muscle disturbance. The examination of the fundi showed a neuroretinitis with hemorrhagic streaks and spots, resembling very much albuminuric retinitis more active on the right, veins not particularly engorged nor arteries changed in caliber, discs indistinct. Seemed to be some weakness of both facial nerves in entire distribution, could wrinkle right brow fairly well, however. The right arm showed impaired strength for all the coarser and finer movements, though they were all possible. The same was true of the right leg. Left side was normal. Arm reflexes more active on the right, also the knee jerks. Ankle clonus and positive Babinski on the right. No sensory changes either from touch or position anywhere. Heart sounds feeble and slow, about seventy per minute. Pressure right arm 135-90, left 125-82. Diminution in amount of urine, high colored and loaded with dark granular casts and albumin. A tentative diagnosis of nephritis was made at this time with request for further information about the case in view of the great possibility of brain tumor.

Three weeks after this examination I again saw the patient. He had had a number of unconscious spells of a few minutes' duration with twitching of both shoulders and to some extent the right hand. Had shown lack of emotional control; as already mentioned, would grasp a glass of milk, when brought to him, in both hands and gulp it down greedily. Several times there were outbursts of foolish laughter with no apparent cause. There had been several motor aphasic attacks lasting only a few minutes. Vomiting and headache had become much worse, almost constant, in fact. The patient did not seem to have the same degree of intelligence as formerly, although the rest of the family denied this possibility. Paralysis of right arm and leg almost entirely cleared up, particularly the right leg; plantar reflex on the right and left at this time normal. No clonus. Knee jerks below normal on both sides. Urine had shown neither casts nor albumin for a couple of weeks. Diagnosis of tumor in the mid-frontal or post-frontal region on left was made. At operation a tumor the size of a pigeon's egg in post-frontal region and about an inch and a half below the cortex, about on a plane with the arm center, was removed. It was a clearly defined encapsulated growth of carcinomatous nature.

The man became practically well a couple of weeks after the operation, then rapidly became worse, and the old area was opened and no hemorrhage found; a decompression was done in the opposite side and excessive bulging of the dura found. Patient died several weeks later and the autopsy revealed two other growths similar in shape and a little larger than the removed growth, one further forward in the pre-frontal area on the same side and on a plane about one-half inch lower. It was entirely subcortical and clear cut. The cortical indentations were very poorly developed or atrophied in the region of the frontal pole. On the opposite side (right) a similar growth just back of the occipito parietal juncture and also about an inch subcortical was found.

443 Davidson Building.

EYE INJURIES AS RELATED TO WORKMEN'S COMPENSATION.*

By F. D. Gulliver, M.D.,

New York.

In my talk this afternoon I shall endeavor to relate some points bearing on eye injuries, which I hope will not only be of interest but of assistance to you in dealing with these cases which come under the Workmen's Compensation Law.

1. I shall first speak briefly of the function of the eye and describe how the amount of visual power is measured and expressed.

2. Of the most common eye injuries showing part of eye affected, and shall explain certain technical phrases so that reports on eye injuries can be more easily interpreted.

3. I shall describe the best means of shortening the period of disability and of preventing permanent disability after eye injuries have occurred.

4. I shall endeavor to point out that malingerers and exaggerators exist among eye claimants; the probable number of the same and the means of detection.

5. I shall draw attention to compensation for partial defects of vision; how various States regard partial defects of vision, and their basis for making awards for such defects, and shall make a comparison of awards in the various States with those of the New York Industrial Commission.

6. And, finally, I shall deal briefly with the answers to any questions regarding the eye, and invite full discussion of my remarks.

The eye is the only organ in the body whose function can be accurately measured. In cases of partial loss of function, the remaining amount can be determined by standard tests and expressed in fractions of normal vision. Such being the case, eye injuries should be the simplest of all injuries from the standpoint of adjusting a fair scale of indemnity to the injured. For instance, in the case of a crushed hand or foot, there would naturally be a considerable diversity of opinion as to what fractional amount of usefulness still remained. But, as stated before, in partial impairment of sight the amount of vision remaining can be accurately determined and definitely stated.

How is the Amount of Visual Power Determined and How Stated? Visual acuity, amount of vision, visual power and vision are synonomous terms. Vision is usually the term employed. Vision is measured by standard test figures, or test types of fixed dimensions. These test cards are used throughout the world and agreed upon by all doctors as the standard and accepted means of determining the amount of vision. And if there is one point on which doctors would all agree, it is this point.

The ability of the patient to distinguish the letters on the cards is expressed in fractions—the distance at which test card is placed being the numerator, and the distance at which letters displayed subtend an angle of five minutes, the denominator. Test cards are always placed at a distance of twenty feet, and the cards are properly illuminated either by daylight or artificial reflected light. Then, with a patient at a distance of twenty feet who can distinguish only the top letter of card, vision is stated as 20/200 or 1/10 of normal. If he reads the second line, 20/100 or 1/5 of normal,

*Delivered before the New York Claim Association May 5, 1916.

and so on. Of course, it is taken for granted in persons not seeking remuneration for an alleged injury that they are using their full visual power.

Cases of suspected malingerers or exaggerators I will speak of later on.

Now, in a case of eye injury, what you men want to know is: (1) What is the amount of vision present? (2) Was defect of vision due to injury as claimed? (3) Is vision improved by glasses? (4) Is defect of vision permanent?

Eighty per cent. (80 per cent.) of eye injuries resulting in defects of vision involve the cornea. The pupil, or pupillary area, is the central portion of the cornea through which we see. Any injury affecting this part of the cornea naturally results in loss of vision. Unless injury does affect the pupillary area, there is no impairment of vision. Injuries to the cornea in most cases leave a portion of the cornea opaque or cloudy. This condition is commonly expressed by the following terms, which all mean the same: scar of cornea, macula of cornea, nebula of cornea. So that when you get a report from a doctor on an eye, stating that there is a scar macula, or opacity of the cornea, and that vision is 20/50, you will know that there is an opaque or cloudy condition of the cornea and vision is 2/5 of normal.

The next most common injury to the eye, impairing vision, is injury to the lens. When the lens has been injured a cataract develops, which is also called traumatic cataract. Cataract means that the lens loses its transparency and becomes opaque. In all cataract cases there is always almost total loss of vision. Now, in many of these cases, the cataract can be removed, and by putting a proper lens before the eye the sight is restored to one-half, or even to normal vision. Such improvement in the sight of an eye after the removal of a cataract is usually of no practical advantage to the injured, for the following reasons: It is impossible to wear the cataract glass on the injured eye and still use the other eye at the same time. This is because the cataract glass over one eye produces double images and great discomfort. Of course, in the event the sight of the other eye becomes impaired, the injured can use the cataract eye alone for visual purposes. Commissions rule, however, that in a case where cataract has been removed, although the injured may have good vision in the eye by using a cataract glass—for reason already stated, namely that the injured will have to depend on the uninjured eye for visual purposes—such a case is entitled to compensation for total loss of the eye. I believe this ruling a fair one in a compensation case when viewed from the standpoint of loss of efficiency to the injured. In a liability case, I would view the matter quite differently.

Foreign bodies, especially steel, penetrating the eye are of rather common occurrence, and are important injuries. In any case where there is any possibility of a foreign body in an eye, it should have an *x*-ray examination without delay.

The retina is the innermost coat of the eye, and is very important because it is the part of the eye by means of which we are able to see. Injuries and inflammations of the retina are called retinitis, and are usually associated with marked impairment of sight. In the retina are often found evidences of a general syphilitic condition and of other general diseases, such as Bright's disease, diabetes, thickening of the arteries, etc.

Now, as to malingerers and exaggerators.—In my work of examining eyes of persons seeking compensation, I have found that fully ten per cent. pretend there is defective sight in one or both eyes when vision is normal, or exaggerate greatly the amount of defective sight. Of course, the reason why persons with eye injuries try to deceive the physician examining them is that they believe that he cannot disprove their statements in regard to the amount they are capable of reading on the test cards. Very happily for insurance companies this is not the case. Very rarely will a claimant simulate total blindness of one eye. They always elect to lessen greatly the amount of vision actually present. The best means of detecting and exposing exaggerators and malingerers is to fight them with their own weapons, namely deception. There are many simple rules and tricks to employ that expose the cleverest of this class of claimants. All methods of detection are based on making the claimant believe that he is seeing with the good eye, when in reality he is using the injured eye. This is accomplished by different arrangements of glasses and prisms. Examining these cases and detecting false claims and statements affords one both diversion and amusement, and the satisfaction of knowing that the individual has not accomplished his dishonest aim.

I wish to state in this connection that in all eye cases with defective vision, I have the injured come to my office twice before making report as to amount of vision. It is not fair to the injured or the insurance carrier to make a statement on such an important matter as this until I have obtained complete and conclusive evidence. In cases of malingerers, I have them report to me three or even four times in order to use different tests in different ways and under different conditions before making a final report on the case.

Furthermore, in this connection, I would say that when reports of eye specialists do not agree as to amount of vision in a particular case, it is not a question of opinion as to amount of vision, because the same tests are universally used. The explanation is that the injured on one examination intenionally or unintentionally did not use the full visual power of the eye. One can easily understand how a person might be nervous under first examination by a physician and not need the test card to an amount equal to the full visual capacity.

I have a case in mind where I found vision to be 2/3 of normal. The medical examiner for the commission requested an examination by another specialist. This physician, famous in his profession, reported the vision as 2/7, and the man was awarded for total loss of the eye. Subsequently, I examined the man and found vision to be 2/3. Now, of course, the physician designated by the commission stated what he believed to be a fact in regard to amount of vision; but the claimant was not using full visual power. I might add that the above case has been appealed.

What are the best means of lessening duration of disability and preventing permanent disability (partial or total) after eye injuries have occurred? In the first place, you must know that there are a considerable number of persons awarded compensation for a defect of vision which has existed previous to the date of the alleged injury. The only certain way to exclude such cases is to have all applicants for work examined by a physician,

and in a case of defective sight not to give employment to such applicant.

Fully appreciating that it is not practicable to observe the above measure in all cases, how then can a person having an existing defect of sight and receiving an injury to that eye be prevented from receiving compensation to which he is not entitled. The only means I know of are: (1) To get immediate notification from assured of all eye injuries. (2) To make an immediate investigation of the case. (3) To have injured report at once to an eye specialist for examination, or, in case where the injured cannot or will not report for examination, have an eye specialist visit the injured in his home or hospital. I cannot emphasize the importance of above procedure too strongly. It is of the greatest moment if you would avoid paying false claims. In many cases I am not asked to examine a case until several months after the injury. How am I to tell them whether the injury, as alleged, caused the loss of sight? Whereas, if I had seen the case a week, or even two weeks after injury, I could say whether the injury on the date alleged caused the condition, or whether some previous injury was responsible for it.

My suggestions as to an immediate examination apply to the treatment of eye injuries as well. I know of a large number of cases where sight could have been saved if properly treated by a physician skilled in this particular branch of medicine. The following cases coming under my observation are only a few examples: A man with a piece of steel in his eye was treated for two months by an osteopath—by rubbing or massaging his back. Another with the same condition was treated by a doctor for a month with electricity. One case of cataract was operated upon and the eye subsequently removed before the insurance company was notified. Another case where the eye was badly injured, the sight was wholly destroyed and serious inflammation was present. The treatment indicated was removal of the diseased eye. This eye was allowed to remain until the good eye became affected by sympathetic inflammation. Result, total blindness—*i.e.* total permanent disability.

Awards in partial defects of vision in one eye. The law specifies the amount for total loss of one or both eyes and leaves it to the commission to fix a lesser amount when the defect is only partial. The majority of cases by far with which you have to deal are partial defects of sight of one eye. It is to these cases that I will devote my closing remarks.

From the point of view of an eye specialist, I have long felt that the awards for partial defects of one eye by the New York Commission were not in proportion to the actual loss of function, and greatly in excess of possible loss of efficiency or earning power to the injured. In order to learn how the commissions of Germany, Austria and States in our country regard these cases, and on what basis they make awards, I have addressed a copy of the following letter to all States and territories—about thirty in number:

Dear Sir:

For the purpose of comparison, I am endeavoring to get from the various States in which Workmen's Compensation is in force, the basis on which their boards or commissions make awards in cases of defective vision resulting in partial loss of sight.

In most jurisdictions the law gives the amount of total loss and leaves it to the Commission to fix a lesser amount when the loss is only partial. Have you any fixed rule on which to base the award in partial loss of sight, or do you estimate the loss on a percentage basis?

In order to simplify the matter and arrive at a basis for estimating awards in all cases, I think it would be well to start with award for total loss of sight of one eye. Then, taking the case of an individual with normal vision in one eye and a laborer, or of such occupation as does not require good binocular vision to efficiently perform his work, would you be kind enough to inform me on what basis or to what extent you would consider the above case compensable, when having the following fractional amounts of vision in one eye: 20/200 (1/10); 20/100 (1/5); 20/70 (2/7); 20/50 (2/5); 20/40 (1/2); 20/30 (2/3).

I have received replies from all States and reviewed the laws of Germany and Austria. In Germany and Austria, and in all States of our country where there has been occasion to rule on such cases, the basis of award is as follows: Individuals with remaining vision of 1/10 or less of normal in the injured eye are compensated as for total loss. Where vision is more than 1/10, awards are made on a percentage of total loss. The above basis applies to all occupations.

Let us compare awards of other States with those of New York. Our commission takes into consideration the vocation or work of the injured in considering the amount of award. This is only just and fair, and in my opinion a commendable act of that body. But, of course, the question naturally arises, if one class of workmen is to receive more for partial loss of vision, why should he not receive more for total loss?

The New York Commission rules that in a case where remaining vision of the injured eye is 1/3 or less, the injured is entitled to compensation as for total loss. Now, with 1/3 of the amount of average normal vision remaining, an individual has a considerable amount of sight. For instance, if a man had only one eye and in that eye had 1/3 the amount of normal vision, such man would be able to go around the city, recognize different objects and read medium-sized type in the newspapers. Of course, with two eyes and normal sight in one, the condition is far different. However, the New York Commission regards an eye with 1/3 remaining vision as totally lost.

More important still, a person with total loss of one eye cannot see objects on that side; that is, he has lost one-half of his binocular field of vision. A person with 1/3 vision still retains the extent of his field of vision. Again, with total loss of one eye, the injured is greatly handicapped by an absence of the appreciation of the dimension of depth when looking at objects. This power is accomplished by using both eyes in conjunction. With 1/3 vision, one can use the injured eye in conjunction with the good eye and enjoy the great advantage of stereoscopic vision.

Our commission has ruled in cases where the injured eye has remaining vision of 2/3 the amount of normal vision, the claimant is entitled to compensation for 1/2 loss of the eye. In amounts of vision between 2/3 and 1/3 of normal vision, the award is determined largely by the vocation or work of the injured. The above awards apply to laborers and those not requiring particularly good visual power. In cases of mechanics and those persons requiring good vision, the award may be increased at the discretion of the commission.

Before establishing a basis on which to make awards for defects of sight of one eye, a knowledge of the proportion of persons who never acquire normal vision in both eyes should be had. Without error of refraction corrected, *i. e.* by

glasses, the percentage is from 30 to 40. Again, acuteness of vision is largely a matter of training, and laborers whose sight requirements are moderate, and illiterates who never do any reading, are apt to have subnormal vision when tested on cards with letters and numbers with which they are unfamiliar. Now, a person not needing particularly good vision, as obtains in many employments coming under the act, can perform his work very efficiently with 2/3 vision in both eyes. Of course, with normal vision in one eye and 2/3 vision in the other, there could not possibly be loss of efficiency on account of sight.

I direct especial attention to the ruling of the Commission of this State where injury to one eye with remaining vision of 1/3 compensation is awarded as of total loss. In Germany, Austria and all other States to which my attention has been called—and I have made searching inquiries—the loss must equal or exceed 9/10 to secure compensation for entire loss. It is important and interesting to consider the basis and merits of the two rulings.

It is clear that with 1/3 remaining sight the field of vision is not destroyed, whereas where the remaining vision is but 1/10, the field of vision is practically gone. This is equally true of the stereoscopic vision. It seems unfair that with the field of vision and stereoscopic vision practically intact, compensation for total destruction should be given. This view is taken in all jurisdictions other than in this State. It is self-evident that total destruction is one thing, and 1/3 remaining vision with a field of vision and stereoscopic vision remaining is quite another thing, and compensation in the two cases should not be identical.

My aim is to make clear that the general ruling giving total compensation where 1/10 of vision remains, with practical loss of both field of vision and stereoscopic vision, is far more equitable and should be adopted in this State. Likewise, it is unfair to one who has suffered total loss of an eye to receive no more compensation than one with 1/3 of the sight remaining and with the field of vision and stereoscopic vision practically unimpaired.

As the percentage of remaining vision can be ascertained by measurement, compensation should be given to the extent of the percentage of loss of vision. This is the general rule outside of this State. But in New York, where the remaining vision is 2/3 of normal, compensation is given for 1/2 of the loss of the eye. Were it impossible to measure with accuracy the amount of vision destroyed, an arbitrary ruling giving 1/2 compensation where remaining sight is 2/3 might be justified. Where the actual percentage of loss is readily ascertained, equity and justice would indicate that the compensation be placed at the actual loss.

It is furthermore to be considered that in this State the financial compensation for total and partial destruction is greater than elsewhere. The measure of damage is greater, and the basis of compensation is more favorable to the injured. There is no pretense that there exists in this State a greater value in eyesight than elsewhere, or that the partial or total destruction should be measured more favorably to the injured, especially since, as above explained, the extent of loss may be accurately measured and correspondingly compensated without arbitrary ruling.

Speaking from the standpoint of both the injured and assurer no fair adjustment for partial loss of sight can be reached without a consideration of the vocation of the claimant. A study by commission of the visual requirements of each class of employment coming under the act, and a classification formerly made with a percentage of award for each class, in my judgment, would be the fairest to the injured and to the insurance carrier.

105 West Seventy-second Street.

PRIMITIVE MEDICINES.

A SHORT SKETCH ON EMETICS AND PURGATIVES.

By J. Barkley Percival, M.D.,

Paramaribo, Dutch Guiana.

Our cats and dogs pick up carrion now and again with the consequence that their stomachs get out of order. Instinct impels them to strain for relief by vomiting the obnoxious matter. Housewives hear the hawking and drive them out of doors, if possible before it comes to the worst! The animals often get nausea and pain, but cannot get immediate relief until they have taken an emetic of grass. The discomfort or pain drives them to take medicine.

Primitive man was like the dog in his habit of picking up meat wherever he found it and no matter how tainted it might be. He would also taste strange fruit, some of which might be poisonous. When the painful results drove him to do something he chewed herbs which he had learned by former experience caused vomiting.

Our children eat unripe and rotten fruit and come crying to their mothers with their hands pressed against the painful part. The mother finds the child retching and gives large draughts of tepid water, sometimes putting her finger down the child's throat until the desired result is obtained.

These are examples of the beginnings of medicine; we may call them fancies but they are reasonable. When man first began to take medicine is a riddle which will probably never be solved, and yet the problem is worth considering. Pliny, whom we consider one of the ancients, said he admired the industry and laborious research of the ancients in finding out by experiment the medicinal properties of plants. We also have to thank, not only the Chaldeans, Egyptians, and Greeks, but the East Indians and Americans as well. The real origin of medicine, however, goes back to primitive man when his impulses were mainly instinctive.

What happens when poisonous crabs or sprawns are taken? I can state from personal experience. There is retching, colic, cold sweats, and a general feeling of collapse. Something must be done to relieve the symptoms and the feelings indicate an emetic, a purgative, and a warm bath. The most urgent is the emetic, but vomiting often takes place without assistance. The principle of all medicine should be to assist nature and this was acted upon by the primitive American, who followed the same course as our cats and dogs by chewing some herb as an emetic.

There is one herb peculiar to America which must have been discovered long ages ago, for it is widespread and never truly wild. This is tobacco, which possibly may have been the primitive emetic. That it is powerful everyone will admit, especially the boy who has suffered from his first smoke. To chew the green leaves is even more likely to cause vomiting than the smoke. Every smoker knows

the effect of a tiny bit of tobacco when accidentally swallowed.

Those who only know tobacco as smoked, or taken as snuff, are possibly not aware that it has been taken internally as a diuretic in dropsy. It is, however, so very powerful that in many cases it produces nausea; it is also much used externally as a sedative for aches and pains as well as swellings. The medicine man generally drinks tobacco water when he is going through his ordeal. He also uses it to bring on a trance when carrying on his work.

Smoking is probably a late development of its use and a strictly American discovery. Possibly the sedative effects of tobacco water were agreeable to those who enjoyed getting drunk, but the nausea and sickness were too much even for the Indian. It probably led to smoking, which gave the pleasant feeling so well known, and no nausea after the smoker became accustomed to it. The smoking habit was unknown in the old world until introduced, but it so quickly spread that some have doubted whether it did not exist in India before the discovery of America. The evidence, however, will not admit of this.

A well-known emetic is the kaka-baballi or buck-puke, which is much used by the native cross-bred races in South America. As far as I can gather it is free from the defects of tobacco. Other emetics include bullet tree bark, red mora, and others with only Indian names.

The wild coffee or myamya root is Indian as well as creole; it seems to be a very violent emetic, only used in extreme cases of bilious fever. The so-called white lily bulb is another severe emetic. The creole emetic most commonly in repute is the palse ipecacuanha.

It may be stated that most intoxicants are also emetics. The Indian's piwarri is decidedly so and beer is not far behind. The most repulsive stage of drunkenness goes to prove that all intoxicants are emetics when first taken.

It is a sound principle to take medicine when there is something which impels us to do so and this impulse might be given by the spirit drinker as a reason for taking up the habit. But, as all medicines are poisons and should be used to assist nature only when absolutely necessary, there is no rational excuse for their being taken habitually.

Emetics and purgatives are both indicated when some poisonous meat or berry has been taken. There are both retching and colic, indicating plainly that the somach and bowels must be relieved. This is provided for by several remedies, especially those nausious herbs which cannot be retained if chewed or swallowed without disguise. On this account most of the nastier purgatives are now used in pills. Primitive man did not know how to make a pill and, therefore, many of his medicines acted both ways. The negro often asks the druggist for pills to work both ways; his medicine must "do him justice." He has not the idea of assisting nature, but desires to take her by storm. Whether the Indian also likes strong purgatives I am not quite sure, but we may expect that his stoicism in pressure of pain means that he is glad to know that the remedy is fighting the disease. A gentle laxative would probably be unsatisfactory to the man who wants to fight a disorder.

Emetics and purgatives are very numerous, especially among the creole remedies. One of them is well known in gardens as Allamanda cathartic and is an Indian medicine of great potency. Acosta said long ago that there are a thousand simples in America fit to purge, and though I have not come across anything near a hundred still the purgatives are too numerous to deal with in this article. I think that a mere list would be of little value and anything more would take up too much space; I can, therefore, only give a few examples.

The creoles use carrion-crow bush as a purgative, and like many others of its class it sometimes acts as an emetic. The leaves are used fresh in decoctions and are more powerful than senna, to which it is closely allied. Other species of Cassia have similar properties, and we may safely state that the genus contains many good purgatives besides the two species known as senna.

An allied plant called "Doctor Doodles" or Barbados Pride is probably a valuable medicine, for it supplies from its different parts mild and drastic purgatives to suit young chidren and strong men. The flower buds may be used as a gentle aperient for children, the open flowers for adults, the leaves and pods as stronger purgatives, the bark of the stems yet stronger; and the root is so drastic as to be dangerous.

This suggests the fact that we have something analogous in the Natural order *Euphorbiaceæ*, to which the castor oil plant belongs. We can get milkweed as a gentle laxative and go on to belly-ache bush, castor oil, physic nut, and sand-box, which last is dangerous. In connection with the reactions of plants we may state that butterflies and moths appear to feed on a number of allied species of similar qualities. They choose by the odors and tend to confirm deductions made from botanical alliances. In cases just mentioned we have a division of the bean family with qualities like senna, and the Euphorbias more or less resembling castor oil.

Jalap is represented here by a substitute, the four-o'clock or marvel of Peru, the roots of which were once used as an adulterant of the real drug. It is not quite so strong as jalap, but the roots are so similar that a novice could hardly tell them apart.

Aloes is grown in boxes by the creoles and the juice sometimes used as a purgative; it is, however, too nasty for general adoption. Its use is generally limited to external dressings for "rose" and other swellings.

We have already stated that colic is one of the symptoms of poisoning; many vegetable poisons are drastic purgatives, decidedly painful because of their griping. Among them I may mention the frangipanni, the mudar or ladies pin-cushion, and the good-luck. These are very dangerous. We have also in cultivation some of the cucumber family, such as Karyla and luffa, the active principles of which are similar to that of colocynth; these are not worth considering.

The tendency of late years has been to reduce the heoric doses once so common. We still find, however, that some of the creoles must have griping purgatives, for mild aperients will never "do them justice." If the women dealt only with themselves it would not be so bad, but unfortunately their children are often injured by drastic cathartics. Even when they use castor oil they often give an adult's dose to a child. We may safely state that as a rule too much medicine is taken everywhere. When the primitive man took an emetic or purgative and got relief he did not go on with the medicine for weeks as some people do nowadays.

We may ask whether any of these medicines are worth retaining. In regard to emetics we may say that they are hardly needed except in the treatment of poisoning. If a purgative is required it is generally safe to take a small dose of castor oil; this was formerly made in the Colony from seeds grown here and could be so again. A good substitute for senna is the Barbados Pride, the leaves of which can be dried and kept for some time.

The foregoing facts point to certain conclusions from which we can form a tentative theory of medicine. It was once supposed that the constituents of plants were made for the use of man; we know that they are for the benefit of the plants themselves. Indian corn and wheat contain what we may call baby's food, for the starch and other things support the young plant until it is strong enough to feed itself. Man has utilized the stores of plant food for his own purposes, but they were not secreted for his use.

We can apply the same principle to medicine. Through the ages there has been a grand struggle between plant and animal, the results of which we can see every day. Certain animals feed on certain plants and the plants resent this by secreting noxious juices, some of which are poisonous to most animals. But there are always some that become immune and are able to feed on the poisons. A certain amount of protection is gained, probably enough to insure the preservation of the species, but it is never complete.

Disorders and diseases are common to plants as well as animals. They are largely due to the wonderful provisions for eliminating the weak and unfit. As soon as the plant or animal is injured there is a grand struggle between the recuperative powers and those scavengers that are always ready to dispose of the dying and dead. If there is enough internal power to heal or overcome the sickness there is a recovery, otherwise death ensues. If the animal or plant can do anything to help the healing process it is well, but little has been done by others than man. What we see in dogs and cats is suggestive, and possibly wild animals may take similar emetics.

The principle, as we see it in nature, is that an impulse is given to do something when we suffer pain. In fact pain is the warning note; like hunger, it plainly says take what is suitable. Proper foods were always known, but not proper medicines. There has been more improvement in the preparation of foods than in that of medicine, but great progress has been made in both. There is, however, apparently a fault with the latter; people take medicine when not really sick. This is not helping Nature, and in many cases it hampers the recuperative powers.

On this principle I must condemn tobacco smoking and spirit drinking, even though I condemn my own pipe. They are medicines and should be used only when we are sick. However, I suppose people will go on smoking and drinking, for we are not always rational.

Opinion Evidence.—In an action against a railroad for injuries in a derailment, where the road contended that the plaintiff did not receive the injuries through the derailment, but from disease, it was held that testimony of a physician that in his opinion there was no injury to the cartilages of the knee joint, and that when the plaintiff received the injury, of which she told him there was a fracture of one or more of the synovial cartilages, was inadmissible.—Jackmann v. St. Louis & H. R. Co. (Mo.) 187 S. W. 786.

Medicolegal Notes.

Insufficient Evidence of Malpractice. — Action was brought against a physician for damages on account of injuries sustained by the plaintiff while a patient at a maternity hospital for the purpose of confinement, by reason of the breaking off of the glass tip of a vaginal douche while it was inserted in the vagina of the plaintiff, and permitting the broken fragments to remain imbedded in her flesh without informing her thereof. On appeal from a judgment for the plaintiff it appeared that the plaintiff was attended by the defendant during her confinement in a large maternity hospital; that shortly after her confinement she suffered from the effects of what was subsequently found to be the presence of fragments of glass in the wall of the vagina; that she was discharged from the hospital without the discovery of such condition; that thereafter she consulted the defendant and was treated by him because of her continued suffering; that the doctor made several examinations, and attributed the trouble to the failure of the stitches to heal which were necessarily taken in the person of the plaintiff after the birth, or to the fact that the gut used in sewing up the torn parts had not absorbed or assimilated in the plaintiff, and calcareous matter had accumulated.

The court said: "It would hardly be profitable to enter into a discussion of the facts of this case in this opinion. The plaintiff has completely recovered. The only negligence claimed against the defendant is for his delay in making such an examination of the vaginal cavity as would disclose the foreign substance thereafter found. Two experts of standing have sworn in behalf of the defendant that it would have been poor surgery to have made such an examination as would disclose the existence of foreign substance before the time that it was actually made by the defendant. One expert, on behalf of the plaintiff, has sworn that such an examination ought to have been made three months before it in fact was made. It is always easy, after the cause of an injury has been found, to look back and say that that cause should have been sought for. To my mind the jury failed to give proper force to the fact that this defendant had never had the slightest cause of suspicion that any foreign substance could be causing this trouble. Every fact surrounding the case and its treatment would constitute almost proof of its absence. The breaking of the glass of a vaginal douche within the vagina is a circumstance so rare as not to have been reasonably contemplated at any time by the defendant, and for failure to anticipate this most unusual occurrence the defendant has been most unjustly charged with a substantial money judgment, and, what is worse, with a stain upon his professional fidelity. That this verdict is clearly against the weight of evidence I have no doubt whatever."

Judgment for the plaintiff was reversed and a new trial ordered.—Rogers v. Voorhees, New York Appellate Division, 157 N. Y. Supp. 330.

Tuberculosis Hospital a County Purpose.—In an action to enjoin the erection of a tuberculosis hospital by a county, the New York Appellate Division holds that the erection and operation of a hospital is a proper county purpose, although the hospital takes some pay patients. It has never been held that the incidental revenue from board, or from special care, deprives such an institution of its charitable character.—Smith v. Smith, 160 N. Y. Supp. 574.

Testimony as to Professional Service Where Patient Has Died.—Under New York Code Civ. Proc. Sec. 829, prohibiting testimony of an interested person as to a transaction with a decedent, in a physician's action for professional services against executors of a decedent, testimony of the physician that he attended decedent professionally was held inadmissible.—Kennedy v. Mulligan, ,New York Appellate Division, 160 N. Y. Supp. 105.

Improper Cross-Examination of Medical Witness.—In an action by a husband for damages for personal injuries to his wife, one of the elements of damages was the bill of a physician who had had principal charge of the plaintiff's wife after the accident. He had testified to the amount of his bill, and was asked on cross-examination if he expected to get it paid out of the litigation. The question was held improper.—Jolman v. Alberts, Michigan Supreme Court, 158 N. W. 886.

MEDICAL RECORD.

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THE ETIOLOGY OF EPIDEMIC POLIOMYELITIS.

THERE has been no epidemic of recent times that has so excited the attention of the whole populace as that which has prevailed during the past summer. The youth of the patients affected, the rapid spread of the disease, the high mortality, and the mystery which surrounded the methods of transmission, combined to add to it a peculiar terror, which was not lessened by the rigid and often unnecessary quarantine regulations which were adopted by some localities. The causative organism may be said to have been discovered by Flexner and Noguchi, but the epidemiology of the disease was certainly not on a satisfactory basis. The publicity given to the epidemic naturally attracted many investigators, and the result of their work has begun to appear in articles which, if the information which they contain is correct, have increased somewhat our information as to the cause and spread of poliomyelitis.

The work which was done in the New York Hospital Branch had already received a certain amount of attention, but the first authoritative description of the results accomplished was given by Dr. Rosenow at a meeting of the New York Academy of Medicine on October 5, as reported in the MEDICAL RECORD of October 21. In this report, Rosenow summarized briefly the work done by him and his associates, Towne of Boston, and Wheeler of New York. They followed the lead which Rosenow established in his work on the elective localization of streptococci in the study of rheumatism, endocarditis, gastric ulcer, and other conditions, and were able to isolate a pleomorphic streptococcus which, as a result of their extensive animal experiments, they felt justified in regarding as the cause of the disease. If they are correct in this assumption, we may perhaps look on the Flexner and Noguchi organism as a form which this coccus takes when grown anaerobically. One of the most interesting statements made by Rosenow is that regarding his success in isolating this organism from the tonsils of patients suffering from the disease, an observation which might have an important bearing upon the treatment and epidemiology of poliomyelitis. If, as these authors believe, the tonsil is the focus in which the streptococcus so develops as to acquire its elective affinity for the central nervous system, then the removal of the tonsils should have a marked influence upon the incidence of the disease. It is doubtful if any physician at the present time would have the temerity to advocate wholesale removal of the tonsils of children, but if Rosenow's hypothesis is established there will doubtless be a tremendous sacrifice of the tonsils of the young and helpless when another epidemic appears. The removal of the tonsils even during the course of the disease is said to have had a favorable influence upon it in a few cases.

The work is, of course, in the line of confirmation of Rosenow's theories concerning the streptococcus, but the problem is far too large for it to be worked out in so short a period of time; one way is merely pointed out, and there will probably be no lack of workers to follow it. The objections to this theory that will occur to every one are innumerable, and it will be necessary to reconcile it with many of the apparent facts of quarantine, immunity, curative sera, and the like; and then there is the work done at the Johns Hopkins seeming to point to an intestinal localization, though of that we know little beyond what has appeared in newspaper reports. Nevertheless, the investigation by Rosenow and his associates will stand as a good piece of work, and even if, eventually, the whole theory is disproved, the observations are there, and only the interpretation can change.

THE IRRITABLE HEART OF SOLDIERS.

RECENTLY a good deal has been written concerning the soldier's heart. Sir James Mackenzie has expressed his views on the subject, while Sir James Barr has given his somewhat original ideas in a paper published in *American Medicine* for September, 1916. In the September issue of the *Canadian Medical Association Journal* Dr. Robert Dawson Rudolf, Professor of Therapeutics in the University of Toronto and Lieut.-Colonel Canadian Expeditionary Force has contributed a paper dealing with the question. He does not agree wiith Barr as to the causation of the so-called soldier's heart but is in more or less complete agreement with Mackenzie with regard to the nature of the condition. Rudolf points out that soldier's heart, as witnessed at the French front, can hardly be due to strain of the heart muscle to which it has been largely attributed for the reason that trench warfare does not give rise to strain sufficient to damage a previously healthy heart muscle. On the other hand the strain to which the nerves are subjected by the mode of warfare in France no doubt has much influence. All kinds of functional nerve conditions are encountered, including nervous instabilities of the circulation. The heart and vessels are very largely under the control of the nervous system and the rate of the pulse is perhaps a better index of the state of this system than anything else. Moreover, as Rudolf points out, when the whole nervous system is under such tension it will yield, if at all, at its weakest point, and the weakest point varies in different individuals. If a person's circulation is his weakest point, then that is where it is most likely to give way. Rudolf's conclusions are as fol-

lows: (1) The condition called "soldier's heart" is not an entity but includes merely the worst examples of a circulatory instability that grades up from the nearly normal to a degree so great that it may completely incapacitate the patient. (2) The circulatory instability has often been there before and is merely brought into prominence or exaggerated by the unusual physical and mental surroundings of a soldier's life. The very same condition occurs, only more rarely, in civil life. (3) In many cases the condition appears to be caused or precipitated by infection with consequent toxemia, also by nerve shock or strain, but in many instances no such clear origin can be traced. (4) The condition appears to be essentially one of neurasthenia in which the circulatory apparatus happens to show the most symptoms. (5) The best test of the degree of the condition is to take the history in conjunction with the pulse rate when the patient is standing. (6) The treatment is not that of ordinary heart disease, but should be directed in every possible way toward increasing the general tone, including the mental tone of the sufferer. (7) The patient should not be told, or allowed by our bearing towards him to think that he has "heart disease" as such is not strictly the case, and such a belief does much harm. (8) The progress in well-marked cases must be guarded, but the great majority of patients bad enough to be invalided home will probably not be fit for "full duty" for a long time, but will eventually be quite capable of doing light duty. (9) The ultimate fate of the bad cases (after years) remains to be investigated.

Sir James Barr, to whose views reference has been made, attributes the condition simply to hyperthyroidism, basing his conclusions on the study of soldiers back from the front. The treatment, therefore recommended by Barr is directed to the condition of the thyroid gland and he claims to have received excellent results from it. The weight of evidence as to the causation of "soldier's heart" is, however, with Sir James Mackenzie and those who agree with him, albeit Sir James Barr has made out a plausible case. It is a question of very considerable importance, as the irritable heart occurs more or less frequently in civil life. It is therefore to be hoped that the problem will be solved in the near future.

SHALL WE PUNISH MANIACS?

A SITUATION which constantly confronts the physician in charge of the insane, and which the general practitioner occasionally encounters, is the problem of the excited patient who, left to himself, would tear up everything about him, including his own clothes, soil his surroundings, injure himself and assault others. To his exasperated guardian he often seems to be actuated by a malicious spirit, and this impression is heightened by his conversation, which is apt to be abusive and allusive to the highest degree, enumerating his physician's failings accurately, and indulging in the grossest and most vulgar personalities. It is but human to want to tie up a patient who has just slapped one in the face, and it is easy to be convinced that such a patient's reasoning powers, being in abeyance, he should be treated as a child.

Let us not delude ourselves with the idea that we are engaged in any sort of a therapeutic measure when we have to resort to tying down such a patient. In the reports of a hospital for the insane we sometimes find a record of so many "dry-packs" given in the course of a year. The term "dry-pack" is a euphemism given to the process of tying an excited patient hand and foot for a given time. Hot and cold packs, either of the sheet or blanket variety, have, of course, their proper therapeutic indications, and the hot or cold water acts as a sedative or a stimulant, depending on various things. The "dry-pack" can, by no stretch of the imagination, be conceived to have any therapeutic value. The officers of these same hospitals boast that no patient is "restrained" in their institutions, and salve their consciences by calling their cases—really the most severe form of restraint—"dry-packs." Any one can get an idea of how one feels in a "dry-pack" by reading the scenes in Charles Reade's "It's Never Too Late to Mend," where the prison chaplain tests the form of punishment of lacing a prisoner in a tightly-strapped jacket; or to allude to actual experiences he can read the description by Clifford W. Beers in "A Mind That Found Itself," of the night he spent in a straitjacket.

We are getting gradually away from the old idea of treating the mentally disordered as if they were criminals. We no longer think it necessary to put chains on maniacs or even to stupefy them with drugs. Psychotherapy between attacks and hydrotherapy during the attacks are the methods of choice. Of all forms of hydrotherapy for excited cases, the continuous bath is the best, and it has the great merit that it can be administered, in a somewhat modified form perhaps, in nearly every private home. It is interesting as illustrative of the changed attitude towards mental cases that at first it was thought necessary to tie the patient in a continuous bath, with the result that finding himself restricted in his movements, he struggled to be free. Now he is merely put in the bath and watched. He may at first get out and run about the room, but he is soon chilly enough to be glad to step back into the warm tub.

We should conclude, therefore, that everything in the way of disciplinary measures for mental cases is absolutely contradicted both for the sake of justice and for therapeutic reasons. The maniac should be treated, not punished. If it is impossible for any reason to give him adequate hydrotherapeutic treatment, or to watch him constantly so as to prevent him doing damage to life or property, and it is found necessary to restrain him in some way, let the physician at least be honest enough to acknowledge that it has been found necessary to restrain his patient, and not call his bonds a "dry-pack."

FERRAN ON THE BACTERIOLOGY OF TUBERCULOSIS.

As is generally known, Koch's bacillus does not explain all the phenomena of tuberculosis, and especially does it fall short in connection with the problems of acquired immunization. Some authorities

go so far as to state that the acid-fast bacillus of Koch is wholly devoid of either immunizing or curative powers. If there were not some natural immunizing forces in the body tuberculosis would in a short time destroy the race. Koch's bacillus cannot confer such protection. Ferran, the Spanish bacteriologist, insists that when tuberculosis arises *de novo* in the body, it is not caused by Koch's bacillus as such, although the power of the latter to cause inoculation tuberculosis is not called into question. According to Ferran, Koch's bacillus makes up but a small fraction of the complete biology of spontaneous tuberculosis, being merely the last step. Ferran says that in human beings conjugal infection but rarely occurs—the incidence varies from 7 to 22 per cent. according to the material—and he does not understand how any spouse could escape infection if Koch's bacillus was the sole or even the chief agent of transmission.

Ferran holds that Koch's bacillus is naturally a saprophyte. He finds five varieties of bacteria present in tuberculosis, one of these representing the classical acid-fast bacillus of Koch. Literally it is the fourth term of an ascending mutation, due to adaptative evolution. A further form is that derived artificially from the tubercle bacillus. The Koch organism is by no means the same thing as the virus of tuberculosis. The artificial form is regressive, just as the three ascending forms are progressive, Koch's bacillus standing at the apex. The natural forms cause spontaneous tuberculosis but are not infectious from man to man. They are ubiquitous, in the air, soil, and water. If by any chance they enter the blood they give rise to a form of septicemia. If they gain access to the tissues, there is no immediate reaction, but instead a process of adaptation on the part of both bacterium and host, the latter obtaining a general immunization from the formation of antibodies in the blood, while the former tends to pass through mutations until Koch's bacillus is formed. If the latter stage is reached there has been no immunization—the individual is tuberculous; but in the majority of cases this is a local process admitting of spontaneous arrest, the subject is affected, but not infected with the disease.

Ferran's teachings apply to bacteriology in general and go far to fill a number of defects in present day teaching. According to Persano (*Rivista critica di clinica medica*), these views have excited much controversy. The opposition is based partly on the claims that vaccines and sera produced under Ferran's teachings have not yet led to practical results. Ferran's rejoinder to his critics is that his methods are in the experimental stage, but show encouraging results. Evidently several years must elapse before a final judgment regarding these claims can be formed.

Simulation of Sciatica.

Sciatica, having no objective characteristics, is an affection which invites simulation. Patients who have recovered from other affections in hospitals have obtained an extension of their sojourn by this means. Lasègue's sign—accentuation of pain as a result of traction on the limb—is of great value in exposing simulation, but the malingerer soon learns to show pain under this maneuver and to imitate the defense exerted by the true subject of the disease. In *La Riforma Medica*, for July 10, Neri suggests a substitute procedure as follows: The subject is asked to stand and make various indifferent movements, such as elevation of an arm, bending forward, folding the arms, etc. If he has sciatica there will be some embarrassment in flexing the trunk on the lower extremities, flexion is more pronounced on the healthy side, and there is a slight rotation toward the affected side. Or the affected member may be flexed on the body, in which case the heel will be elevated, while the patient, feeling a severe pain at the sciatic foramen supports himself on the sound limb. In the simulator these flexions are produced without reactions, or defence movements, which are wholly instinctive. On the cadaver the author learned that the flexions cause stretching of the sciatic nerve. Vigorous active and passive flexions of the head on the trunk also cause pain in sciatic nerve of a sciatic victim, this being felt at the sciatic foramen. If the patient is supine, flexion of the head may cause a slight flexion of the hip upon the pelvis and of the leg on the thigh. This defence reaction is sometimes accompanied by clonus. This behavior has been explained by the possibility of a drawing upward of the medulla oblongata, corresponding to the flexion of the head, with a resulting traction upon the nerve radicles. It is evidently, however, not pathognomonic for sciatica.

Hepatic Prophylaxis.

The various manifestations comprised under the term hepatic insufficiency have been freely discussed in recent years, and in the more severe types we see urobilinuria, alimentary glycosuria, aminoaciduria, and acidosis. There is a form of true diabetes due to this causation, and functional insufficiency is a forerunner of cirrhosis of the liver, as shown by the urobilinuria which precedes that affection. Given a condition of hypohepatism (to paraphrase the terminology of thyroid pathology) how is it to be antagonized? Regnier (*Gazette Médicale de Paris*) states that proper diet is the first requirement. The subject cannot digest fats and articles containing fats, and has grayish stools, diarrhea and constipation alternating. He is drowsy by day and wakeful at night. He is intolerant to alcohol and tobacco, has no desire to work, is melancholic. In addition to fats, he must eschew wine, spices, sauces, excess of meat, fresh bread, pastry, yolk of eggs, shell fish, and an entire series of dishes which might disagree. No chemicals should be given. The author advocates lactic acid ferments, which may be combined with selected yeasts. To stimulate the hepatic cells he counsels organotherapy and gives hepatic and splenic extracts and bile salts. The latter are especially valuable and may be all that is necessary. He has great faith in hepatic extract, which has a beneficent action on the blood in increasing its coagulability, and he regards it as the logical remedy in impending cirrhosis. According to him, older as well as more modern clinicians (Semmola, Joffroy, Millard, *et al.*) have made this use of organotherapy. The urine which characterizes hypohepatism is said to return to the normal under this treatment. Cirrhosis, whatever form it may take, is always preceded by a certain degree of hepatic insufficiency.

News of the Week

Poliomyelitis Epidemic.—During the week ending October 21 there were reported in New York 41 new cases of poliomyelitis, making a total to that date of 9,243 cases, of which 2,379 have been fatal. Cases of the disease have also been reported from several places in the State. At Ithaca, eleven students at the University have been quarantined because of the occurrence of a case of the disease in the house in which they roomed. Other cases have been reported in schools and colleges in New York, Connecticut, and New Jersey, but no serious outbreak has occurred. In Westmount, near Montreal, two cases of poliomyelitis developed shortly after the holding of a dog show, and it has been suggested that the disease was introduced by dogs from New York exhibited at that time.

Need for School Physicians.—The New York Bureau of Welfare of School Children has recently sent to the Board of Estimate of this city a memorandum urging that provision be made for the appointment of additional inspectors, physicians, and nurses in the public schools. It is stated that during the last school term each school physician had the care of 9,200 pupils, and each nurse of 4,800. It is possible, under the present conditions, to examine each child only once in three years, whereas an annual examination is essential.

Fire in Hospital.—A blaze in a bathroom and clothes hamper, in the women's ward of the Lutheran Hospital, Brooklyn, on October 21, caused some alarm among the inmates, but was extinguished before serious damage had been done.

Balkan Relief Fund.—For the relief of the people of Albania, who, their land devastated by the opposing armies, are literally starving to death, an attempt is now being made to raise funds. Appeal is made for contributions in any amount, and these may be sent to the Balkan Relief Fund, 70 Fifth Avenue, New York.

Gifts to Charities.—By the will of the late Dr. James Y. Shearer of Sinking Springs, Pa., the sum of $60,000 is bequeathed, following the death of the wife and daughter of the testator, to Jefferson Medical College, Philadelphia, to be used for the endowment of a chair of bacteriology.

To Dedicate Hospital.—The new Lutheran Hospital at the northeast corner of Convent Avenue and 144th Street, New York, will be dedicated on October 29, and opened to the public on the following day. The buildings were made possible largely by the generosity of Dr. Inslee H. Berry, one of the founders of the hospital, whose entire residuary estate, on his death in 1912, passed to the institution. With this, and further gifts received since that time, the directors have erected a hospital and provided an equipment complete in every detail.

Personals.—Dr. William Seaman Bainbridge of this city was elected an honorary member of the Vermont State Medical Society at its annual meeting recently held in St. Johnsbury, and of the Society of Pennsylvania Railroad Surgeons at the annual meeting in Philadelphia on Friday of last week. He delivered the oration at the meeting of the Pennsylvania Surgeons.

Dr. H. H. M. Lyle of New York spoke before the Waterbury Medical Society, Waterbury, Conn, on October 9, describing the results of the Carrel method of sterilization of wounds as he had observed them during his service in France, and as detailed in the report of the Surgical Section of the New York Academy of Medicine, published in another column of this issue.

Dr. David S. Booth has undertaken the editorial management of the *Alienist and Neurologist* of St. Louis, upon the death of its editor, Dr. C. H. Hughes, pending the appointment of a permanent editor.

The Diagnosis of Diphtheria.—Dr. D. L. Gaillard of Greenville, Tex., writes that for years he has depended upon swabbing the suspected tonsil with solutions of the perchloride of iron as a diagnostic help in diphtheria. In follicular tonsillitis the deposit is broken up, in diphtheria the membrane is stained only. Dr. Gaillard asks that others try this method and report the results.

Removals.—Dr. William A. Downes has removed his office to 424 Park Avenue.

Dr. Fellowes Davis, Jr., has also removed to 424 Park Avenue.

Dr. Edward Lindeman announces the removal of his office to 565 Park Avenue.

Society Elections.—Medical Association of the Southwest: Annual meeting at Fort Smith, Ark., on October 2 to 4. The following officers were elected: *President*, Dr. Everett S. Lain, Oklahoma, Okla.; *Vice-presidents*, Dr. H. L. Snyder, Winfield, Kan.; Dr. J. H. Thompson, Kansas City, Mo.; Dr. M. M. Smith, Dallas, Tex.; and Dr. Charles S. Holt, Fort Smith, Ark.; *Secretary-Treasurer*, Dr. Fred H. Clark, El Reno, Okla. The next meeting will be held in Kansas City, Mo.

Fairfield County (Conn.) Medical Society: Annual meeting at Noroton on October 10. Officers elected: *President*, Dr. Frank H. Barnes, Stamford; *Vice-president*, Dr. Frank M. Tukey, Bridgeport; *Secretary*, Dr. Eli B. Ives, Bridgeport; *Treasurer*, Dr. Henry B. Lambert, Bridgeport.

Vermont Homeopathic Medical Society: Annual meeting at Montpelier on October 11. Officers elected: *President*, Dr. E. B. Clift, Fair Haven; *Vice-president*, Dr. W. G. Hodsdon, Rutland; *Secretary*, Dr. George I. Forbes, Burlington; *Treasurer*, Dr. F. E. Steele, Montpelier.

School of Chiropody.—The faculty of the School of Chiropody of New York has recently been increased by the addition of the following: Dr. Edwin C. Adams, professor of surgery; Dr. Paul Luttinger, director of laboratories; Dr. Joseph Mark, adjunct professor of physiology; Dr. E. C. Rice, associate professor of clinical chiropody; Dr. Harry E. Mereness, Jr., lecturer in pathology; Dr. Carl C. Franken, lecturer in bacteriology; Dr. S. S. Markell, lecturer in surgery. The student body of the school now numbers over one hundred.

Surgery in Moving Pictures.—Vivid pictures of the wonderful surgery done by Dr. Alexis Carrel and others on the wounded soldiers in French hospitals have recently been made with a cinema camera and brought to this country by the Clinical Film Company. The picture will be shown before medical societies, medical students, etc., and, judging from the reported effects of a private view given to representatives of some of the New York newspapers recently, it is hardly probable that they will appeal to any but technical audiences.

The Late Dr. Marple.—The Board of Surgeons of the New York Eye and Ear Infirmary record with deep sorrow and sincere regret the death of the late Dr. Wilbur Boileau Marple, who died suddenly at Kennebunkport, Me., September 30, 1916. Dr. Marple had been connected with the infirmary for

twenty-five years, first as assistant surgeon, and from 1901 to the time of his death as attending surgeon. He was also for a number of years one of the representatives of the Board of Surgeons on the Board of Directors.

The death of Dr. Marple has removed from among us a distinguished ophthalmologist, admired colleague, wise counsellor, and honored friend. His loss is greatly deplored by all of us. The Board of Surgeons desire to express their appreciation of his high professional attainments, and extend to his bereaved family their profound sympathy. (Signed) John E. Weeks, M. D., Edward B. Dench, M. D., W. E. Lambert, M. D.

Obituary Notes.—Dr. James Albert Cowan of New York, a graduate of the College of Physicians and Surgeons, New York, in 1904, died at his home, from apoplexy, on October 15, aged 43 years.

Dr. Oliver L. Hudson of Princeton, Ind., died at his home on September 22 after an illness of several weeks, aged 86 years.

Dr. A. B. Daniel of Claxton, Ga., a graduate of Jefferson Medical College, Philadelphia, in 1857, died at his home after a long illness, on September 30, aged 82 years.

Dr. Lawrence Yancey King of Florence, S. C., a graduate of Louisville Medical College in 1891, died suddenly on September 30, at Richmond, Va. Dr. King was a member of the Kentucky State Medical Association and the Florence County Medical Society.

Dr. Henry J. McKenna of Long Island City, N. Y., a graduate of the University and Bellevue Hospital Medical College, New York, in 1901, a member of the Medical Society of the State of New York, the Queens County Medical Society, and the Associated Physicians of Long Island, and visiting surgeon to St. John's and the Long Island College Hospitals, died in New York on October 17, aged 37 years.

Dr. Nathaniel Matson of Brooklyn, N. Y., a graduate of the New York University Medical College, New York, in 1864, and a member of the Medical Society of the State of New York, the Kings County Medical Society, the Associated Physicians of Long Island, the Brooklyn Medical Society, and the Brooklyn Pathological Society, died at his home on October 14, aged 77 years.

Dr. David F. Lincoln of Boston, a graduate of the Medical School of Harvard University in 1864, died at his home on October 17, aged 75 years.

Dr. William Preston Miller of Hagerstown, Md., a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1894, and a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, and the Washington County Medical Society, died at his home, from pneumonia, on October 5, aged 46 years.

Dr. William Stiles, Jr., of Philadelphia, a graduate of the Hahnemann Medical College and Hospital of Philadelphia, in 1875, died at his home on October 7, aged 74 years.

Dr. John Savile Lees of Bridgeport, Pa., a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1863, died at his home on October 9, aged 74 years.

Dr. William Peter Knight of Luverne, Ala., a graduate of the Southern Medical College, Atlanta, Ga., in 1892, and a member of the Medical Association of the State of Alabama and the Crenshaw County Medical Society, died suddenly on October 4.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

INJURIES TO GREAT CERVICAL VESSELS—EMBOLISM—BLOOD PRESSURE — CEREBRAL ANEMIA — SCARLET FEVER—TYPHOID FEVER—LONDON'S MEDICAL OFFICER OF HEALTH.

London, September 30, 1916.

Sir G. H. Makins has published a group of cases illustrating some of the effects of injuries to the great vessels in the neck. Cerebral embolism is somewhat frequently the consequence of such injuries and the thrombi may be entirely independent of septic infection. But if the vessel lie exposed in an infected wound the thrombus is likely to disintegrate and septic emboli may be set free, or secondary hemorrhage may occur when the damaged arterial wall is exposed to the full force of the blood pressure. Such cases show that embolic obstruction of even minor cerebral vessels may have more serious effects than the blocking of vessels supplying small areas of a limb where anastomosis is not much interfered with. Cerebral disturbance due to such wounds is occasionally met with in civil practice; in fact, more often than was supposed before military practice demonstrated its frequency. The cases are important, the prognosis unfavorable, and the clinical symptoms so complicated as to obscure the diagnosis and history. Abolition of pulse, superficial or temporal, is evidence of obstruction or complete obliteration of the arterial lumen. But although a corroborative factor, this is by no means a necessary sign for diagnosing arterial thrombus, a lateral mural thrombus projecting into the lumen of a vessel may grow and quite obstruct the vessel or it may get detached and be the obstruction; it may as such prove more dangerous than greater damage causing more rapid and complete formation of the occluding thrombus with a firmer attachment to the whole circumference of the vessel, giving it greater resisting ability to the blood pressure. In these cases this pressure is a rising one as the shock of the injury passes off. Arterial lesion is the more probable when both apertures—entry and exit—are present. So it is when a retained missile can be detected by x-rays. The coexistence of signs of injury in contiguous structures is a further aid to diagnosis, particularly injury to the sympathetic chain.

The striking difference of these cases from those dependent on sudden cerebral anemia, such as follows ligature of the carotid, is mentioned. Primary or secondary hemorrhage and complete hemiplegia leading in many cases to a fatal issue in 24 to 36 hours. In the emboli cases the paresis is more slowly developed. As to treatment, rest appears to be the only hope, and that but a feeble one.

The annual report of London's medical officer of health is on the usual lines and one need not say that the statistics it contains are as full as ever and offer a basis for many investigations. Many of the charts are so good that they seem able to convey their message almost independently of the text. Those whose work has any relation to its contents will need no reference to it—they will already have been considering it. There was a slight decline in the estimated population for 1914, attributed by many to the difficulty of poor persons with families obtaining the accommodation they require within the county who are therefore obliged

to reside at some distance. The expectation of life in these last returns again shows an increase, and that for both sexes and for all periods of life. The marriage rate is higher than in any year since 1874. But the birth rate has continued its fall, and is now 24.3 per 1,000. It was 25 for the period 1909-13. The death rate is again very low—14.4, as against 13.7—for the whole of England and Wales. The highest rate is in Shoreditch; the lowest in Lewisham. The first quarter of the year has the highest incidence; the second quarter the lowest.

The infant mortality again has a lower rate—104 per 1,000 births, against 107 in the preceding five years. Some cases of smallpox were found at the port and measures promptly enforced to prevent it spreading were successful. A double notification of measles and smallpox occurred in some districts, the schools as well as the sanitary authorities also reporting a similar return of whooping-cough. Scarlet fever had a slight increase in the rate. The wave curve of this disease corresponds with one showing the prevalence of fleas; also with one in inverse relation to rainfall. Typhoid broke out at the turn of the year 1913-14 and was traced to a particular establishment, and in that to the kitchen. There were 789 cases, and in 400 the source of infection traced. Trash sold in the streets, fish and shellfish, are considered to be sources of danger in London. But the improvements in sanitation have done much to restrict the growth of the typhoid toxin in the capital, and the greatest danger is from cases imported from polluted foreshores and distant estuarial waters.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 12, 1916.

1. Were the Sailors of Columbus the First European Syphilitics? Andrew F. Downing.
2. The Massachusetts Tuberculosis League. Remarks by the President. Vincent Y. Bowditch.
3. The Plan of the State Department of Health for More Tuberculosis Hospitals. Eugene R. Kelley.
4. The Relation of the Anti-Tuberculosis Society to the Local Board of Health. John W. Tapper.
5. The Visiting Tuberculosis Nurse. Mary Van Zile.
6. Tuberculosis in Rural Communities. Vanderpoel Adriance.
7. Some of the Problems of the Trustees of Massachusetts Hospitals for Consumptives. Arthur K. Stone.
8. The Value of a Program of Work for Anti-Tuberculosis Societies. Mrs. W. H. Lothrop.
9. Report of the Secretary of the Massachusetts Tuberculosis League. Seymour H. Stone.

2. The Massachusetts Tuberculosis League.—Remarks by the President.—Vincent Y. Bowditch, in his address before the Massachusetts Tuberculosis League on the occasion of its second annual meeting, reviewed the purposes for which the League was established. These are to keep watch upon the work which is being done throughout the State, to note and encourage those communities where work is being actively done, to stimulate to action those in which there possibly has been, and may still be, indifference as to the importance of all anti-tuberculosis work. He emphasizes three points as most important in the anti-tuberculosis campaign: First, there is need of a more rigid enforcement of the present law requiring all cases of tuberculosis to be reported by the attending physician to the proper authorities. Such an enforcement in the present state of public opinion may at times be embarrassing to the physician in attendance, but at the same time the public must be taught that registration, not necessarily meaning discomfort to the patient or friends, is absolutely necessary if the disease is to be brought under control in the future. Second, a constant endeavor should be made to induce proprietors of mills, factories, and shops to watch the health of their employees more carefully and attend to the hygienic surroundings of their workers. Much has been done in this direction but there is still vast room for improvement in the future. Third, there is need for the establishment of open air schools not only for those already ill, but for those not afflicted but who need to be fortified against disease. No one familiar with the work of the open-air schools can fail to be impressed by what can be done by such measures to restore health to tuberculous children. Similar methods could be adopted by all schools with infinite benefit to preventive medicine.

6. Tuberculosis in Rural Communities.—Vanderpoel Adriance summarizes the situation in respect to rural tuberculosis by stating that rural communities are very ignorant of the prevalence of tuberculosis and have been neglected in the anti-tuberculosis campaign. The formation of anti-tuberculosis leagues should be encouraged in such communities. The State Board of Health should be encouraged to make a thorough survey of the prevalence of the disease and should enforce the law which demands instruction about tuberculosis in the public schools. The education of the public school children on the subject of tuberculosis is of prime importance, not only from the standpoint of the individual child but because in it lies the main hope of this campaign, since the children of today will be the workers of the next generation. Instruction in regard to bovine tuberculosis is especially needed. Bovine tuberculosis is commonly conveyed through milk and is a menace, particularly to children under five years of age. There should be a state law compelling the pasteurization of all milk.

7. Some Problems of the Massachusetts Hospitals for Consumptives.—Arthur K. Stone mentions as among the problems confronting the trustees of hospitals, lack of cooperation on the part of communities and local health boards and the difficulties of administration. One of the most difficult problems concerns a class of patients who, after a period of progress, seem to come to a standstill, or the progress is very slow indeed. Some, though the active progress of the disease is arrested, show that they can never become self-supporting, active citizens again. They can live, and happily, under the protecting walls of an institution. Some of these persistently have bacilli and some never have bacilli or only at long intervals. The question comes up as to what shall be the attitude of the State to these persons. In the course of years groups of such patients tend to collect at various institutions and the question is asked, "What is to be done with them?" To this group must be added a group of patients where, in spite of marked symptoms and signs in the lungs, there is nevertheless grave doubt whether the process is that of real tuberculosis, or rather of so-called chronic bronchitis or bronchiectasis. These people are sick and suffering, but they are not, so far as is known, dangerous to the public health. It is desirable to know to what extent the State should make provision for their care. A difficult therapeutic question to be solved is how, after the period of rest has passed and the patient has returned to a normal temperature, and bacilli have disappeared from the sputum, shall he obtain the graduated work necessary to put him in the best possible condition to enable him to return home capable of being a productive citizen?

New York Medical Journal.

October 14, 1916.

1. The Postfebrile Treatment of Anterior Poliomyelitis. Dexter D. Ashley.
2. Epidemic Poliomyelitis. W. Sohier Bryant.
3. Intracranial Murmur of Long Duration and Spontaneous Cessation. Frank K. Hallock.

4. Pelvic Inflammation. H. M. Armitage.
5. Chronic Renal Infarcts. Nathaniel R. Rathbun.
6. Extrauterine Gestation. Earl P. Lothrop.
7. Status Lymphaticus. William Ledlie Culbert.
8. Cystoscopic Rectovesical Transillumination. P. S. Pelouze.
9. Obstetrical Abdominal Hysterectomy with a Report of Twelve Cases. Alfred M. Hellman.

2. Epidemic Poliomyelitis. — W. Sohier Bryan discusses the nasopharyngeal aspects of poliomyelitis. He believes that the experimental work of the past six years has given abundant proof that the virus or microorganism of poliomyelitis occurs first on the mucous membrane of the nasopharynx and is given to other victims through the excretions of the nose and throat. He points out that abortive cases and carriers are computed to be four or five times as many as are patients with distinct paralytic symptoms. The infection of the mucous membrane of the nasopharynx is so general and so far spread that the quarantine net cannot catch all the people carrying the infection. In view of the problems presented he suggests the management of the nose and throat with the view of making the pharynx a poor culture surface for the virus. The care of the nasopharynx should be made a routine matter; the public should attend to the conditions of the nose and throat in the same manner that it attends to the care of the teeth. Health authorities and family physicians should urge regular examination of the tonsils, adenoid and nasal passages for the treatment of infected mucous membrane. The key to the prevention of epidemic lies in such care. Those coming into contact with cases of poliomyelitis should have special nasopharyngeal treatment, consisting of sprays, applications through the nose, and the insufflation of powders through the nose. Since no specific treatment is known for poliomyelitis it is necessary to use those agents which have proven advantageous in nasopharyngeal infection from other organisms, such as silver salts, iron salts, phenol, corrosive sublimate, essential oils, iodine solutions, kaolin, calomel, quinine sulphate, charcoal, etc. The following is a description of the technique of one of the methods of treatment suitable for prophylaxis and for the purpose of lessening the dose after the infection: Spray the nose with a solution of 1 per cent. cocaine with one in 8,000 adrenalin to shrink the turbinates and slightly deaden sensibility. With a small cotton carrier apply hydrogen peroxide through the inferior meatus of the nose to the back wall. If there is much effervescence of the hydrogen peroxide, make several applications until effervescence has subsided and wipe the foam from the mucous membrane. If incidentally in this application the adenoid tissue appears to be very thick apply nitrate of silver (10 per cent., children; 25 per cent., adults) with a small dry applicator to the region of the adenoid and the pharyngeal pituitary, being careful not to use enough to permit its running down into the pharynx. If the adenoid tissue feels smooth and thin use a saturated aqueous solution of ferrin alum. For prophylaxis repeat the treatment after four days.

3. Intracranial Murmur of Long Duration and Spontaneous Cessation.—Frank K. Hallock relates the history of a patient, forty years of age, who from her earliest recollection had a pulsating sound in the head, variously described as "pounding," "whistling," "steam escaping," etc. When thirty-eight years of age, after an ocean voyage, she lost this sound, which had not returned save for a few seconds during a delayed and disturbed menstrual period. The systolic bruit could be heard by the stethescope at all points on the cranium, but was most marked in the left occipital and postauricular regions. On the left side of the head the sound was loud enough to be heard with the naked ear held close but not touching the scalp. Its character objectively was that of a steady, pulsating, whirring, rushing sound, synchronous with the pulse. Ordinary exercise and body movements did not modify the sound to any extent. Turning the head sharply to the right stopped the murmur both objectively and subjectively, while rotating the head to the left or flexing it downward did not interfere with the sound. In discussing the possible diagnosis in this case the writer assumes that this systolic bruit was due to a structural arterial abnormality existing from childhood. He says that this murmur would ordinarily be diagnosed as aneurysmal or its equivalent, but in addition to a constricted, dilated, or sacculated portion of artery, one could also picture the possibility of a sharply tortuous, angulated, or kinked section, either free or in relation to some bony or soft growth or projection. It might be that in these later years with a more equalized and better balanced vascular system there was a somewhat lessened flow of blood in the cerebral vessels and a slight diminution of the fluid volume within the cranium. This would favor the cessation of the murmur.

6. Extrauterine Gestation. — Earl P. Lothrop discusses the diagnosis and treatment of extrauterine gestation and reports five cases in which the diagnosis was made before operation. He says that when a correct diagnosis was made before operation the operator should thank his intuition rather than his judgment. The histories of his cases show that most cases present suggestive symptoms at the time of rupture. There is usually sudden pain followed by flowing, and a feeling of faintness or collapse may follow these symptoms. After rupture the history of repeated attacks, together with the finding of a pelvic tumor, may guide one correctly. In all cases the possibility of gonorrheal salpingitis should be carefully considered. An analysis of the writer's series of 83 cases shows that their ages ranged from 21 to 41 years, 54 occurring between the ages of 21 and 36 years, 19 between the ages of 36 and 41 years, and in 10 cases the age was not correctly given. The gestation was going on in the right tube in 43 cases and in the left in 40. The number of tubal abortions was 15; unruptured, 5. Of the ruptures two were interstitial. Fifty-nine occurred in the middle of the tube; two at the fimbriated end. In this series of 83 cases there was only one death from shock a few hours after the operation. In 15 cases the other tube was diseased and in 21 there was a chronic appendicitis. Three cases had been operated on for tubal gestation on the opposite side. The writer thinks conservative treatment in cases with mild symptoms and slow bleeding with the development of hematocele, when seen late, is permissible, but that such cases should be kept under observation and operation performed later if there is a recurrence of hemorrhage. He outlines the usual operative procedures and concludes that every case of supposed pregnancy in which sudden pain develops, flowing or shock should be considered extrauterine until proven otherwise.

7. Status Lymphaticus.—William Ledlie Culbert reports two cases of what for the want of a more definite term is usually called status lymphaticus. These cases serve to draw attention to the importance of a thorough physical examination of all children who present themselves for operation, especially those for removal of tonsils and adenoids. When a child shows any deviation from normal we should look all over the body for enlarged glands, bone deformities characteristic of rachitis, and areas of sternal dullness. Pribram of Prag draws special attention to enlarged papillæ at the base of the tongue and an omega shaped epiglottis as significant of this condition. If any stigmata are present suggestive of an enlarged thymus, operation

should be refused, or at least deferred until a full laboratory investigation can be made, including skiagraphs.

8. **Cystoscopic Rectovesical Transillumination.**—P. S. Pelouse states that the digital examination of subvesical structures per rectum is at best uncertain and that he has made an application of the old method of transillumination to these structures. He inserts the cystoscope into the bladder, dilates the viscus with water, introduces an electric bulb into the rectum, and turns out the cystoscopic light; this makes it possible to transilluminate the intervening structures. This can be done so thoroughly that the tiny blood vessels at the base of the bladder are distinctly seen, changes in tissue thickness and density can be accurately determined, and the ureter followed for a short distance. The essayist has had made a curved shaft for carrying a large transillumination lamp which makes it possible to bring a larger field under observation. The value of this procedure is in the determination of infiltrations of tissues from vesical, prostatic, or rectal growths, and the diagnosis of stones in the lower end of the ureter.

9. **Obstetrical Abdominal Hysterectomy.**—Alfred M. Hellman relates his experience with twelve cases of abdominal cesarean section. He gives thirteen indications for cesarean section and states that the abdominal operation is preferable to the vaginal, because it takes less time, assures greater cleanliness, the abdominal incision is wholly under the control of the operator, the patient can be sterilized if needed, and tumors can be removed By the abdominal operation one is more likely to get a viable fetus. Rupture of the uterus is more likely to occur if a low incision is used than if a high one. The bladder and ureters will not be injured by a high incision. The adbominal cesarean section also returns the parts much more nearly as they were before than does the vaginal incision. The convalescence is less painful and more likely to be smooth. In concluding, Dr. Hellman says it is time that the general practitioner learned that there is a safe method of delivery in complicated but uninfected cases, one that is free from the multilating effects of forceps, version, and the like, and it is time that this same truth is brought home to the laity.

Journal of the American Medical Association.

October 14, 1916.

1. Obstetric Surgery a Modern Science: Its Scope and Limitations. Edward P. Davis.
2. Meddlesome Midwifery in Renaissance. Joseph B. DeLee.
3. Obstetrics and Gynecology Under Ideal Conditions in a General Hospital. Frederick C. Holden.
4. Anesthesia in Human Beings by Intravenous Injections of Magnesium Sulphate. Charles H. Peck and Samuel J. Meltzer.
5. The Significance of Pulse Form. A. W. Hewlett.
6. Some Factors in the Production of Cardiac Dyspnea. Francis W. Peabody.
7. Roentgenocardiograms: Polygraphic Slit Tracings of Cardiac Pulsations by the Roentgen Ray. A. W. Crane.
8. Nail Extension in Fractures of the Lower Extremity. John C. A. Gerster.
9. Nails and Screws Through Joint Surfaces, in Autografts and in Fractures Into Joints. Arthur T. Mann
10. A Bacillus Isolated from Epileptics; Preliminary Report. William Barclay Terhune.
11. Constipation and Intestinal Infection in Epileptics. Charles A. L. Reed
12. Simple Procedure for Nasal Bleeding. William Lapat.

1. **Obstetric Surgery a Modern Science.**—Edward P. Davis. (See MEDICAL RECORD, July 8, 1916, page 85.)

2. **Meddlesome Midwifery in Renaissance.**—Joseph B. DeLee. (See MEDICAL RECORD, July 8, 1916, page 86.)

3. **Obstetrics and Gynecology Under Ideal Conditions in a General Hospital.**—Frederick C. Holden. (See MEDICAL RECORD, June 17, 1916, page 1115.)

4. **Anesthesia in Human Beings by Intravenous Injection of Magnesium Sulphate.**—Charles H. Peck and Samuel J. Meltzer state that in this preliminary report they wish to relate briefly the course of anesthesia in three operations performed on human beings exclusively under the influence of intravenous injection of magnesium sulphate. In summary they state that the observations made in these cases prove conclusively that the state of anesthesia which is produced by injection of magnesium sulphate is actually anesthesia, that is, that in this state sensation as well as consciousness are temporarily more or less completely abolished. This central effect may or may not be accompanied by a pronounced paralysis of the endings of the motor nerves of a great part of all skeletal muscles. Evidently the central effect, especially the effect on the sensation of pain and on consciousness, can be obtained with a smaller dose of the magnesium salt than that which is required for a paralysis of the motor nerve endings. The central effect also appears to set in sooner than the peripheral one. The employment of intravenous injection of magnesium salt as an anesthetic may prove to be indeed a practicable and advantageous method, because, in the first place, it may cause simultaneously a moderate degree of relaxation of the muscular mechanism, and, secondly, because the untoward effects can be rapidly reversed by a careful administration of a solution of calcium chloride. This method, however, before it can be made practically serviceable, would require a good deal of careful study. They, therefore, at least for the present, abstain from a discussion of the possibility of the practical applicability of this method.

5. **The Significance of Pulse Form.**—A. W. Hewlett. (See MEDICAL RECORD, July 1, 1916, page 33.)

6. **Some Factors in the Production of Cardiac Dyspnea.**—Francis W. Peabody. (See MEDICAL RECORD, July 1, 1916, page 33.)

7. **Roentgenocardiograms.**—A. W. Crane. (See MEDICAL RECORD, July 1, 1916, page 33.)

8. **Nail Extension in Fractures of the Lower Extremity.**—John C. A. Gerster claims the following advantages for this method of treating fractures of the lower extremity: (1) It is a safe measure provided the proper technique is employed. (2) Because of its small site of attachment, it is of great value in recent simple fractures with extensive abrasions, in recent compound fractures with much destruction of soft parts, and in multiple fractures of the same limb. (3) Because of its efficient traction, in conjunction with osteotomy, it is the only method whereby the shortening present in certain old malunions can be safely overcome even months after the original fracture. (4) In relation to open operative reduction, it may be stated that in certain cases nail extension will obviate the necessity for operative intervention, and in other cases it can be employed to prevent shortening until the suitable time for plating has arrived.

9. **Nails and Screws Through Joint Surfaces, in Autografts, and in Fractures into Joints.**—Arthur T. Mann writes that his experience warrants the conclusions that: (1) The autografts unite with a line of callus as fine as those of simple fractures, with a free joint, and without adhesions. (2) The autografts seem to live, but in reality the bone trabeculæ are gradually replaced by microscopic bone growing inward from the vascular spaces between them, while the cartilage continues to live and to a limited extent aids in the formation of the new bone adjacent to it. (3) The main replacement of the bone in the trabeculæ seems to take place directly from bone cells without the preliminary formation of cartilage, and the dead portions of the trabeculæ seem to be absorbed in a line immediately adjacent to the new growing bone without the inter-

vention of special osteoclasts. (4) Condyles detached from all tissue save the crucial ligament unite like free autografts. (5) Condyles, attached more or less to other tissues as well, continue to live throughout, or nearly so. (6) Nails and screws are tolerated in the human being as well as in the experimental cases, and with surprisingly little reaction. They remain firmly embedded in every specimen recovered, but the Roentgen ray shows a slight thinning of the bone about them. (7) The surface covers with connective tissue, a reversion of the cartilage from hyaline to fibrocartilage and then to connective tissue, which overlays connective tissue derived from the vascular spaces between the trabeculæ. (8) The response of the condyles to the presence of a rigid body projecting above the joint surface is to build up the condyle in its attempt to withdraw it, and prevent further injury to the opposing joint surface. This also takes place when the condyle is an autograft. (9) This growth is a true growth of bone, and the cartilage tends to retain its normal thickness. (10) The groove cut by a projecting nail or screw, in the opposing surface, covers over with hyaline cartilage, and the groove tends to fill up with bone as the projecting body is withdrawn by the growth of the condyle. (11) The line of fracture in the cartilage tends to cover over with cartilage, largely of the fibrocartilage type if it is narrow, with connective tissue if it is wide. (12) In autografts, empty drill holes fill with new bone, growing up from below, only to a very limited degree from the bone and cartilage in the graft; in living fragments, from the trabeculæ of the fragment, very little from the cartilage. The surface covers with the same kinds of connective tissue as do the nails and screws.

10. A Bacillus Isolated from Epileptics. — William Barclay Terhune makes this preliminary report. He states that feeling a deep interest in epilepsy, he undertook a study of individuals classified as epileptics in the East Louisiana Hospital for the Insane. It was decided that this investigation should be conducted from every possible angle; accordingly, case histories were reviewed, relatives questioned with a view if discovering the part played by heredity, personal injuries, illnesses, and psychic factors recorded. Accurate records were kept giving the number and description of the paroxysms in each patient, the nurses were interrogated regarding the habits and disposition of the epileptics in their care, and careful mental examinations were made. While he was in the midst of this work, Reed of Cincinnati published a paper definitely asserting that epilepsy was caused by a bacillus which might be isolated from the blood stream, which organism was found in large numbers in the colon of epileptics, and was demonstrable in the retroperitoneal glands. That epilepsy was of toxic origin was not a new idea, in consequence of the labors of Haig, Weber, Ferrani and many others. In view of the mass of statistical evidence pointing to the importance of the hereditary influences, and the traumatic factor, as well as the information gleaned from psychanalysis, he could not do otherwise than view with great skepticism the assertion that epilepsy was an infective process. Accordingly, the work embodied in this report was performed with the view of substantiating or disproving this assertion, and was begun with the preconceived idea that there was not any such organism as the *Bacillus epilepticus*. In summarizing he states that although he began this work profoundly biased in his opinion, as he believed that epilepsy was not bacterial in origin, he was forced to the conclusion that the bacillus which he had isolated, which was identical with the *Bacillus epilepticus* described by Reed, must be an etiological factor in epilepsy, in view of the following facts: A bacillus was isolated from 75 per cent. of the epileptics examined; it was present during and following a seizure but not during the intraconvulsive period, except in the case of one patient who was debilitated by ill health; it was not found in non-epileptics; it caused typical epileptoid convulsions in cats, during which death occurred, both when they were injected intravenously and when they were fed cultures of the organism; the organism might be recovered from the animal during the convulsion and after death.

11. Constipation and Intestinal Infection in Epileptics.—Charles A. L. Reed makes a reply to Caro and Thom and Wherry and Oliver, who have failed to find the *Bacillus epilepticus* in the blood of epileptics examined by them, and who therefore infer either that the organism does not exist, or if it does exist it is a contamination, or, in any event, it has nothing to do with "idiopathic" epilepsy. Reed states that the fact of the existence of the organism seems to be fairly well attested, since it has been isolated by a number of investigators in a large percentage of epileptics. The inference that the organism is a contamination is also unfortunate since it is scarcely likely that the different investigators should all have found the same contamination. The reason for the failure to induce convulsions in animals by Wherry and Oliver was due to the use of a subculture from a subculture which was probably not sufficiently potent to overcome the natural immunity of the animal. Reed also discusses the objections to his classifications of this organism. He presents the complete bacteriological records of his cases which Wherry and Oliver report from the standpoint of their individual observation, and in analyzing them finds that they show that positive findings were not made in every specimen taken. He finds several cases in which positive findings were not made until, in one instance, after the examination of the sixth specimen. The ratio of positive to negative findings is as 7 : 13. He cites one series of five and another of eight in which the first examinations proved negative. He says it will be seen from this that in the single examination of four cases and the three examinations of one case which Wherry and Oliver report it is not surprising that they obtained negative findings. Reference is also made to the work of Marie Bra, who in the early part of this century found an organism again and again in the blood of epileptics; other European investigators failed to find it, and disgusted with the treatment she received she forsook the scientific world and married.

The Lancet.

September 23, 1916.

1. A Series of Cases of Cerebral Embolism Consequent on the Reception of Gunshot Injury to the Carotid Arteries. G. H. Makins.
2. Notes on the Agglutination Reactions with Oxford Standard Agglutinable Cultures in a Series of Patients, Including Those Examined in a Recent Civilian Outbreak. R. Donaldson and Barbara Clark.
3. An Application of Drop Measuring to Widal Technique; a Reply to Adverse Criticism. E. W. Ainsley Walker.
4. A New Remedy for Syphilis, Luargol or "102." N. S. Bonard.
5. A Note on the Use of Perforated Celluloid in the Dressing of Certain Wounds. S. R. Douglas.

1. A Series of Cases of Cerebral Embolism Consequent on the Reception of Gunshot Injury to the Carotid Arteries.—G. H. Makins bases this communication on the clinical history of 14 cases. He states that limited injuries are the most prolific source of origin of this class of cases. The presence of a definite perforating wound of the artery has been assumed from the existence of obvious signs, such as systolic arterial bruit, and arteriovenous murmur and purring thrill, the detection of a pulsating swelling in the course of

the vessel, or the occurrence of a secondary hemorrhage demanding surgical intervention. A non-penetrating injury has been assumed when none of the above signs could be detected, while diminution or abolition of the carotid or superficial temporal pulses has been regarded as evidence of obstruction or complete obliteration of the arterial lumen. Obliteration or considerable diminution of the distal pulse, although a corroborative factor, is by no means a necessary sign for the diagnosis of the formation of an arterial thrombus. The determination of the period which has elapsed between the reception of the injury and the onset of signs of cerebral lesions, while of prime importance, has proved of considerable difficulty. Reasoning from analogy, however, the rapidity with which a clot capable of causing cessation of hemorrhage from a ruptured artery in the limbs allows one to conclude with some confidence that a period of a few minutes would suffice. Hence very early development of symptoms need not be an occasion of surprise. In five of these 14 cases there were symptoms of damage to the cervical sympathetic nerve. Only one of these 14 patients died. Of the remainder, one was sent home practically recovered from an incomplete right brachial monoplegia and aphasia, while slight improvement had occurred in some of the others. The general impression, however, was not a favorable one. As to treatment, rest is the only resort; it might, however, be remarked as an important fact in support of the diagnosis (in favor of embolism as opposed to cerebral softening fqrom anemia) that in two cases in which subsequent complications necessitated ligature of the common carotid, neither patient suffered any increase in symptoms; in fact, one man's condition improved at once and the other made a steady improvement.

2. **Notes on the Agglutination Reactions with Oxford Standard Agglutinable Cultures.**—R. Donaldson and Barbara Clark present a study of the serum reactions of 275 patients, of whom 184 were soldiers. Of these latter 165 came from the Mediterranean, 18 from France, and one contracted paratyphoid in Reading. There were 91 civilians, of whom 53 were cases of typhoid or paratyphoid occurring during the Reading outbreak, while the remaining 38 were not suffering from the typhoid-paratyphoid group of diseases, but were used as controls. In their examinations they have used a slightly different technic from that used by Dreyer and have employed the Oxford standard agglutinable cultures throughout. These they have found thoroughly satisfactory. They believe their method the most accurate and the simplest of all agglutination methods where routine work is concerned. The great majority of their cases arrived with the diagnosis "enteric," whereas out of 115 cases only 13 per cent. at the outside could be claimed as true typhoid. The mortality among these typhoid cases was nil, and offers a marked contrast to the 15 per cent. mortality among 53 uninoculated civilians. Out of the 115 cases examined twice, 71.6 per cent. contained agglutinins for paratyphoid bacilli, and out of the whole number of military cases 60.3 per cent. agglutinated paratyphoid organisms. The impression that paratyphoid B infections are more common among these cases is probably more apparent than real, and is probably not to be explained merely by saying that one type of case was more common during certain months. The results obtained by the authors point to an explanation based on the time elapsing from the onset of the illness till the first agglutination. The nearer to the onset that the first agglutination is made the greater will be the number of positive A agglutinations. The further on one goes in convalescence before taking a reading the more likely is it that the less persistent A agglutinin will have disappeared, and consequently there will be a greater apparent percentage of B infections. These examinations did not furnish any clear evidence of coagglutination of A for B or vice versa, and there was no evidence of *B. typhosus* evoking coagglutinins for paratyphoid organisms in the lowest dilutions employed (1 in 27). Paratyphoid infections in persons inoculated against typhoid have acted as a stimulus to the agglutinin-forming mechanisms which had previously been called into being by a preventive T inoculation. The need should be emphasized for repeated agglutinations at intervals in the case, at least, of persons previously inoculated. It does not seem that any diagnostic inferrence can be drawn from a consideration of the titre in inoculated persons, where only one examination has been made. This study affords no evidence to support the view advanced by Tidy that marked pyrexia for some days is associated with diminution or disappearance of typhoid inoculation agglutinins. The civilian epidemic in Reading was not due to *B. typhosus* alone, but was complicated by a paratyphoid infection in a certain proportion of the cases. The source of infection was probably a military one. None of the 38 uninoculated controls showed any trace of agglutinins to typhoid, or paratyphoid A or B except four, and in one of these there was a history of contact.

4. **A New Remedy for Syphilis, Luargol or "102".**—N. S. Bonard writes of his experience with this preparation in Lock Hospital, where about 100 cases of syphilis at different stages were treated with luargol. All of these cases without exception have done well and the results are most satisfactory. The therapeutic effects have been more rapid than with salvarsan, neosolvarsan, galyl, novarsenobenzol, or neokharsivan. No serious complications or reactions have been observed. All symptoms of the disease have cleared up rapidly. The injections have been made with concentrated solutions of "102" by means of a 20 c.c. glass syringe. All out patients have been treated in the consulting room and have left immediately after. In the wards of the hospital the patients were not kept in bed after the injections. Frequent small doses have proved to be of greater benefit and to give better results than larger doses at longer intervals. The contraindications for luargol are the same as for other arsenical compounds. In acquired syphilis with primary, secondary, or tertiary symptoms without nervous complications, the following doses should be injected in a normal adult patient: 0.15, 0.20, 0.25, 0.30, 0.30, 0.30 gm., *i.e.* totally 1.50 gm. in six injections repeated every second, third, or fourth day. For a female patient in the same condition the following doses: 0.10, 0.15, 0.20, 0.25, 0.25, 0.25 gm., *i.e.* a total of 1.20 gm. A violent reaction may occur if the dose is too large, which is regarded as an anaphylactic crisis caused by the precipitate, which is the principal agent in the pathological manifestations. Sufficient alkalinization of the product will obviate the appearance of these nitroid crises.

5. **A Note on the Use of Perforated Celluloid in the Dressing of Certain Wounds.**—S. R. Douglas suggests for the alleviation of pain caused by the removal of dressings which have become adherent to the wound the employment of sheets of perforated celluloid. This material, which is rather too stiff to be conveniently applied to the irregular surface of the wound, was found to become perfectly safe and pliable, and at the same time somewhat elastic, after it has been soaked in a five per cent. carbolic solution for a few hours. The carbolic acid solution having been washed away with sterile salt solution, the softened celluloid can be applied to the wound surface and falls at once into all the

irregularities; any suitable dressing can be applied over it. On redressing the wound it is found: (1) That the celluloid lifts off the surface of the wound without causing any pain; (2) that all the discharges from the wound have passed through the perforations, leaving the surface of the wound quite clean; and (3) that the celluloid has regained its original stiffness, thus making an accurately fitting splint, which tends to keep the wounded tissue in a complete state of rest. After the celluloid has been taken off the wound it is cleansed in tepid water and again softened and sterilized by placing it in the 5 per cent. carbolic acid solution. Heavier sheets of celluloid treated in this way have been found to make excellent splints.

British Medical Journal.

September 23, 1916.

1. A Note on Weil's Disease (Spirochætosis Icterohæmorrhagica) as It Has Occurred in the Army in Flanders. Adrian Stokes and John A. Ryle.
2. A Memorandum Upon Heart Affections in Soldiers, with Special Reference to Prognosis of "Irritable Heart." J. C. Meakins, J. Parkinson, E. B. Gunson, T. F. Cotton, J. G. Slade, A. N. Drury, and Thomas Lewis.
3. Note on the Antenatal or Pregnancy Clinic at the Edinburgh Royal Maternity Hospital. J. W. Ballantyne.
4. Some Principles of Investigation in Blood-Pressure Problems in Health and Disease. James M. McQueen.
5. Septic Endocarditis; Intravenous Injection of Eusol; Recovery. J. Allman Powell.

1. Note on Weil's Disease (Spirochætosis Icterohæmorrhagica) as it Has Occurred in the Army in Flanders.—Adrian Stokes and John A. Ryle state that about 15 cases of Weil's disease have come under their observation and they have been able to confirm the findings of the discoverers of the cause of this disease. In two cases they have succeeded in infecting animals, and these have shown the characteristic pathological changes. In each instance the guinea pig was found to have the spirochætes in large numbers in the liver and blood. Two of four experiments done on the sixth day of illness were positive; no positive results were obtained after the sixth day. The infected guinea pigs became ill on the fifth day after injection, in one case, and on the seventh day in the other. The lungs of these animals presented the small hemorrhagic spots, like the wings of a mottled butterfly, which is one of the most important changes in the diagnosis of the disease. The authors think that, while the experimental facts which they present are meagre, they are sufficient to show that the cause of epidemic jaundice in Flanders is identical with that found in Japan, and to emphasize that it is important that the infective possibilities of Weil's disease be recognized. The clinical histories of individual cases are given, from which it appears that there are both mild and very severe types of the disease. The jaundice, weakness, and pain in some cases have been slight and of not long duration. On the other hand, there were three deaths in this series and two other patients were very ill.

2. Heart Affections in Soldiers, with Special Reference to Prognosis of "Irritable Heart."—J. C. Meakins, J. Parkinson, E. B. Gunson, T. F. Cotton, J. G. Slade, A. N. Drury, and Thomas Lewis present this memorandum based on observations made at the Military Hospital, Hempstead, where 200 beds have been set aside for soldiers suffering from heart affections. Of 251 patients, 113 were discharged from the army within a few weeks of admission. This group contained 31 cases of mitral stenosis, 7 of mitral stenosis and aortic disease, 22 of aortic disease, and 53 of myocardial disease with or without enlargement and with or without mitral incompetence. The graduated exercises and marches by which some of the patients are returned to duty or fitted for civil life are described. With reference to the prognosis, they state that the proportion of favorable results is highest among men who have broken down in health on active service. Men who develop their symptoms while training at home are distinctly unfavorable subjects. The prevalence of rheumatic or choreic history amongst cases of irritable heart is too high to be a matter of coincidence (19 per cent.); it suggests the presence of early rheumatic heart lesions in many of these soldiers. Patients in whom there is such a history rarely reach the higher grade exercises, though their physical signs do not differ from the remainder. The majority have to be discharged as permanently unfit. Of the irritable heart cases, 46 per cent. gave a history of symptoms dating back prior to enlistment. The longer the history the worse the prognosis; patients in whom the history is of years standing make little progress; those soldiers are most likely to return to duty in whom the history is of a few months' duration.

4. Some Principles of Investigation in Blood-Pressure Problems in Health and Disease.—James M. McQueen deplores the lack of method shown by some clinicians in the choice and arrangements of their observations on blood pressure. He points out that the feature to be studied in the circulation in health and disease is the power of the heart in conjunction with changes in the peripheral blood field to adapt itself quickly and efficiently to extra strain. If a satisfactory knowledge of the heart and peripheral circulatory system in the human subject in health and disease is to be gained it is necessary to examine and record the changes in the systolic, in diastolic, in pulse pressure range, rate of heart beat, and rate of respiratory rhythm during the strain thrown on the heart by exercise, not after it is over. The systolic pressure can be estimated during exercise either by the auditory or the tactile index, but the diastolic index is estimated by the auditory index alone. Consequently it is best to adhere to the auditory index for both measurements. In making the examinations the subject is placed on his back on a polished table and the exercise consists in rhythmically drawing up his feet and legs as in swimming on the back. The mildness of this exercise depends upon the length of time it is kept up. It is also possible to examine the circulatory phenomena during exercise in the erect posture by the auditory method, the exercise employed being that of working a silent lathe with one foot. By these methods it is found that the ranges of blood pressure, both systolic and diastolic, in both healthy and unhealthy subjects vary greatly. It is obvious that the response to a given amount of work of normal adults with a blood pressure, say of 130 systolic and 75 diastolic, and a rate of heart beat, say 78, should be investigated. The author believes that in cases with departures from the normal by testing them against the performance of a given amount of work we may be able to solve some of the problems as to how nature adapts both the heart and the peripheral circulation so as to overcome initial defects. Until we know the significance of various levels of pressure, systolic and diastolic, with various rates of heart beat, and respiratory rhythm, a mere chronicling of measurements in countless clinical lectures is without significance.

5. Septic Endocarditis: Intravenous Injection of Eusol; Recovery.—J. Allman Powell reports the case of a girl, 13 years of age, in whom an erysipelas of the right foot and leg was complicated by septic endocarditis. Two injections of antistreptococcal serum were administered. The first seemed to be followed by some improvement; after the second the patient became rapidly worse. As a last resort it was decided to give her eusol [a solution of 12.5 grams each of calcium chloride

and boric acid in 1 liter of water] intravenously. Forty c.c. of eusol was administered, preceded by 300 c.c. normal saline. At the time of the injection the patient was apparently dying. After the injection she perspired freely and an hour later had another rigor. From this time she gradually improved, and several months after was apparently well except for some rapidity of the pulse and anemia. No blood culture was made so the diagnosis was not proved, but clinically the case was typical of acute sepsis of the blood stream.

Journal de Médecine de Paris.

September, 1916.

Treatment of the Carriers of Diphtheritic Bacilli.—Labbe and Canat cite abundant evidence of the tenacity of this bacillus to remain in the throat, especially after proliferation. After an attack of diphtheria, 50 per cent. of victims are carriers for one month, 40 per cent. from one to two months, and 10 per cent. from two to three months. Carriers have remained carriers for 458 days, 669 days, etc. In war times it is a great burden to keep carriers of any disease isolated for weeks. The most vigorous and protracted sterilization may not dislodge all of the bacilli until perhaps three months have expired. Antisera used in solution or insufflation perhaps represent an advance, but are still on trial. The authors make use of the following system: During the first postdiphtheritic three-month period, when bacilli of all lengths may be present, the throat is irrigated abundantly with Labarraque's solution 30 per cent. in water, while a 10 per cent. resorcin ointment is introduced into the nostrils. Both remedies are exhibited twice daily. The throat is also swabbed with iodized glycerin 1 per cent. Of twenty-nine patients thus treated, twenty-four were freed from bacilli in an average of thirty-one days. The extremes were fifteen and forty-eight days. In the other five the average persistence was over forty days. (As a matter of fact, one was discharged still a carrier on the seventy-fifth day and the other four under the same conditions on the ninetieth day.) In a second period the antimicrobic serum was used on all carriers, thirty-five in number, the powder being insufflated into the nose and throat. The bacilli disappeared in from nine to sixty days, save for one case in which they persisted for ninety-five days. The average was twenty-four days. Naturally the two methods could not be applied jointly. We see here a slight advantage of the serum over the antiseptic treatment.

Specific Treatment of Scarlatina with Sodium Salicylate.—Ramond and Schultz refer to the disease as it occurs among the troops. Originally the treatment was purely symptomatic, and consisted partly of red light. It seemed impossible to jugulate a violent attack, and the authors sought a remedy which would exert a quasi-specific action directly upon the disease. On account of some similarity between this disease and acute articular rheumatism, the salicylate of sodium was the first to suggest itself. The so-called rheumatic manifestations of scarlatina respond readily to this drug, and this rheumatism is clearly the disease itself and not a complication. The drug is indicated in all types of the disease, and should be given always in apyretic cases in which dangerous complications may develop. It should be given from the start to the finish of the fever and general reaction. Allowing three days for this, it should be given for two days more. After the fifth day it should be discontinued, and resumed from the fifteenth to the twentieth day, when late complications are due. These arise in part from a reanimation of the scarlatinal virus, which is at once controlled by the salicylate. If these complications were really due to the streptococcus the salt would exert no power over them; however, a simple infection may readily be grafted upon the primary disease if the remedy be not promptly given. The dose is about 6 grams per day, increased to 8 grams or more if required. Scarlatina, like acute rheumatism, is characterized by nocturnal exacerbations; hence the drug should be followed up during evening and night. When the treatment is resumed at the fifteenth day the dosage need not be as large. As already stated, the fever, under the action of the drug, subsides by the third day. If defervescence does not occur we may accuse some secondary infection or a complication like bronchopneumonia. The throat lesions rapidly undergo involution, but, with the recrudescence of the disease, may reappear in an aggravated form. It is purely a scarlatinous symptom, and is rapidly controlled by the salicylate. The early nephritis of scarlatina is not a serious manifestation, but the later form is always uncertain. The salicylate may abort it if given in time, but if it have several days' headway the drug should be given cautiously, in relatively small doses, lest the kidneys be unable to excrete it. If it can pass the kidneys the dose may be increased. But the drug evidently has no salutary effect on the organ, and is given for the sake of the disease as a whole. On all other manifestations of the disease the drug behaves more or less as a specific.

Treatment of Pertussis.—Satre discusses the subject with candor. He gets a certain amount of relief from bromoform, which diminishes the intensity of the cough and vomiting. Relief must not be looked for until two, three, or four days after the treatment has begun. For children under 2 years of age he prefers terpene. A third trustworthy medicament is quinine, pushed in broken doses. A child of five receives 1 gram in twenty-four hours. The drug is given persistently for several days only. If benefit has been obtained he stops its use or continues it in much smaller doses. If the results of the sulphate are negative, he then gives the chlorhydrate, bromhydrate or carbonate. His reliance upon it is such that in case of intolerance by the mouth he injects hypodermically the bichlorhydrate. In several days the course and severity of the disease should be favorably influenced.

La Presse Médicale.

September 25, 1916.

Clinical Notes on 289 Cases of Icterus Observed in an Ambulance Service.—Gimbert, at the Medicochirurgical Reunion of the V Army, stated among the troops all ages suffered and cases occurred almost equally in all seasons. Among predisposing causes are previous sojourn in the colonies, abuse of meat diet, vaccinations performed at too frequent intervals. Myalgias and arthralgias are often seen at the onset of jaundice, and transitory albuminuria is often present. When enlargement of the liver exceeds 15 or 16 cm., one may think of destruction of the hepatic cells or intrahepatic disorders of circulation. Bradycardia and low-tension pulse are often present and dilatation of the heart may be very frequent. Intense anemia may follow the jaundice, accompanied by slight enlargement of the spleen, suggesting the possibility of a critical hemolysis. The temperature, elevated at first, becomes in turn a permanent hypothermia. All the clinical types have been observed, from simple congestion of the liver to fatal icterus gravis (two cases). Prolonged icterus and relapsing icterus were also seen. The prognosis may be grave, and advanced age and intemperance are largely

responsible; these factors always aggravate the disease. From the therapeutic viewpoint sodium salicylate is the best cholagogue, while urotropin and calomel are the best antiseptics. Adrenalized serum has rendered excellent service. The best regimen has appeared to be legume broth and low-protein diet. A milk diet was inferior to the preceding.

Utilization of the Cochleo-Orbicular Reflex in Deafness.—Gault's material consisted of soldiers who were completely deaf, partially deaf, suspected of deafness. These have all been tested in the usual manner, including search for the nystagmus reflex by excitation of the labyrinth (vestibular). Can excitation of the cochlea also produce this reflex? A cochlea-orbicular reflex has been known for many years. It may be produced by certain brusque procedures, such as firing a pistol close to the ear. The sound is transmitted to the organ of Corti, reaches the cochlear nucleus in the bulb, is irradiated by the facial nerve, and causes a contraction of the superficial facial muscles, and especially of the orbicularis palpebrarum. This contraction varies much in degree, but if it is present at all it guarantees that the organ of Corti and acoustic nerve are intact, so far as gross lesions are concerned. If, on the contrary, the reflex is suppressed, the vestibule is destroyed. Marked reduction in degree of the reflex suggests a minimal lesion in the vestibule. To practise the test the author uses the horn of a bicycle, which is not burdensome to the patient yet well suited to excite the organ of Corti. The eyelids are watched with a strong lens to discover the slightest flicker. The horn is blown about 2 meters from the ear, and must be on a prolongation of the biauricular line. The meatus must be plugged with cotton soaked in vaseline, and cardboard or some similar substance placed in front of the ear. The eye observer gives a signal to the horn blower. At the very first sound the former notes through his lens perhaps a minimal contraction of the orbicularis. The subject is unable to resist this action of the muscle. If total deafness from organic disease is present, the reflex is entirely absent. However, in a heredosyphilitic patient with apparent total deafness, the horn when blown at the distance of 1 meter elicited a feeble response. In traumatic total or subtotal deafness listed as due to shell shock the reflex is not entirely extinguished, and unconscious simulation is often revealed by the test. Many of these patients will promptly recover, but it is best to "let them down easily" and treat them as if they were actually deaf, promising good results from certain remedies, which duly appear, to the wonder of the patient. In some of these subjects with marked psychic trauma both the cochlear and vestibular reflexes are normal, but there is a fixed idea of deafness. These men must not be mistaken for malingerers. A so-called deafness by inhibition of cortical origin is often seen and is curable by therapeutic suggestion. Of 500 to 600 cases of "traumatic" deafness of mostly early appearance, but a single case of total permanent deafness was noted despite the frequent diagnosis of labyrinthitis. In malingerers of total deafness, who are more rare than is generally believed, the cochleopalpebral reflex exposes the deception.

Gazette Hebdomadaire des Sciences Médicales de Bordeaux.

September 24, 1916.

Treatment of Post Chloroformic Vomiting.—Jeaneney states that there are two forms of this accident. One is of psychic origin and is of a benign type—only mucus or bile being evacuated. The patients may be obsessed with the idea that they must vomit, or may simply be influenced by some association of ideas or even be nauseated by the smell of chloroform. The other type of vomiting is known as the toxic, and produced by the action of some poison on the vomiting center, usually chloroform itself. The patient may be hypersensitive to such toxic influences. Ranking with this type as a serious form of vomiting is that produced by acute postoperative dilatation of the stomach. The toxic cases may be conservative for when vomiting is checked by treatment the patient still feels malaise and sense of weight in the epigastrium relieved only by vomiting which may supervene about the third day, often when a purgative is given. In toxic vomiting we see violent accesses occurring without apparent cause, rebellious, frequent, with a peculiar odor of the breath. Slight icterus now appears, with delirium and convulsions and eventually bradycardia. The syndrome is due to the great fragility of the hepatic tissues after chloroform. The prophylaxis of chloroform vomiting consists in the milk regimen and the use of a purgative. The stomach must remain empty for some eight hours. This precaution works wonders. In veterinary practice apomorphine is given. The purest and best chloroform must be used. It must have been recently distilled. Much must depend on the anesthetist as some of them hardly ever see vomiting. After the operation nothing is taken into the stomach for ten hours when a spoonful of water is first given, then liquid diet, semiliquid diet, lactovegetarian diet up to full regimen. When psychic vomiting appears, a combination of eucalyptol and menthol is given by the mouth, while oxygen is inhaled. Any powerful essence or aromatic substance may be smelled. Spirits of cologne inhaled from a mask is a favorite remedy in England. If these measures fail the ordinary substances given to check vomiting may be tested in succession, as ice, charged water, etc., etc. The author is not enthusiastic over this class of remedies, considering the psychogenic nature of the vomiting. In toxic vomiting the first indication is gastric lavage. After a due interval hot drinks are given, sweetened or alkalinized, and later milk. Next day a sodium sulphate purge is given. If the case is desperate blood transfusion is practised. It must not be forgotten that we do not wish to suppress the vomiting entirely, but to reduce its degree notably.

Reflex Disturbances and Cerebral Insufficiency.—Mézie like others has noted reflex disorders in a great variety of wounded soldiers, comprising contractures, pareses, paralyses, hypotonias. They are accompanied by troubles of sensibility, trophic disturbances, vasomotor and thermic disorders, and alterations in the blood pressure, as determined by Pachon's oscillometer. In addition, such conditions as edema, refrigeration, cyanosis, profuse sweats cause suspicion of reflex disorders. According to Babinski and Froment the wound of the extremity produces these reflex disturbances chiefly on the corresponding side through the intermediary of the cells of the cord, some of which are activated and others muffled. Cerebral fatigue acts as a contributory cause. The author would make cerebral insufficiency a most important factor. In these patients there are numerous evidences of this insufficiency both physical and mental. The condition may be due to mental over-activity and fatigue or to commotion. Persistent insomnia and repeated emotions play their part as does an innate cerebral inferiority. The various forms of physical therapy give the best results in treatment.

Casualties Among the Canadian Troops.—The total number of casualties among the members of the Canadian forces up to the middle of October are reported as 52,025, divided as follows: Wounded, 37,939; killed in action, 8,133; died of wounds, 3,120; died of sickness, 452; missing, 2,381.

Book Reviews.

THE ART OF ANÆSTHESIA. By PALUEL J. FLAGG, M.D. Lecturer in Anæsthesia, Fordham University Medical School; Anæsthetist to Roosevelt Hospital; Instructor in Anæsthesia to Bellevue and Allied Hospitals, Fordham Division; Consulting Anæsthetist to St. Joseph's Hospital, Yonkers, N. Y.; Formerly Anæsthetist to the Woman's Hospital, New York City. Pp. 341 with 1136 illustrates. Price, $3.50. Philadelphia and London: J. B. Lippincott Company, 1916.

ALMOST anyone can hold a cone and pour ether on at the word of command of the operator but, as Flagg says, the proper administration of an anesthetic is more than a mere mechanical performance and the art of anesthesia is acquired by becoming familiar with the laws which govern its administration and by developing the ability to properly correlate and apply these laws. With these facts in mind the author has discussed the subject most intelligently and has elaborately presented the fundamentals of correctly administering anesthetics of various kinds and in various sequences.

After an introductory historical sketch the author proceeds to the classification of anesthesia, its characteristic signs and its administration by the various methods and agents ordinarily employed. Each of the three types of anesthesia—general, local, mixed—is discussed in detail, often in most exhaustive fashion; and this applies particularly to the 200 odd pages devoted to general anesthesia. This is considered from every angle. The stages of anesthesia—induction, maintenance, and recovery; the signs of anesthesia as shown by changes in respiration, color, muscle symptoms, the behavior of the eye reflexes, and the pulse; the methods of administering ether—oral insufflation, intrapharyngeal, intratracheal, oil-ether rectal, intravenous; general considerations and the technique of administering ethyl chloride, chloroform, nitrous oxide, and the various sequences—all these subjects are treated with much detail. Methods of local and mixed anesthesia are then briefly outlined, this closing Part I of the book. Part II, "Bearing upon factors incidental to the actual administration of the anesthetic," discusses preliminary medication, post-operative treatment, emergency anesthesia, etc.

The book's greatest fault lies in its prolixity and we should say that the text could be condensed at least one-third without leaving out anything of vital importance. Circumlocution and redundant words and phrases abound. Hence, while the embryo anesthetist cannot fail to profit greatly by reading the book as it stands, it would be much more valuable as a teaching instrument after proper condensation and a little friendly editing; for the English construction is not always what it should be.

ASEPTIC SURGICAL TECHNIQUE with Especial Reference to Gynecological Operations, Together with Notes on the Technique Employed in Certain Supplementary Procedures. By HUNTER ROBB, M.D., formerly Professor of Gynecology, Western Reserve University and Gynecologist-in-chief to the Lakeside Hospital, Cleveland, Ohio; Fellow of the American Gynecological Society and of the American College of Surgeons, etc. Fifth edition, revised. Octavo of 292 pages, with 44 text figures and 24 plates. Price, $2.00 net. Philadelphia and London: J. B. Lippincott Company. 1916.

IN the preface to the first edition, which appeared twenty-two years ago, it is stated that the technique recommended is in the main that practised in the gynecological and surgical departments of the Johns Hopkins Hospital. Certainly many radical changes in technique have been made at the Johns Hopkins Hospital as well as everywhere else in the past twenty years; but starting with that excellent model, occasional revisions have made it possible for the author to follow the same general scheme and still incorporate new material and alter the old in accordance with the best teachings of the day.

The author first discourses upon the importance of a bacteriological training to the surgeon; and makes the point that the trained bacteriologist will have exalted ideas of surgical cleanliness, and cannot fail to see the many inconsistencies that occur during the majority of operations. Sepsis and wound infection, the microorganisms generally concerned, asepsis, antisepsis, the principles of sterilization, dry and moist heat, fractional sterilization and chemical disinfection are taken up in order. This is preparatory to the actual business of the book—instruction in the practical application of the principles of sterilization as concerns gowns, dressings, instruments, sutures, etc.; the care of instruments, rubber gloves, drainage and other materials; the preparation of the operative field; the preparation that must be made for operations in private houses; the preparation of the patient for major and minor operations; postoperative care; and numerous other matters that must be understood by the nurse, operator, and assistants in order that operations may be conducted with that aseptic technique which is the desired goal of most competent operators to-day and the despair of many. In the latter part of the book are found a number of chapters on examinations of various kinds. Some of these would be improved by further revision; and this applies especially to that on the examination of the bladder and ureteral catheterization, for this chapter is in many respects far out of date. The final chapter, on endometritis, has been added in this edition. Why the author has added twenty-seven pages on this subject is beyond our comprehension. It seems to us entirely out of place in a work of this sort, especially as it is the sole representative of the discussion of disease affecting a particular organ.

For the nurse, for the interne, and, above all, for the man who is occasionally called upon to operate and who has not had the advantage of rigid hospital training, this book should be of great value.

THE CLINICS OF JOHN B. MURPHY AT MERCY HOSPITAL, CHICAGO. Volume V, Number 3, June, 1916. Octavo of 178 pages, with 44 illustrations. Price per year, paper, $8.00; cloth, $12.00. Philadelphia and London: W. B. Saunders Company, 1916.

THIS is a better issue of the Clinics than has appeared in many months. With the exception of one case of infective costal perichondritis, bone and joint cases are conspicuous by their absence. This is, in itself, cause for rejoicing; for our appetite for clinical lectures on bone and joint diagnosis and operative technique was long ago satiated. In this volume about thirty-five clinical cases are discussed and every one should be of interest to the general practitioner, for most of the cases are such as he is apt to meet any day in his practice. There are also a number of valuable tables, diagnostic and otherwise, in connection with certain of the subjects.

MODERN MEDICINE AND SOME MODERN REMEDIES. Practical Notes for the General Practitioner. By THOMAS BODLEY SCOTT, Author of the Road to a Healthy Old Age. With a preface by Sir LAUDER BRUNTON, Bart., F.R.S. Price, $1.50. New York: Paul B. Hoeber, 1916.

THIS little work consists of four essays, devoted respectively to disorders of the heart, arteriosclerosis, endocrinology and chronic bronchitis. The first thing to attract the reviewer's attention is the fact that the essays are not reprints of journal articles, but have been independently composed. The author, a clinician of wide experience, has endeavored to popularize among the ranks of the busy practitioner, some of the latest developments of internal medicine, all of which have reference directly or indirectly to those disorders of the circulatory system which continue to be the great menace to those past middle age. Therefore it is hardly necessary to dwell on the timeliness of the book. Sir Lauder Brunton's service as sponsor to the book is unnecessary, but welcome. In his preface he bitterly assails the Germans for robbing mankind of the treasures of the University of Louvain.

ULTRA-VIOLET LIGHT BY MEANS OF THE ALPINE SUN LAMP. Treatment and Indications. By HUGO BACH, M.D., Bad Elster, Saxony, Germany. Authorized Translation from the German. Price, $1.00. New York: Paul B. Hoeber, 1916. pp. 114.

THIS little work is properly devoted to the indications for the use of ultra-violet light lamps and the technique for carrying out the same. Not much space is devoted to the principles and construction of the apparatus, with which the physician is presumably sufficiently familiar. The raison d'être for the book appears to be associated with the use of the lamp for general disorders, as distinguished from local, superficial ailments. Here belong tuberculosis, chlorosis and anemia, leukeuria, arteriosclerosis, cardiac and renal disease, obesity, diabetes, furunculosis, gout, chronic rheumatism, neurasthenia, etc., etc. In this class of cases the lamp is regarded as an understudy of direct solar light whenever the latter is not fully available.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twenty-Ninth Annual Meeting Held at Indianapolis September 25, 26, and 27, 1916.

THE PRESIDENT, DR. HUGO O. PANTZER, INDIANAPOLIS, IN THE CHAIR.

Appendicular Abscess Complicated by Hemorrhage and Death.—Dr. MAGNUS A. TATE of Cincinnati spoke of this condition as rare. The patient was a young woman who had her first attack. Her abdomen was opened through the right rectus, and drainage was profuse for six days. At the end of the tenth and eleventh days her condition was good. On the twelfth day she complained of pain and nausea. On the morning of the thirteenth day there was hemorrhage from the wound, and on the fourteenth day her condition was alarming, death occurring the same evening. Autopsy revealed a gangrenous sac, the size of a dollar, which was found in the mesentery, probably the site of hemorrhage.

Dr. ALBERT GOLDSPOHN of Chicago said that this case reminded him of an experience he had after a vaginal hysterectomy in a septic case a number of years ago where, after a normal course following operation, the patient began to bleed about two weeks after the wound had nearly closed. After futile attempts to stop the hemorrhage by local tamponning and the use of clamps, he saved the patient's life by doing an abdominal section and ligating the internal iliac arteries.

Drainage for Pus Conditions in the Pelvis During Pregnancy.—Dr. FRANCIS REDER of St. Louis stated that the most frequent cause of a pus accumulation in the pelvis during pregnancy must be attributed to a diseased appendix. A pelvic abscess was very insidious, with the exception, perhaps, of a subphrenic abscess. The reason for this was that the diagnosis of appendicitis was often obscured by pregnancy. If the pains and frequent indispositions, which usually accompanied the pregnant state, were not closely scrutinized and correctly and promptly interpreted by the physician, the primary clinical picture of an attack of appendicitis might be readily overlooked, and only recognized when the more serious phases of the disease had manifested themselves. Pregnancy did not in any way predispose to appendicitis, but on account of the anatomical changes which took place in the pelvis during pregnancy, appendicitis might terminate in a pus formation more rapidly than in the nonpregnant state. A close study of the symptoms of an appendix lesion during pregnancy might bring out some clinical points which differed from the usual clinical picture as it was found in women who were not pregnant. For instane, before any pus formation had taken place, the pulse and temperature might show little or no change. The pain was usually located in the epigastric region and remained there until the disease had reached the stage when all pain ceased. The triad of Dieulafoy was often so obscured by other conditions that it was usually blurred, and its presence therefore overlooked. Even in an advanced pregnancy a readily recognizable rigidity of the right rectus was seldom encountered, and only exceptionally did palpation reveal a tender spot over McBurney's point. Nausea and vomiting, two alarming symptoms in an attack of appendicitis, counted for naught during pregnancy because they were frequently associated with the toxemia of the latter condition. The most satisfactory and convincing evidence as to the presence of pus in the pouch of Douglas could be obtained by a rectal examination. If the accumulation was considerable, no difficulty should be experienced in promptly detecting a fluctuating mass, even if the examining finger was inexperienced. Surgery during the pregnant state must have its limitations and they must be more respected in the latter stage of gestation. An abdominal operation, for example, could be done with less risk of interrupting pregnancy before the fourth month than after. Furthermore, the thoroughness with which an operative measure during early pregnancy could be carried out was fraught with less danger than in the later stages. Great antipathy still existed as to attacking a pelvic abscess through the rectum, largely because of the likelihood of infecting the abscess cavity. This was doubtful, inasmuch as it was one of nature's ways in relieving the organism of a pus accumulation in the pelvis. Patients relieved in this manner had usually suffered no untoward results and their recoveries had been satisfactory.

Dr. HERMAN E. HAYD of Buffalo, N. Y., said that in cases of appendicitis complicated with pregnancy miscarriage was apt to take place. Miscarriage was liable to occur in typhoid fever complicating pregnancy. Undoubtedly a bacteriemia was established, and the fetus was made ill by reason of the infected blood, and as a result the woman had a miscarriage. The point the essayist brought out of opening the abscess through the rectum was a good one.

Dr. W. A. B. SELLMAN of Baltimore stated that he had had experience with two cases of appendical abscess complicating pregnancy. One woman was pregnant four months, and the other six months. One method of dealing with these abscesses was that suggested by the essayist of opening through the vagina posteriorly into the cul-de-sac and by that means reaching the abscess. The second method was opening the abscess through the rectum. He selected the abdominal route, made an incision, drained the cavity, leaving the drainage tubes in. His experience was that in appendical abscesses it was necessary to drain the cavity for a longer period than that suggested by Dr. Reder.

Dr. ROLAND E. SKEEL of Cleveland said that as regards making a puncture through the rectum in these abscesses he had used that procedure for ten years, but he would emphasize the fact that there must be an abscess cavity. If there was no abscess cavity with a thin wall, it would be dangerous on account of peritonitis or rectal infection. He could recall cases of appendicular abscess which opened and drained through the rectum spontaneously.

Dr. REDER, in closing, said that in these cases he contented himself with draining and did not care to use a split tube for fear some irritation by pressure might excite infection.

Rupture of the Uterus; Sepsis; Operation; Recovery.—Dr. RUFUS B. HALL of Cincinnati reported a case of rupture of the uterus, followed by sepsis, with a walled off abscess, which was operated upon thirty-seven days after delivery. The patient made a slow but satisfactory convalescence and was now perfectly well. Rupture of the uterus during labor was a rare and dangerous accident. It was so fatal that it was our duty to report every case in detail, whether the patient recovered or not, that the profession might profit by the facts revealed in each individual case. He asked if it was possible that an unrecognized small rupture, causing leakage into the abdomen, might not be more frequent than was generally believed. The case reported would suggest that as a possibility, because there were no symptoms connected with the case that would suggest rupture of the uterus, and it was not suspected until revealed at the time of the operation.

Rupture of the Uterus in Cesareanized Women.—Dr. JOHN NORVAL BELL of Detroit drew the following conclusions: (1) A cesareanized woman was always in danger of uterine rupture in subsequent pregnancies and should be under careful observation for the last half of her gestation. (2) In case her puerperium following the first section was afebrile she might be allowed to go to term if she could be in the hospital for the last month of gestation; otherwise the labor should be anticipated and operation done at least two weeks prior to term. (3) Implantation of the placenta over the scar area undoubtedly increased the danger of rupture, as did also an afebrile puerperium following operation.

Rupture of the Cesarean Scar.—Dr. ABRAHAM J. RONGY of New York City drew the following conclusions: (1) Spontaneous rupture of the cesarean scar occurred in about three per cent. of cases. In most instances rupture took place during labor. Not frequently it took place during the latter half of pregnancy, especially in the last six weeks. (2) We had no means by which we could judge the strength of the scar. Rupture would occure in cases which ran an afebrile course and in which union of the wound was apparently by first intention. (3) One-third of all cases that were operated for reoperated section showed evidence of inflammatory reaction in and about the uterine wound. The result in such cases was a weakened scar. (4) Proper suturing of the uterine wound and exact approximation of the edges would not always prevent subsequent rupture of the scar. (5) The mortality rate of repeated section was smaller than that of primary cesarean section, because these patents were more carefully watched by competent men. (6)

A patient who had had a cesarean section should not be allowed to go through a tedious or severe labor. If labor did not progress rapidly, repeated section should be performed. (7) When advising a patient to have a cesarean section the management of subsequent pregnancies should be taken into consideration and discussed with one of the members of the family. (8) As a general rule, it might be stated that fully seventy-five per cent. of women who had had a cesarean section were delivered by repeated section during their subsequent labors. (9) The obstetrician should always bear in mind that cesarean section created a new problem for the woman, and therefore he must carefully weigh the indications before he decided upon the abdominal route. He must remember that the dictum, once a cesarean section always a cesarean section, held true in fully seventy-five per cent. of cases.

Dr. PALMER FINDLEY of Omaha said that if ninety-seven women out of a hundred went through labor with a cesarean scar successfully without intervention, the thing to do was to put the woman in a hospital, if possible, and be ready to interfere, but we should not adopt the method of performing a cesarean operation on every woman who had had a previous cesarean scar in the uterus. He did not think we should be guided by any three per cent. of chances except this: we should take every precaution to safeguard the woman in the event of imminent rupture of the scar.

Dr. J. HENRY CARSTENS of Detroit said he had had about fifteen patients upon whom he had performed cesarean section a second time. In all of the cases there was pelvic deformity. There was not one of them in whom the operation was performed for placenta previa or eclampsia. He made it a point to have these patients go to the hospital early, if possible, and operated on them two weeks before the expected time of labor. He hesitated twice before he would sterilize a woman who had had no children.

Dr. HENRY SCHWARZ of St. Louis said that he endorsed every word Dr. Findley had said. Within the last year he had delivered two women through the natural passages. One was a woman on whom Dr. Webster of Chicago had performed a cesarean section on account of obstruction to delivery by an ovarian tumor. He did a cesarean section on the other patient years ago. The woman was brought to the hospital with a temperature of 104°; she was intensely sapremic, there was an offensive discharge, with a dead macerated fetus in the uterus. He removed the fetus. The patient was a young woman, and this was her first pregnancy. After emptying the uterus and removing a subserous fibroid which was situated on the left side of the uterus, close to the external os and blocking the pelvis, and after removing a smaller fibroid near the fundus, he closed the uterus, because the woman was young and had had no children. He delivered this woman about seven months ago through natural passages.

Dr. JAMES E. DAVIS of Detroit said that the problem from a pathological standpoint was this: First, we had a reduction of muscle tissue, a degradation of a normal tissue, then we had a degradation of the connective tissue by the interposition within the connective tissue cells of syncytial cells. The connective tissue, while it might be in certain instances as strong as the muscle tissue, yet was not as resistant to the syncytiolysins which were formed from the syncytial cells, and wherever we had syncytial cells we had a tissue of very low resistance so far as its ability to withstand pressure was concerned.

Dr. MAURICE I. ROSENTHAL of Fort Wayne said that the important thing was infection, and that infection was predisposed to by intrauterine pressure. If the lochia was kept free from the internal surface, the entire suture line closed owing to the absence of the intrauterine pressure, and that was a point in safeguarding against the infection of the wound and in securing perfect wound healing.

Dr. IRVING W. POTTER of Buffalo said that he had done cesarean section on a number of patients a second time without any trouble. One could not see the scar in the majority of cases from the outside, but if one felt from below up one would find a thinning in many of the cases, although it was not enough to make any special difference.

Dr. HERMAN E. HAYD of Buffalo said he would like to ask Dr. Bell why he removed the uterus in this case? Why did he not sew it together instead of removing it?

Dr. BELL, in closing, said he must confess he was afraid the woman might have died. In order to sew the uterus he would have been obliged to freshen both edges entirely, because there was a scar, and except for the fibromuscular bands across, he would have been obliged to remove the surface of the normal part. He thought he could do the other operation better.

Dr. RONGY, in closing, said that he never sterilized a woman unless she had had two children. He did not do hysterectomy in these cases, but resected the tubes on either side and then embedded the cut ends of the tubes in the wall of the uterus. That was a safe procedure.

Gunshot Wounds of the Abdomen in Pregnant Women.—Dr. LEWIS F. SMEAD of Toledo, Ohio, reported the case of a woman shot through the abdomen with the recovery of both mother and child. The bullet perforated the colon and the uterus of the mother, the placenta, and the hand of the child. Gunshot wounds of the abdomen were more dangerous during pregnancy than at other times. The abdomen should be opened in all cases, if possible. The uterus at full term should be emptied by cesarean section and at earlier periods if the organ was badly injured. A uterus during labor was likely to spread any infection which was free in the abdomen and a pregnant uterus was therefore a menace to the patient if peritonitis developed. The uterus would usually be emptied by cesarean section or hysterotomy because the abdomen was open. Hysterectomy was usually not indicated in gunshot wounds of the abdomen unless the uterus was badly lacerated. Drainage should always be used in these cases and irrigation very rarely. He gave an abstract of about thirty cases of gunshot wounds of the abdomen in pregnant women.

Dr. JOHN D. S. DAVIS of Birmingham, Ala., said that he rose to report a case of gunshot injury in a woman pregnant three and a half months. She was handling a small rifle when it went off and shot her through the abdomen, producing twenty-five perforations, six through the transverse colon and nineteen through the small intestine. She was brought a distance of eighty-five miles. He saw her twelve hours after the reception of the injury. There were five perforations on the mesenteric border of the small intestine, and two perforations on the mesenteric border of the transverse colon. He closed back the serosa and turned in the musculature and put the serosa over that. Instead of doing two resections of the gut, he took out five feet of the intestine between the nineteen perforations. She recovered and gave birth to a living child at the ninth month.

Version with Report of Five Hundred Cases.—Dr. IRVING W. POTTER of Buffalo, N. Y., stated that in the advocacy of all procedures we should have a clear idea of the results. In these 500 cases there was not a maternal death, and there were no injuries to the mother's soft parts that required repair. In other words, there were no tears of the cervix or the perineum that necessitated suturing. There were no alarming hemorrhages, and the period of involution in these cases was shorter than ordinary with less flow during the puerperium. The convalescence was more rapid due to the elimination of the shock that was experienced by patients going through a long second stage of labor. There was also apparent greater strength of the patient at the end of the puerperium. In reference to the fetus, there were 57 stillbirths, the greatest cause being prolapsed cord; in 30 cases alone death was due to this cause. His conclusions were as follows: "Version should be more often done to shorten the time of labor, lessen the shock to the mother, and eliminate undue pressure to the child's head. That the majority of occipito-posterior positions were best treated by version. That version can readily be accomplished in primiparae and should be more often done. That the fetal mortality in version should not be as great as in prolonged instrumental delivery. That head injuries to the child were lessened by a properly performed version."

Lymph Gland Extract, Its Preparation and Therapeutic Action.—Dr. DAVID HADDEN of Oakland, California, stated that he had used in several cases of streptococcemia the magnesium sulphate solution advocated by Harrower. The magnesium sulphate solution alone produced no leucocytosis, but used in conjunction with leucocytic extract, a marked leucocytosis resulted of a more profound character than the extract alone produced. These patients recovered. Two cases of easy bleeders, one with hemorrhage from the abdominal incision, the other with free oozing from the mucous membrane had a complete and permanent cessation of the bleeding almost immediately following the one dose.

His associates had been using this lymph gland extract in cases of hemophilia, pulmonary hemorrhage and tonsillar bleeding with very favorable results. He had used, during the last two years, lymph gland extract, in all inoperable cases of carcinoma, and discounting fully the possibilities of spontaneous improvement, he believed he was justified in the conclusion that the effects had warranted the use of the extract. He probably would never use body extracts in operable cases of malignancy as a substitution for operation, but if proven of value in animal work, they would have their place as a prophylactic. In inoperable cases, it gave one method that undoubtedly prolonged the patient's life and relieved many of the distressing symptoms, so that the amount of opiates necessary was lessened, but, above all, it put in our hands an ability to make the patients really feel something was being done for them. The present important field for the lymph gland extract was, however, undoubtedly in cases of hemorrhage and especially so in patients whose blood changes resulted in lowered coaguability. Dr. Archibald and Dr. Moore were anxious to see the extract tried out more extensively in tuberculosis and other chronic infections, for they felt that their laboratory experimental work had demonstrated its effect in these cases.

Dr. JAMES E. DAVIS of Detroit said he would like to ask Dr. Hadden if in using the lymphocytic extract he know how the platelets were produced. There were a number of theories about it. Some believed that the platelets had nothing whatever to do with the coagulation; others had raised the question as to just what the platelets were, whether they were fragmentary portions of the lymphocytes, and he wondered whether light had come to Dr. Hadden in this particular instance of the platelet.

Dr. HADDEN, in closing, said that, personally, he could not express any opinion with reference to the function of the blood platelets. We knew they were markedly increased, that so much of the spaces in between cells were filled with blood platelets. After a series of injections in lower animals Dr. Moore had proved conclusively, although he was not willing to give the evidence publicity, that we were dealing with an enzyme and the presence of the enzyme produced these changes.

Observations on Blood Pressures During Operations.—Dr. CHARLES W. MOOTS of Toledo, Ohio, said that, having made observations and records of the pressures in ninety-eight per cent. of his cases for the past eight years, he had, as a result of his experience alone, come to certain conclusions which he wished to offer at this time. (1) The systolic pressure alone was of very slight if any value. (2) The diastolic pressure alone was of much more value than the systolic alone. (3) The pressure ratio was the essential factor, and offered the earliest danger signal. (4) There were certain elements in technique which had marked and constant effect upon the pressures. These were as follows: (*a*) The physical or emotional state of the patient. (*b*) The position of the patient upon the table, the extreme Trendelenberg being the worst. (*c*) Overdosing by the anesthetist. (*d*) The amount of traumatism inflicted by the actual operation, such as cutting and tearing the tissues with scissors, the hands and other dull instruments; the packing of large gauze packs instead of rubber tissue into the abdominal cavity. (*e*) The preservation of the fluids in the body up to the hour of the operation, this being absolutely necessary to maintain the usual pressures.

Dr. R. R. HUGGINS of Pittsburgh said that when one was suspicious of any weakness on part of the circulatory apparatus of the patient, if he would take the pulse pressure with the patient in the lying position and found that it went down that patient was a bad risk. A patient with a blood pressure of 170 or 180, with low diastolic pressure, should always be watched. The same thing was true of low blood pressure.

Dr. CARSTENS said that he had for some time insisted on taking the blood pressure of patients a day or two before operation, and if we had a patient with a blood pressure of 170 it was dangerous to operate before adopting some measures to reduce it.

Points in the Diagnosis of Pelvic Troubles—Dr. J. HENRY CARSTENS of Detroit said that these patients had pains when moving the uterus and the pelvic organs in certain directions. If one pulled the uterus to the right, they complained of severe pain in the left side, and vice versa. When one pulled the uterus away from the bladder no complaint seemed to be made, but when one pulled the uterus forward or away from the rectum severe pain was complained of, often in the back. These cases were due to adhesions, and he believed the adhesions were caused by an infection from the rectum and sigmoid, as these patients were often suffering from chronic constipation. In many cases it was difficult to convince the patients that an operation was necessary when they had always been in perfect health before. He was convinced that when the history was perfectly clear of the non-existence of any trouble previously with a gradual onset of pain and distress, it was very much increased when moving the uterus and the pelvic organs.

Care of Patients Before and After Operation.—Dr. H. WELLINGTON YATES of Detroit stated that every surgeon should be a humanitarian. Surgery was a thing of art as well as science, a thing needing a fine esthetic sense rather than mere boldness. It was constructive, not destructive; it was saving life, not taking it, and likewise a surgeon was not he who had boldness, but one who had judgment, not alone he who knew how and when to operate, but also he who knew to refrain and when to conserve. Surgeons had paid too little attention to the internal secretions. Patients did not come for operations *per se*, they came to be cured of a malady of which they usually knew nothing, and placed themselves in our hand, because they had been referred to us by some other physician, who had failed to cure them. We should be exceedingly careful in the selection of such cases. As a rule, they were not given thorough examination—general physical examination. In general, he had been giving his patients more preoperative care than formerly. For two or three days he fed them well on easily digested nutritious foods; the last day he gave six ounces of water each hour while awake; this filled the blood-vessels, increased kidney, liver, and skin excretions and secretions. Nervousness and loss of sleep won exhausting and should be met by such remedies as the usual sedatives or opium. He thought it imperative that the patient be given sufficient quantities of opium to induce sleep. As regards obdominal surgery, we had learned that the viscera and their coverings spoke in no uncertain manner, and to some extent we had learned their language and, therefore, after an operation some of them cried out by expression of pain; some by way of abdominal distention; some by way of vomiting; some by thirst; some by pallid skin and sunken eyes; but the meaning of it all was, that we had given insult. One's insides were never intended to play ball in, but if perchance the ball had gotten in, our duty was to get it out as quickly as we could, with gentleness and safety. We had been taught by this language that we must get in and get out; that we must do the least handling possible to accomplish results; that we should avoid forcible retractions, and when we sought to pick up bleeding points, should pick them up separately, instead of insulting all the adjacent tissues; warm moist gauze, used gently, was less offensive than dry gauze, used roughly. The handling of patients should vary in accordance with their psychology and the nature and severity of the operation. In all operations of gravity, he used the Murphy drip, with bicarbonate of soda and glucose, as soon as the patient was returned to her bed. The soda would overcome tendency to acidosis, the glucose furnished an easily absorbable carbohydrate, and thus supplied energy. In those who through accident had lost much blood or who sweated profusely, the giving of two pints or more of this solution relieved the distress of extreme thirst and overcame the tendency to shock. In closing he wished to leave these thoughts: (1) Our patients were entitled to more preoperative and post-operative care than they had been receiving. (2) Patients suffered from shock in consequence of long anesthesias, exposures, and rough handling of tissues. (3) Surgery was a thing of art and gentleness as well as of knowledge and skill.

Fibromyomata Uteri and Cardiovascular Disease.—Dr. BEN R. MCCLELLAN of Xenia, Ohio, said that since attention had been directed to this interesting question, he had had opportunity to study carefully twenty-six cases of fibromyoma uteri, nine of which had well marked cardiovascular complications. In each case the diagnosis of the latter condition was confirmed by a competent internist. Of the nine, only two gave any history of other adequate cause than the presence of the fibroid uterus; these two gave distinct histories of a previous acute pelvic infection. Two of the nine patients died, one within a few hours following a difficult removal of a very large multiple fibroid of many years' growth, which had undergone cystic degenera-

tion, and was complicated by every extensive adhesions to the surrounding viscera. The heart behaved badly during the operation and death was undoubtedly due to shock, which in turn was caused by extreme traumatism in the presence of heart and blood vessels already handicapped by changes due to the presence of the chronic uterine disease. The other case, which had very pronounced cardiac and renal complications, was carefully prepared for the operation which was not difficult, although the tumor was of extreme size. The patient made an exceptionally good recovery up to the eleventh day, but died without warning while sleeping after a dinner which she had greatly enjoyed. No doubt the cause of death was brown atrophy of the heart. The remaining seven cases had all recovered with symptomatic relief from cardiac trouble, and only three, on careful examination, showed some hypertrophy. That a relationship between the two diseases existed there could scarcely be any doubt, but the etiology of the cardiovascular changes remained as yet in the field of theory.

Operative Judgment as a Factor in Surgical Mortality and Morbidity.—Dr. Roland E. Skeel of Cleveland, Ohio, said that in the matter of the particular operation which he performed he would cite two or three widely separated types of cases as examples. There might be an honest difference of opinion as to whether exophthalmic goiter was a medical or surgical condition, but there could be no honest difference of opinion as to the outcome of properly applied surgical treatment. Even this rarely gave a complete cure in the sense that all the symptoms were relieved permanently and at once, but it did convert the patient from an invalid or semi-invalid into one whose condition was such that self-support was possible and the health nearly as good as the average, but this result could not be obtained by slavishly following out one method of procedure whether that be pole ligation, tying of one or more vessels, or partial thyroidectomy. The last had a prohibitive mortality if used in each and every case, the first two were not efficient in the chronic slow-going type of cases, especially in women, while they not only had a very low mortality but a high permanent recovery rate in acute cases in the male, in whom the pelvic functions did not constantly disturb the nervous equilibrium. By a proper selection of cases for the various procedures, by a judicious selection of the anesthetic for the individual case, and, above all, by speed in operating, absolute prevention of postoperative bleeding, gentle manipulation of the gland, and sealing of the relatively large raw area by painting the wound surface with tannic acid solution combined with drainage, practically every case could be saved. In the treatment of *intestinal obstruction* the slavish obedience to some precept learned while a student or swallowed in its entirety because propounded by the master of a surgical clinic was likely to result in as serious a disaster as delayed diagnosis. To eventrate every patient through a huge incision meant that the operator had utterly overlooked the possibility of death from shock due to exposure of the peritoneum and much handling of the gut; to attempt operation through a wholly inadequate incision meant that an enterostomy only would be done. Reopening the primary incision in postoperative obstruction was all that was needed ordinarily, since the obstruction would be found in or about the operative site, and under any circumstances an incision large enough to admit the hand for exploration should be sufficient unless the obstruction was at a point far remote from the exploratory opening.

(To be continued.)

Insufficient Protection in Radiology. — Nogier questioned as to whether the customary protection really protects in deep radiation in which very hard tubes and very penetrating rays are employed and undertook a series of researches to decide the question. He found the apparatus guaranteed by manufacturers does not protect at all. A lead glass shield was found to be of unequal thickness and not opaque. Despite this shield a photographic plate exposed during a session of radiotheraphy was impressioned in an intense fashion. The rays which pass through the shield cause secondary rays when they impinge against the walls or other objects which also affect photographic plates, even behind protecting screens. Silk containing lead salts gives but feeble protection, and eight thicknesses are inferior to the leaded rubber of Müller.—*Archives d'electricité médicale.*

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held October 6, 1916.

Dr. John Douglas in the Chair.

Rupture of the Uterus with Prolapse of Intestines—Resection.—Dr. Seward Erdman presented this case. He stated that the patient was an Italian woman, 23 years of age, and married, who was admitted to Dr. Pool's service at the New York Hospital on June 5, 1916. Three months before admission to the hospital she became pregnant for the first time. One month before admission she began to bleed profusely, and had continued to bleed since that time. For the past two weeks she had had abdominal cramps. During curettement for incomplete abortion which was being performed under ether anesthesia and with asceptic precautions, the operator recognized the prolapse of intestine into the vagina and at once sent the patient to the hospital. The pulse and general condition of the patient were excellent. Immediate operation was performed. After iodine preparation, a median suprapubic incision was made. Upon opening the peritoneum, some four ounces of free blood were encountered. The soft, boggy uterus, the size of a three months' pregnancy, showed a linear tear one and one-half inches long in the fundus posteriorly, just medial to the right cornu and on a level with the tube. Firmly wedged into this rent were the two limbs of the loop of ileum, its mesentery crowding still more the small tear. With the gentlest traction, and without difficulty, the loop was drawn up out of the uterus, when it was found to consist of about fifteen inches of collapsed and badly traumatized ileum torn completely from its mesenteric attachment. The torn edge of the mesentery had been well puckered into the uterine wound and its vessels thrombosed so that it bled scarcely at all. Fifteen inches of the ileum were resected, a lateral anastomosis by suture using the Roosevelt clamp having been done. The wound in the uterus was closed by two layers of sutures. The abdominal wound was closed without drainage. With the patient in the lithotomy position a large blunt curette was passed lightly, bringing away several small fragments of membrane. On the third day both breasts became painfully distended with milk, requiring stuping and a tight binder. The wound healed by primary union and the patient went home on the twelfth day. The report from the Follow-Up System snowed that the patient developed a slight left saphenous thrombo-phlebitis soon after leaving the hospital, which troubled her for four weeks. She had suffered from no further abdominal, intestinal or pelvic symptoms.

Dr. Charles H. Peck said he had had a case similar to the one reported by Dr. Erdman some fourteen years ago in which eight and one-half feet of intestine was drawn through the rent in the uterus. As soon as the intestine was recognized laparotomy was performed by another surgeon and it was replaced but not resected. The intestine was stripped from the mesentery just as in Dr. Erdman's case. Twenty-four hours later, when the case came under his care, resection was performed and the patient recovered in spite of the presence of well-marked peritonitis. Dr. Peck said he had followed this case right along until a year or so ago, and she had remained well. He had been interested in the case because of the length of intestine removed, and had followed it to see what the results might be. No chronic diarrhea had developed. Some two years after this operation the patient had undergone an operation for ventral hernia, and it was interesting to see what was found at the site of the anastomosis. Everything had smoothed out and the ileum was practically free from all traces of operation.

Accidental Scalping United per Primam.—Dr. George Sheinberg presented this patient by invitation. He stated that the woman had been admitted to the Lincoln Hospital with a complete eversion of the scalp, the entire scalp resting on the occipital bone. She was employed in a laundry and her hair was caught in a shaft. She was not unconscious and grasped the scalp, and did not allow it to be torn off completely. The scalp was torn through the eyebrows just over the bridge of the nose and from ear to ear. The wound was full of loose hair and particles of dust. It was cleansed, sutured with three rows of deep sutures, and drainage was provided for in the back of the head. After the operation the patient's temperature never rose above 99.5° F. and she had no pain, headache or dizziness,

and she felt well. There were a few adhesions over the right eye.

Osteomyelitis in Children (Two Cases) with Demonstration of Lantern Slides of X-Ray Plates Showing the Bone Repair Following this Disease.—Dr. FREDERIC W. BANCROFT presented these patients. The first case occurred in a boy, 5 years of age, who was seen two days after having sustained a fall and injury to the left knee. The child had had chills and fever, but had not vomited. The knee was red, swollen, and exquisitely tender. Physical examination was negative save for enlarged and injected tonsils and a few palpable nodes in both cervical chains. The child complained of much pain and the antitibial region was particularly tender. Active and passive motion were limited. There was an abrasion one inch in length on the inner aspect of the knee. During a period of seven weeks the following operations were performed: (1) An incision carried through the fascia and periosteum through which four ounces of pus were evacuated. Counter drainage was established. (2) Incision and drainage of bilateral suppurative parotitis. (3) Incision and drainage of metastatic abscess of the back, with the evacuation of eleven ounces of pus. (4) Aspiration and irrigation of the knee joint, after which the knee was put up in entension. (5) Aspiration and irrigation of knee joint as before. (6) Excision of sequestrum of the tibia. An incision was made from the tibial tubercle on the anterior surface of the leg to about 5 cm. above the lower extremity of the tibia. A sequestrum about fifteen inches long consisting of the entire circumference of the bone was removed and a smaller sequestrum about 4 cm. in length was also removed at the lower portion. There was beginning involucrum at the lower end. The sequestrum extended up as far as the epiphysis. After removing dead bone and exuberant granulation tissue, a gauze packing was inserted at both extremities and the intervening area sutured together with deep silkworm gut, going through skin, muscles, and periosteum, and thus largely obliterating dead space. A small area was left for blood clot to form within the periosteum. The bacteriological examination showed the staphylococcus albus in cultures from the parititis, from the leg, and from the blood. In the culture from the leg there was also a member of the streptococcus group present. Nearly two months after the last operation and almost four months after the first, a sequestrectomy for chronic osteomyelitis of the tibia was performed. A cavity in the bone was found, about 1 x 2½ inches in size. Two sequestra were removed and considerable soft granulation tissue curetted away, care being taken not to destroy any healthy endosteum or connective tissue. After hemostasis was established, the cavity was filled with Mosettig Morehof's bone wax. Three days later the patient had a temperature of 103° F., and some of the bone wax was removed. About six weeks later an operation was performed for chronic osteomyelitis humerus. The bone was found diseased from about the middle of the shaft up to a short distance from the epiphyseal line. The deltoid fibers were separated; the bone was found not covered with periosteum, much roughened, and with two cloaca extending into the medullary cavity and small abscesses in the fiber of the deltoid. Cultures showed a pure growth of staphtlococcus aureus. This operation was performed on November 27, 1915. On June 19, 1916, another operation was done, consisting of an excision of a sinus that included a small sequestrum from osteomyelitis of the humerus. Convalescence was uneventful. The second patient was a girl, 8 years of age, who fell and injured her left knee. Her past history and physical examination were negative except for a few palpable lymph nodules in the left cervical chain. The knee appeared red and swollen and was extremely tender, active and passive motion at the knee joint being practically *nil*. The knee was soft and edematous, and a patellar click could be made out. There was likewise a swelling in the popliteal space, which looked and felt like a popliteal bursa. On May 11, 1915, incision and drainage for suppurative arthritis of the left knee was performed. In this case also there followed a series of operations including incision and drainage of the popliteal space, incision and drainage of a secondary abscess on the outer side of the thigh about four inches above the knee, drainage of an abscess under the extensor femoris on the outer surface of the femur, operation on the lower end of the femur at which the periosteum was found to be infiltrated and the outer side of the femur necrotic; at operation the wound in the lateral surface of the thigh was enlarged and about five cm. of the outer portion of the femur removed. The last operation was done on June 29. On October 16, a sequestrotomy for chronic osteomyelitis of the femur was performed. A cavity 1 x 2 inches in size was found in the bone, in the center of which were two sequestra. On December 14, an incision was made and drainage provided for an alveolar abscess and the right lower canine tooth was extracted. The patient was discharged on the 21st day and had since been under observation. Dr. Bancroft said he presented these cases not because he was attempting to show any originality of treatment, but to stimulate discussion so that they might derive some fixed ideas in regard to therapy. He discussed the following disputed points: (1) In the acute stage, how much drainage was necessary? Should one make a groove throughout the entire infected area, or was it sufficient to make numerous drill holes into the medullary canal to allow the pus to escape? (2) How soon after the acute process was it safe to remove the sequestrum? This latter question involved two classes of cases: (a) Those in which there was a second bone to act as a splint in the forearm or leg. (b) Where there was no other bone to act as a splint. After discussing these two classes of cases he concluded that in acute osteomyelitis an attempt should be made to produce sufficient drainage with the least possible trauma to the blood supply and tissues of the medullary canal. This could often be done by making good-sized perforations into the canal. The sequestrum should be removed as soon as sufficient involucrum had been formed to resist the pull of the muscles. In the tibia and fibula six weeks after the onset of the acute process might be sufficient. At this time the *x*-ray showed only a very small shadow of involucrum, about one-sixteenth of an inch. In the femur or humerus a longer time was necessary—Nichols thought about sixteen weeks.

Congenital Goiter.—Dr. EDWARD W. PETERSON presented a girl, twelve years of age. He stated that on January 18, 1905, when the patient was five weeks old, she was admitted to the Babies' Ward of the Post-Graduate Hospital. Her parents were Hungarians and both were healthy. There was no syphilis, tuberculosis, cancer, or goiter in the family. The mother had had one miscarriage at the second month. This was the first child. The labor was easy and uneventful. The infant was normal except for a relatively large tumor on the right side of the neck. There was some difficulty in breathing for the first two hours after birth, after which there was neither dyspnea nor dysphagia. Aside from the deformity, the tumor apparently produced no symptoms. The physical examination showed a growth on the right side of the neck, behind and to the inner side of the sternomastoid muscle, extending from the level of the jaw downward nearly to the clavicle. The tumor was made up of two masses, the larger situated above. It was smooth on the surface, of firm consistency, and did not fluctuate at any point. Below and to the side there was distinct palpable nodulation. An incision was made parallel to the border of the right sternoeleidomastoid muscle. A fibrous capsule which surrounded the growth was opened and the tumor was dissected out without difficulty. There was very little hemorrhage. Several times during the operation artificial respiration had to be resorted to. The wound was closed without drainage. For twenty-four hours after the operation the infant had to be prodded occasionally, as the breathing would stop. A nurse was in constant attendance and would do artificial respiration at such times. The temperature rose to 105° F. shortly after the operation and then gradually declined. There were no special features until the ninth day, when there occurred a convulsion lasting for five minutes. On the thirteenth day there was twitching of the extremities, and the eyes rolled from side to side. On the fourteenth day there were almost constant convulsive movements of the hands, arms, and legs, with twitching of the facial muscles and rolling of the eyes. It was about this time that the pathologist reported the specimen to be a "congenital thyroid tumor" (goiter). Believing from the appearance of the two lobes making up the growth, that the whole thyroid gland had been removed, thyroid extract was started at once, followed by a cessation of the tetany. At this time palpation of the neck revealed no evidence of any remaining thyroid tissue. The thyroid feeding was kept up for the first four years of the patient's life, and was then discontinued. A close watch was kept for

the appearance of any evidence of hypothyroidism, but the subsequent development of the patient mentally and physically had been normal. This was explained by the fact that for some time now it had been evident that all of the thyroid had not been removed at the operation. Palpation of the neck showed, to the left and attached to the trachea, what should and did correspond to the left lobe of the thyroid gland. Originally this could not be felt.

Pathological Report.—Dr. Sondern made the following report: Macroscopically, the tumor was horseshoe in shape; one side was composed of a large elongated tumor mass measuring 6 cm. in length, 4 cm. in width, 3 cm. in thickness. The other side was composed of a tumor measuring 4 cm. in length, 2½ cm. in width, and 2 cm. at its greatest thickness. These two tumors were joined at the concavity of the horseshoe by an isthmus of fibrous tissue. Both of the tumor masses had a slight irregular lobulated appearance. Microscopically, sections taken from both tumors showed the same structure, which was that of the thyroid gland. The acini had undergone a slight adenomatous proliferation and were filled with a very dense colloid material, the greater number of them being distended by it to the dimensions of small cysts. The epithelium was very much flattened by the intra-acinus pressure of the colloid. Nowhere did the epithelium show any malignant proliferation. The entire growth was surrounded by a thin fibrous capsule. The diagnosis was adenoma and colloid degeneration of the thyroid gland (goiter). The points of interest in this case were (1) the presence of a congenital tumor of the neck which proved to be a goiter; (2) the abnormal location of the thyroid gland; (3) the accidental complete thyroidectomy; (4) the development of tetany. (5) the disappearance of the tetany upon the administration of thyroid extract; (6) the subsequent normal physical and mental development of the patient. The following questions naturally arose: Was all the thyroid tissue removed at the time of the operation? Why did tetany develop? Would the child continue to develop?

Dr. Peterson also presented a second patient, a boy 10 years of age, from whom the thyroid had been removed without any great difficulty and who had been greatly improved since the operation.

Dr. Henry C. Falk presented a patient who had undergone a bilateral resection of the thyroid by the method which he described in his paper.

Exophthalmic Goiter.—Dr. John Douglas presented this case. He stated that he showed this patient not alone because the exophthalmic goiter was improved by operation but because of the apparent relation of hypothyroidism to dispituitarism in this case. The patient was first seen on November 6, 1915, when she gave a history of having been ill for six months. She had tachycardia, a pulse of 140, marked sweating, flushing on emotional excitement, exophthalmos, tremor, and attacks of vomiting. She was so sick with the hypothyroidism that it would have been dangerous to operate, so she was put to bed and treated for the condition. She had large extremities and the typical symptoms of dispituitarism. The sella turcica showed no enlargement by *x*-ray examination. Pituitary extract was given and the symptoms immediately became much worse; when it was discontinued they became better. In order to make sure that it was the pituitary extract that aggravated the symptoms, the drug was administered again, and again the symptoms became worse. As was well known, it had been proven that there was a relation between the adrenals and the thyroid, and indeed between all ductless glands, and a similar relation seemed to be demonstrated in this case. This case gave evidence of some slight degree of acromegaly. As the patient was still too ill to stand a hemithyroidectomy, an attempt was made to ligate the thyroid artery under a local anesthetic, but she became so excited and started vomiting, so the attempt was not successful. Gas and ether were then administered and a hemithyroidectomy was performed. Since the operation there had been a very marked improvement in the condition of the patient; the pulse was very little more rapid than normal, being about 80, instead of 140 as before the operation, and the patient had gained fifty pounds in weight.

A Case for Diagnosis.—Dr. Reginald H. Sayre presented this patient, a young man who had first come under his observation last June. He gave a history of having stubbed his toe and fallen down stairs three years before. A few weeks after this injury a swelling developed in his knee and the calf of his leg and he suffered a great deal of pain in the neighborhood of his knee. The question in this case was whether the condition was in any way connected with the bones or not, and whether it was a malignant condition or not. The mass had grown to its present size within a few months after the injury and had not enlarged materially since. He had at first thought that it might be an osteoma and had applied a bandage, but without results. There was a little mass in the femur and what this was he was not prepared to say. The soft mass seemed to be divided into two or three parts by trabeculae. Dr. Sayre said he was somewhat at a loss for a diagnosis and would be glad to receive suggestions.

Dr. Charles H. Peck said that about two years ago he had had a case with a tumor somewhat like the one exhibited by Dr. Sayre's patient. It was in the popliteal space and he had taken it to be some form of bursitis. The patient had practically no pain, though he had had the tumor for two years. He had consulted a number of surgeons during this time, who expressed different opinions regarding it. Dr. Peck said he thought it was a non-malignant condition and attempted to excise it. He found that it was a sarcoma and very difficult to remove. He dissected it out as best he could, but it returned later in a much more malignant form than the original growth. The growth in Dr. Sayre's case was in almost the identical locality, but in this case he did not believe it was a sarcoma.

Dr. George H. Semken said he had had a patient with a condition somewhat similar to that presented by Dr. Sayre. There was a mass in the gastrocnemius which was diagnosed as a chronic bursitis. It was removed and sent to the laboratory and the report stated that the growth was largely cartilaginous. This growth extended up to the popliteal muscle where it was attacked. Dr. Semken said it was not uncommon to get such cartilaginous growths in old injuries and he offered this as a possibility in the present case.

Dr. Robert T. Morris said he did not see why Dr. Sayre hesitated to do an exploratory operation. The growth might be a myoma and it might respond to *x*-ray treatment. He knew of two cases in which there was sarcoma in this region in which the growth had been kept under control by the *x*-ray. In this case he would suggest getting a specimen.

Dr. Alfred Stillman said that he had had a case with a somewhat similar tumor, which was soft and nodular. He was doubtful as to the diagnosis, but took it out and found it was a myxoma; he was inclined to think that this was a myxoma.

Dr. W. S. Schley thought the growth might be a fibromyoma.

Dr. Sayre said he was much obliged for the suggestions and possibly the patient might decide to be operated on, but thus far he had refused.

Resection of the Thyroid.—Dr. Eugene H. Pool presented this paper, which was read by Dr. Henry C. Falk. He stated that partial thyroidectomy as usually practised consisted in extirpation of one lobe and isthmus, sometimes supplemented by resection of part of the second lobe. In the removal of the lobe the technique generally followed was an intracapsular extirpation. In order to afford a greater degree of protection to the recurrent laryngeal nerve and to the parathyroids some surgeons advocated leaving a layer of thyroid tissue in this region; but this procedure resulted in more hemorrhage, prolonged the operation, sometimes difficult to control, and led to greater postoperative exudate. In a former article Dr. Pool had presented an anatomical study to determine whether the theoretical advantages of leaving a portion of the posterior part of the lobe had sufficient anatomical basis to outweigh the practical disadvantages. From this study he concluded that for the prevention of tetany the posterior part of one lateral lobe must always be left. Even if one lobe only was operated upon, permanent safety was best insured by leaving *in situ* the posterior part of that lobe. Then, if s a subsequent operation with complete removal of the second lobe became necessary, the operation might be performed with relative safety. He found that the recurrent nerve was relatively immune from injury when a true intracapsular extirpation of the lobe as made, yet there was some danger of injuring it which might be avoided by leaving a portion of the posterior part of the lobe. He found further that it was an advantage to leave *in situ* the posterior part of both lateral lobes, in relation with each of which a recurrent laryngeal nerve and two

parathyroids usually lay. The amount of thyroid that must be left in a thyroidectomy to avoid myxodema was variously estimated as from one-sixth to one-fourth of the gland. The case sto which this operation were applicable were in general the diffuse colloid goiters; it was not necessary, of course, in the single cystic thyroid or adenoma. It had a very limited field in the exophthalmic group where symmetry was a secondary consideration and the patient was operated upon for symptoms only. In regard to the theoretical objections to resection, it might be stated that hemorrhage could be controlled either by Balfour's technic or by use of the clamp described in this paper. After describing Balfour's method of bilateral resection employed at the Mayo Clinic, Dr. Falk presented the clamps, similar to a Scudder gastric clamp, which facilitated the technic of resection by lifting and steadying the lobe and controlling hemorrhage. The lobe was freed with or without ligation and section of the superior vessels as the case demanded; the isthmus was cut across and its stump separated from the trachea; the lobe was then grapsed well back by the clamp, which was placed vertically with one blade on each side of the lobe. The clamp had long, delicate blades so as to grip but not crush the thyroid; it had a broad clutch by means of which it might be locked while the blades were comparatively far apart as in grasping a broad lobe; the bayonet shape allowed the blades to be introduced more readily into the wound. The technic of the operation was described in detail and illustrated by lantern-slides. With the patient in the oblique position, the head higher than the feet, a sand bag under the shoulders to extend the neck, and the goiter frame in place, intratracheal anesthesia was administered with the Janewey apparatus. A curved incision was made corresponding to the crease of the neck from the external jugular of one side to that of the other side. The anterior jugular was clamped, cut, and ligated. The deep fascia cut through to the infrahyoid and sternomastoid muscles. The flap of skin, platysma, and deep fascia were freed with the knife and lifted as far as the incisure of the thyroid cartilage. The separation of such a flap was easy because of the natural cleavage plane. The point to be emphasized was that at the anterior edge of the sternomastoid the division of the fascia which pasesd behind this muscle must be cut as the flap was lifted. The depressors of the hyoid were separated vertically with the scissors passed between the sternohyoid muscles. In general the sternohyoid, sternothyroid, and omohyoid should be cut across and reflected on one or both sides. The line of division of the muscles should be high so as to avoid their nerve supply. Straight clamps of the Pean variety were placed transversely across the muscles which were to be severed. The cutting of the muscles involved a confusing detail in that the sternothyroid was extremely thin and it might be left undivided. With care, however, all the muscles might be severed together. The handle of the lower clamp was slowly rotated and the muscles as a sheet were easily stripped free. The lobe, with the large veins and capsule, now presented, and by passing the finger gently into the plane mesial to the carotid and keeping away from the capsule, this tissue plane was opened up. The left index finger was introduced behind the upper pole of the lobe, making the superior vessels accessible for ligation. These were ligated high up. The lobe was then lifted forward and mesially and separated from the posterior tissues until the inferior thyroid branches were reached. It was then allowed to drop back. The pyramidal lobe was dissected free and two clamps were placed across the isthmus and the isthmus cut across between. The right portion of the isthmus was freed from the trachea. The lobe, with the pyramidal lobe and stump of the isthmus, was then lifted and the goiter clamp placed from above downward and closed so as to grasp gently the posterior part of the lobe anterior to the recurrent laryngeal nerve and the parathyroids. The lobe was thus steadied and sufficient pressure was exerted to control hemorrhage. Large vessels on the surface were clamped behind the proposed line of resection and the anterior part of the lobe excised. After ligating bleeding vessels the sides of the lobe were then approximated with mattress sutures and the edge overhanded with a continuous catgut stitch. A small lobe was thus constructed without injury to the recurrent laryngeal nerve, the parathyroids, or the inferior thyroid artery before its entrance to the gland. The left side was treated in the same manner, two small lateral lobes being thus substituted for the enlarged thyroid. A puncture wound for drainage was made about an inch below the skin incision. After removing the sand bags so as to relax the muscles, the depressor muscles were approximated by a stitch which overhanded the two clamps holding their cut edges. The clamps were then removed and the stitches drawn tight and tied. This operation relieved pressure, minimized danger to parathyroids and recurrent laryngeal nerve, provided a sufficiency of thyroid tissue, and insured symmetry. Double resection might be carried out readily either by Balfour's method or by the use of the clamp described, or by a combination of the two methods.

Dr. CHARLES H. PECK said that the technique which Dr. Falk had described was a very rational one and had distinct advantages over hemithyroidectomy in simple colloid goiter. It was necessary to leave some tissue, and if one left it all on one side he was likely to have disappointing results. If this plan was carried out and a fair amount of tissue was left there would not be so many cases that would require a second operation. Dr. Peck said he had been doing bilateral resection for some time, which he preferred to a hemithyroidectomy, but he thought the method just described was the best he had seen; he had not as yet used these clamps, but intended to do so.

Dr. JOHN DOUGLAS said that he had done the bilateral wedge-shaped resection and the hemorrhage had been considerably less than he had expected. There had not been a great deal of bleeding from the thyroid itself, but he had found it necessary to drain his wounds, as they bleed freely afterward, and unless the drainage was very efficient one might have had bad results.

Dr. HORACE M. HICKS of Amsterdam, N. Y., said that he had been interested in Dr. Pool's paper and his very clear and able description of his technique. He himself had operated on over 200 goiters, and though this was few in comparison with the number removed by Kocher or Charles Mayo, still it had been quite an experience, an experience that had been sometimes tragic, oftentimes commonplace. In most instances he had been able to remove the gland without trouble. He had used the "bow" or "half moon" incision. The lowest point in this incision was carried within three-quarters of an inch of the clavicle. The skin was then dissected as high as the upper extremities of the incision would permit. At a point corresponding to about the middle of the gland, the external jugulars were located and each tied twice at an interval of about one-half an inch. The muscles were then divided, without clamping, between the ligatures before mentioned, from one sternomastoid to the other, clean through to the capsule of the gland. He had next endeavored to reach the upper end of either side, which was most desirable, though not always practical; if unable to do this easily, he had tied the superior thyroidal artery as high as possible and cut clean through the gland at this point, suturing or clamping bleeding points. From this stage a fairly rapid gauze dissection carried one to the trachea, being careful to keep next to the capsule but not tearing or wounding it. The method was much like the removal of the sac of a hydrocele. After very carefully securing the superior thyroid arteries by ligatures, a scissor dissection was used to complete the removal of the gland from the trachea. No clamps were used for fear they might include within the grasp the recurrent laryngeal nerve.

Disinfection of War Wounds by the Carrel Method as Carried Out in an Ambulance at the Front.—Dr. H. H. M. LYLE read this paper which was illustrated by colored photographs (Lumière) showing the wounds and their progress. The Carrel method of disinfecting wounds was based on the following conception: To render an infected wound sterile it was necessary to employ a suitable antiseptic in such a manner that the chosen antiseptic came in contact with every portion of the wound; that the antiseptic be maintained in a suitable concentration throughout the entire wound, and that this constant strength be maintained for a prolonged period. If these conditions were fulfilled every wound would show its response to the treatment by the diminution and disappearance of its microorganisms. The antiseptic employed was Dakin's hypochlorite of soda, 0.5 per cent. This was an ideal wound antiseptic of high bacterial activity and low toxic or irritating quality. In addition to being a strong wound bactericide, Dakin's solution had, due to its pyo-cyto-hemolytic powers, the great clinical advantage of being able to dissolve pus, old blood clots, tissue débris, etc. The living tissues resisted this dissolution, due to the protection afforded them by the sodium chloride of the

serum. The course of the wound was directly dependent on the thoroughness of the first surgical act and this should be carried out under the strictest aseptic precautions and at the earliest possible moment. This consisted of a thorough, methodical, mechanical disinfection of the wound with the extraction of all shell fragments; particles of clothing, dirt, etc. The operative field was painted with the tincture of iodine, the bruised and necrotic edges of the skin were trimmed away with a sharp knife, and everything that could have been infected by the traumatism, or could have become the source of infection, was removed. Gentleness of manipulation was the keystone of the technique. In many of the cases it would be found that fibers of clothing, grass, dirt, etc., were encrusted in the muscular surfaces of the wounds. To avoid overlooking this blood-stained débris the tract of the projectile must be lightly but methodically resected. Dakin's solution had, due to its hemolytic properties, the power of dissolving recent blood clots. A poor hemostasis invited the danger of a secondary hemorrhage. In the introduction of the instillation tubes, the guiding principle was to place them so that the liquid would come in contact with every portion of the wound. Instillations of the fluid were made every two hours by releasing the adjustable clamp controlling the flow. This interrupted instillation was kept up until the wound was proven sterile; the tubes were then removed and a compress moistened with Dakin's solution was applied. The Carrel method was not a continuous irrigation but a mechanical attempt to deliver an antiseptic of a definite chemical concentration to every portion of a surgically prepared wound and to insure its constant contact for a prolonged period. When on three successive days, the bacteriological control showed the wound to be sterile, it was closed by careful layer sutures. The wounds treated by the Carrel technique were entirely different in appearance from those treated by the ordinary methods. The Carrel wounds had strikingly bright red, vivacious granulations, a minimum amount of mucoid-looking secretion, and no odor. There was no redness, no tenderness, no induration of the skin edges. Under the light of the results obtained, many of the phenomena which they had been taught to consider as normal processes of wound healing must now be considered abnormal. The results obtained by the Carrel method in their ambulance were truly remarkable, and had to be seen in order to be appreciated. No secondary abscesses developed on the surface and there was only one case of osteomyelitis and this responded readily to treatment. The average stay for wounds of the soft parts was 14 days, for compound fracture 28 to 36 days. The transformation which was established in their results was startling, the immediate complications became more and more rare, and suppuration disappeared from their services almost completely.

Dr. Fred Albee said that while in France he had had a rather exceptional opportunity of observing the treatment of war wounds and could confirm everything that Dr. Lyle had said. Certainly the management of fractures and wounds in Dr. Lyle's hospital was excellent. Dr. Carrel's management of fractures was not up to Dr. Lyle's. The pictures had shown the condition of the wounds and he had never seen anything like the way in which wounds healed when sterilized by the Carrel-Dakin method. They were remarkable because of their lack of discharge and lack of sensitiveness, and because of their redness and suppleness and the ease with which they could be closed up. This bleaching powder had sometimes been wrongly used and a few hospitals had objected to it on the ground that it caused bleeding of the granulations. It must be remembered that the commercial bleaching powder was not pure and if it contained sodium hydroxide it would then cause bleeding. This difficulty was being remedied. At Dr. Blake's hospital they had carried out experiments in the laboratory to determine the potency of this antiseptic and the results of these experiments had been misleading. If the results of test tube experiments were not in harmony with practical results in this matter, then in this instance the test tube was not reliable. It had been objected that in wounds treated in this way pus organisms grew more luxuriantly in the lesions. It was found that if with a platinum loop some secretion was taken from a lesion and smeared on a slide, then dried and stained, many bacteria could be counted in an oil immersion. The wound should not be closed while one found bacteria in this way, but when the number of bacteria had diminished to one or two on a slide the wound might be closed with safety. It was generally recognized that mere observation of a wound was not a safe criterion by which to be guided in reference to the time when a wound might be closed witih safety.

Therapeutic Hints.

Treatment of Furunculosis.—This is both operative and medical and is followed according to the method of Unna: The operator first notes the set of the hair around which the boil is situated; then the skin covering the boil is gently squeezed until a bloodless white area is presented, which is the bacterial focus. With a darning needle sterilized to dull red heat this central white area is punctured to 3 or 4 m.m. in depth, care being taken to follow the direction of the hair. This plan of procedure immediately removes the focal area and gives instant relief of tension and pain. If such is not the result the operation has not been performed correctly. Any one of the following pastes may be used as a dressing:

℞ Kaolin (Fuller's earth), 20
Glycerin, 10
Ichthyol, 5

After this has been applied the surface should be covered with some impervious material such as guttapercha paper. Another paste which hastens healing is:

℞ Sulphur, 10
Oxide of zinc, 10
Chalk, 10
Glycerin, 30.

When no inflammation or irritation of skin is present the formula may be changed to: 10 parts each of sulphur, oxide of zinc, chalk, oil of turpentine, and vaseline. Axillary boils, while not as painful as those around the back of the neck, are more troublesome on account of the tendency to return. Unna states that in the beginning stages these abscesses may be opened with a small cautery, but that later the skin in the axillary region should be shaved and each small abscess opened by tiny incisions, after which the armpit should be dressed with

℞ Mercurial ointment, 25
Oil of turpentine, 5
Lead plaster, 20

This again should be covered with guttapercha paper, which remains *in situ* without any bandage. —*Berliner klinische Wochenschrift.*

Chronic Granular Pharyngitis.—Coble uses in this condition, especially when there is much irritation of the membrane, compound tincture of benzoin, full strength, applied to the membrane. Compound tincture of benzoin may be used effectively on gauze where a packing that will prevent foul odors is needed for the nose. Tincture of iodine, one drachm, glycerin one ounce, may also be applied to the nose and pharynx. The weaker solution should be used first, but if a stronger one be required the following prescription covers the need:

℞ Iodine crystals., grs. ijss-x
Potassium iodide, grs. vijss-xxx
Glycerin, ℥j

These iodine solutions are very efficacious when used after tonsillectomy and do not produce the pain caused by the application of some other solutions, such as silver nitrate, etc.—*Indianapolis Medical Journal.*

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ACUTE POLIOMYELITIS.

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NEW YORK,

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ACUTE poliomyelitis, or infantile paralysis, as it is more commonly known, was first mentioned by Underwood at the end of the eighteenth century, but it was not clearly differentiated from other cerebrospinal disorders until 1840 by Heine. It was not until Medin reported his observations on the Stockholm epidemic of 1887 that the haze which enveloped the clinical aspects of this disease was somewhat lifted. He recognized and described in addition to the already familiar spinal form, from which it received its name, bulbar, polyneuritic, ataxic, and encephalitic types.

To the Scandinavian physicians belongs the large credit for the intensive study of the clinical, pathological, and epidemiological sides of the problem of poliomyelitis. Ample opportunity for such study was presented by the recurrence of epidemics in that country every six to eight years. The first to have been described was by Bergenholtz in 1881. Then Medin reported the epidemics of 1887 and 1895. Wickman,[1] also a Scandinavian, has contributed more clinical, pathological and epidemicological facts to the solution of the problem than any other man of recent years. He studied and reported the Swedish epidemic of 1905. It was he who first called attention to the abortive and meningitic types and a type resembling a Landry's paralysis. It was Wickman who first proved that the disease spreads from person to person.

The New York epidemic of 1907 to 1909 stimulated study of this disease. Very little, however, was added to the clinical side as a result of such study. The research turned to the rather mysterious questions of specific cause, problems of natural and artificial immunity, serum treatment. These studies which had their inception in the epidemic of 1907-1909 have received a tremendous stimulus by the epidemic now raging throughout the Middle Atlantic States. Scientific men of the big laboratories throughout the country are concentrating on the problems of detection of carriers; the recognition of the mild atypical cases; the production of a curative serum; problems of transmission, and most important of all, a protective vaccine. With the glorious record of past achievements in preventive medicine to encourage, I feel that the many minds now at work on these problems are sure to produce something that will prevent the recurrence of the dread scourge and render it as infrequent as smallpox is to-day.

Acute poliomyelitis has been conceded by all modern workers on the subject to be an acute general infection with apparently a special predilection for the central nervous system. It can be compared to measles or scarlet fever, each of which is an acute general infection with skin manifestations. The virus of poliomyelitis has a special affinity for nerve tissue in much the same way as the virus of rabies, the characteristics of which it greatly resembles. That this virus does attach itself to the central nervous system has been proven many hundreds of times in experimental work. The brain and cord of fatal human cases when injected subdurally into monkeys will produce after an incubation period of from 2 to 19 days a type of paralysis closely resembling the human type. This virus can be transmitted from monkey to monkey for many generations and this method of passage tends to fix the incubation period of monkey poliomyelitis, so that after a number of passages, the incubation period will be from 9 to 14 days.

The virus of poliomyelitis has been found elsewhere in the body. It has been demonstrated in the nose, mouth, and throat, and also in the mucous membranes of the intestines. It has been recovered from the blood in monkey poliomyelitis. The mucous membranes may be the points of entry for the virus, but it has been definitely proved that the virus is also excreted onto these membranes.

How the virus reaches the central nervous system is a much mooted question. Some believe that it is a blood infection and the virus gains entrance by that route. Others think that it makes its way into the brain and cord along the lymphatics of the nerve trunks. Against the former hypothesis stands the fact that the virus has not been demonstrated in the blood of human cases even in the earliest stages, though it has been found in the blood of one monkey that had been infected by the intracerebral route by Clark, Fraser and Amoss.[2] This last fact does not prove that it is a blood borne infection as it is possible to conceive of the virus being eliminated in that way and so reaching the mucous membranes.

That the virus gains access to the central nervous system by way of the perineural lymph channels is indicated by a rather conclusive experiment. Active virus was injected into the sheath of the sciatic nerve. Proximal to the site of injection, the nerve was ligated. This monkey did not come down with the disease, whereas the control animal whose nerve was not ligated showed typical symptoms in the usual period of time.

Other evidence which lends belief to this method of invasion of the central nervous system lies in the fact that that limb which receives an intramuscular injection of active virus is invariably the first to show symptoms, indicating that the virus is conveyed by the nerve of that limb. If it were primarily a blood invasion, it would be expected that occasionally another limb or limbs would show signs first.

Further, the perineural lymphatic route in poliomyelitis would fall into line with the already definitely established paths of infection of nerve-cell poisons, such as rabies and tetanus. So in view of the preponderating mass of evidence, it has become generally accepted that the virus gains access to the central nervous system by the perineural lymph channels.

As stated above, the virus of poliomyelitis resembles very much that of rabies. It is a nerve-cell poison; is filterable, that is, when an emulsion of the infected brain and cord is pushed through the finest grained porcelain filter, the filtrate retains the ability to produce infection in monkeys. This is unlike the common bacteria which are easily strained out by even coarser grained filters, the filtrate of which will contain no bacteria.

It is very resistant. It can stand a freezing temperature for at least 50 days; but is killed at 50° C. in ½ hour. It withstands the immersion in 50 per cent glycerin for long periods of time. It withstands drying much longer than fixed rabies virus. It is resistant to 0.5 per cent carbolic acid for 3 days. It is killed by 1½ per cent carbolic acid in 24 hours.

Pathology.—The pathologic changes produced by this virus are not striking when viewed with naked eye. The changes, such as they are, are to be found principally in the central nervous system as is to be expected when one considers the symptomatology of the disease.

The gross changes in the brain, basal ganglia, and pons consist principally of marked engorgement of the pial and parenchymatous vessels; an accumulation of an excess of serous fluid in and beneath the pia; edema of nerve tissue itself. In a rare case, where the involvement of the brain has been marked, as in the cerebral spastic types, one may find areas of softening of the cortex. I found one such case in an autopsy on a young man of 27 years, who presented what appeared to be a left sided spastic ehmiplegia. In this case a large area of the central and parietal portion of the cortex of the right side was softened into a mass of mushy consistency. There were signs of capillary hemorrhage, but no gross hemorrhage.

The changes in the spinal cords of most of the 35 post mortems done by the writer at the Willard-Parker Hospital in New York were those already described by Wickman, Harbitz and Scheel, and many other students of the pathology of this disease. They consist chiefly of a marked hyperemia and swelling of the gray matter. Whereas in a healthy cord of an infant, the gray matter is only slightly differentiated from the enveloping white matter, in the polio-infected cord, one finds the gray columns very distinctly marked off from the surrounding white matter. There is swelling in most cases of the anterior horns, though in some the posterior horns share in the process to an equal degree. The gray matter presents in the acute stage a distinct reddish tinge, in most cases, indicating increased vascularity. In some instances there are what appear to be minute circumscribed hemorrhages.

The white matter also shows congestion of its vessels, and in some cases marked edema, so marked at times as to produce a distinct softening of the cord. The posterior root ganglia show changes similar to that of the gray matter of the cord.

The remaining organs, as a rule, show little of import. Practically all cases terminating with respiratory paralysis show edema and congestion of lower lobes of lungs. The liver and kidneys often show marked congestion and frequently some acute parenchymatous degeneration. The spleen in a number of cases shows enlargement, congestion and a marked hyperplasia of the lymphoid follicles. The Peyer's patches in a few cases appear somewhat raised and reddened and the corresponding mesenteric lymph nodes slightly enlarged and congested. Otherwise there is nothing worthy of remark.

The microscope shows, in the affected portions of the central nervous system, marked congestion of the blood-vessels, with great accumulations of small round cells about them. Nerve cells can be seen in all stages of degeneration and in the process of being taken up by the phagacytic cells. There is an accumulation of excess of fluid which tends to separate the interstitial tissues. This is the microscopic picture of the stage of destruction. That of the period of reparation consists in the replacing of the destroyed nerve tissue by young connective tissue. This, as it grows older, contracts into firm fibrous tissue and produces the scarring of the gray matter, which is characteristic of the cords of recovered cases of poliomyelitis, in which there are residual paralyses.

The pathogenesis of this disease is still an open question among pathologists. Some think that the virus has a direct destructive effect on the nerve cell and that the vascularity, edema, and round cell infiltration are only the evidences of the body reaction to the presence of the virus. Another school of workers consider the nerve cell degeneration secondary to the marked inflammatory reaction; in other words, that the nerve cell is destroyed in a mechanical way by the effect of pressure of the engorged vessels, edema, and cellular infiltration.

The opinion of the writer coincides with those who consider the virus a specific nerve cell poison in a manner analogous to the virus of rabies, tetanus, and diphtheria. If one concedes that polio-infection is principally manifested by disease of the central nervous system, and there is no divided opinion on that score, then one must also concede that it is the active elements of the brain and cord, namely, the nerve cells, which have special affinity for the virus of poliomyelitis.

The epidemiology of poliomyelitis has not as yet been completely worked out. Much remains to be accomplished in this field of work. Wickman, however, by his celebrated work in the Swedish epidemic of 1905, has definitely proved that the disease is transmitted from person to person. He was able to trace units from one focus to another, and of the formation of foci from these single units along the paths of most frequent human travel, so that on the completion of his study, he was able to present a map showing the main central focus, with arms radiating along the most commonly used roads to other foci and these in turn exhibited similar arms extending into smaller groups of cases along the roads leading from this focus. It was, therefore, clearly demonstrated that one must watch the human animal in order to elucidate the finer point in the transmission of the disease. The question of how it is transmitted from one to another is as yet not solved.

Dr. M. J. Rosenau,[4] of Harvard, a few years ago thought he demonstrated that the virus was carried from one to another through the biting stable fly, much after the manner of malaria and yellow fever transmission by the mosquito. This work gained

considerable credence until it was definitely proved by Dr. Edw. Francis,[5] of the U. S. P. H., by a series of conclusive experiments that the biting fly was unable to convey polio-infection from one to another. That work has apparently settled the theory of transmission by that route.

The theory of transmission by dirt and dust obtained some basis through the work of Neustadter and Thro,[6] who demonstrated the presence of the virus in the dust of a room in which was isolated a case of poliomyelitis. Up to the present time this work has not been confirmed. While it is true that the disease is very prevalent in our congested East Side and South Brooklyn, it is also found in the outlying districts, where there is anything but congestion. It is found in the most sanitary homes as well as the filthy ones. So it seems to the writer that if dirt and dust were among the chief means of conveyance of the disease, it would be found almost exclusively in the very poor districts. That the virus may be demonstrated in the dust of rooms in which poliomyelitis cases have been cared for is no real argument for the transmission of the disease by that method.

The idea as to the causation of epidemics, prevalent in New York and shared by the writer, is as follows: The virus of a previous epidemic, having lost its virulence by means of burning itself out, has become quite widely disseminated onto persons who are or have become immune. This virus in the course of eight or ten years, through some unknown agency, receives an intensification of its virulence. In the meanwhile a crop of non-immunes has developed. Increased virulence of virus plus numbers of non-immune children equals an outbreak. This, to my mind, will explain the peculiar recurrence of the disease at intervals of eight or ten years, and will explain the almost simultaneous development of groups of cases at widely separated localities, as New York and Minnesota. It will also explain why in some epidemics there is a mortality of only 5 per cent. and in others of over 20 per cent. It is simply a matter of virulence. In one the virulence jumped four times as high as in the other. That the virus is present between epidemics is evidenced by the presence of sporadic cases. Twenty to thirty cases every year are seen by the Meningitis Division of the New York Board of Health. The mortality among these is very low, probably not more than 1 or 2 per cent.

Now that we have our outbreak started, how does it spread? It spreads despite all the efforts of modern hygiene and sanitation. There must be a reason, and that reason in our opinion is the fact that there is a form of the disease so mild that it is not recognizable by the rank and file of physicians. This type of case after a day or two of indisposition, with perhaps a little vomiting and fever, is up and about and playing with the neighboring children. This is one of the chief, if not the chief, means of the rapid spread of epidemics. Another means which will be difficult to rule out—and, in fact, observations in the present make it seem likely—is the carrying of infection into the homes by healthy adults.

To summarize our ideas of the building up of epidemics, we have, first, the man-to-man conveyance, the presence of a virus of increased virulence, the existence of a crop of non-immunes, the existence of a very mild type of the disease difficult of recognition and therefore not quarantined, and, lastly, the transmission by healthy adults.

Clinical Viewpoint.—From the clinical viewpoint, acute poliomyelitis is often simple, many times difficult, and nearly always terrible. In the present epidemic our mortality is about 22 per cent. of those cases recognized as poliomyelitis. If all the cases that were not diagnosed were included, it is felt that this percentage would suffer quite a loss. Previous epidemics in this country and abroad had a mortality figure of about 5 to 10 per cent. Seventy to eighty per cent. of those paralyzed have some residual paralysis.

The age incidence in some 2700 cases collected by Wickman is as follows: Up to 3 years, 39 per cent.; 3-6 years, 24; 6-9 years, 13; 9-12 years, 7; 12-15 years, 6; over 15 years, 11 per cent.

Leegaard presents the following figures in 788 cases: Up to 4 years, 28 per cent.; 5-9 years, 27; 10-14 years, 19; over 15 years, 26 per cent.

The age incidence in the mortality figures of the present epidemic in New York City up to and including July 31, 1916, in a total of 848 cases, is as follows: Under 1 year, 15 per cent.; 1 year, 23; 2 years, 20; 3 years, 14; 4 years, 8; total under 5 years, 80 per cent.; 5-9 years, 16.5; 10-14 years, 2; 14-35 years, 1.5 per cent.

From Wickman and Leegaard's[7] figures it is readily seen that while acute poliomyelitis is preferably a disease of early childhood, it will also attack young adults in considerable numbers. In my series of thirty-five post-mortems in the present epidemic there is included a case of 15 years of age, one 22 years, one 27 years, one 34 years, and one 58 years. When the figures on the age incidence are collated it would not be surprising if there were from 3 to 5 per cent. of cases over 15 years of age. The mortality figures of the New York Department of Health show a great preponderance of fatalities in children under 5 years of age.

Age appears to be the chief predisposing cause. Physical condition and character of surroundings play little part, if any, except such condition as congestion, which will, of course, permit more intimate contact of carrier of contagion, and the non-immune. The meteorological conditions cannot be blamed. The 1907 epidemic raged in a dry, hot summer. This epidemic holds forth in a rather moist, moderate summer. One of the worst epidemics in Sweden occurred in the midst of one of their very severe winters.

The clinical picture of acute poliomyelitis is that of an acute infection plus such manifestations of disturbance of the central nervous system as may have been attacked by the disease process. Thus we usually have a sudden onset, with fever of, say, 102° to 105°, headache, drowsiness, or irritability. The skin may be hypersensitive to touch so that the patient will cry out with pain on being handled; he prefers to be let alone. He may perspire excessively. Then he will complain of pain in the back of the neck, especially if moved. If an attempt is made to manipulate his legs, after the manner of Kernig, he will complain bitterly of pain along the spine and resist the efforts to straighten out his leg when it is flexed at the thigh. His knee jerks may be present, sluggish, or completely absent. The next day the neck may be more rigid, the Kernig sign more marked; if the knee jerks had been present they may have disappeared, with perhaps evidences of weakness in one leg or perhaps both legs.

If there is further progress of the disease up the cord, the next center struck after the arm center is that of respiration. That, in the great majority of

the cases, proves fatal, though there have been a number of instances in this epidemic where children have recovered after the respiratory center has been involved.

The description above presented is that of the common spinal type, and it is from this that the disease receives its name. It is the rapidly ascending form with respiratory involvement, the Landry type, which swells our mortality lists. If poliomyelitis were as simple as above described, the disease would present no difficulties to the physician. When one considers the multiplicity of physiological functions of the central nervous system, then, and then only, can one gain a true conception of possibilities of clinical manifestation of the disturbance of these functions. The virus may attack any portion of the central nervous system or several widely different portions at the same time. This fact gives rise to most bizarre forms of paralysis. It is this fact, too, which contributes so greatly to difficulty of an adequate classification of types.

Wickman classifies the types as follows: (1) The spinal poliomyelitis form, (2) the form resembling Landry's paralysis, (3) the bulbopontine, (4) the encephalitic, (5) the ataxic, (6) the polyneuritic, (7) the meningitic, (8) the abortive.

Other authors, as Zappert and P. Krause, give equally cumbersome classification. It is really very difficult to arrive at a compact yet comprehensive classification.

We prefer to classify the various types according to a classification already existing for separation of various chronic forms of nervous disease:

1. Cortical, where the upper motor neuron only is involved.
2. Spinal, where the lower motor neuron is involved; this is to include the bulbar paralysis as well as that of the cranial nerves.
3. Corticospinal, where both upper and lower motor neurons are involved.
4. Ataxic, when any of the systems which have to do with maintenance of a state of equilibrium are attacked, such as the cerebellum, posterior root ganglia, the vestibular nerve.
5. The meningitic form.
6. The abortive or non-paralytic form.

The clinical manifestation of the cortical type may be paralysis of spastic type; some present clonic convulsions on one or both sides, continuing in some instances as long as forty-eight hours. This type has not been a frequent find in this epidemic.

The spinal form is the most common type, and presents the flaccid type of paralysis with loss of reflexes. The corticospinal form will present a combination of both spastic and flaccid paralyses. It has not been my fortune to see any of this type.

The ataxic type will present nystagmus and disturbances of equilibrium, and is usually present along with manifestation of lower motor neuron injury.

The meningitic form is an extremely interesting type. The picture resembles so closely that of an acute purulent meningitis that one would almost invariably call it that until the spinal fluid gives one the hint that one is dealing with the meningitic form of poliomyelitis. The first case of the epidemic was one of this type. This form may also present evidence of cranial nerve paralysis, but the meningeal symptoms dominate the clinical picture.

The abortive form will prove, in our opinion, to be the most common of all the types mentioned above. Most students of the subject consider that there are at least as many of this type as of the sum total of the other forms. It manifests itself in a manner similar to that of the paralytic type, except that it presents no paralysis. The knee jerks may disappear and there may be a very transient paresis, but there is no actual paralysis. These are the cases that may be diagnosed as influenza or gastrointestinal disease, and it is this form which renders the proper quarantine control inadequate.

Diagnosis.—The diagnosis of poliomyelitis is both easy and difficult. It requires no great diagnostic ability to recognize the frankly paralytic forms, such as the cortical and the spinal forms, especially in the presence of an epidemic. The diagnoses of the ataxic and meningitic forms are confirmed by the examination of the cerebrospinal fluid.

The abortive form, especially where knee jerks are present, can be diagnosed with any degree of certainty only by lumbar puncture and examination of the fluid. The Meningitis Division of the New York Department of Health advises physicians who have patients that present vague meningeal symptoms without any adequate explanation of their causation to perform lumbar puncture and have the spinal fluid examined. It is through this agency that we shall be able to obtain a more adequate idea of the relative number of abortive cases, and also it is by the extension of this laboratory aid that we shall be able to more effectively prevent the spread of the disease.

The spinal fluid in poliomyelitis presents changes which deviate in practically all cases from the normal. While the changes are definite, they are in no sense specific. In other words, given a spinal fluid for examination without any further information added, one could not say that it is a poliomyelitis fluid. One must needs have an adequate clinical history in conjunction with knowledge of abnormal changes in the spinal fluid. The reason for this is apparent. There is no specific organism as yet that can be demonstrated in the spinal fluid of poliomyelitis. Other diseases, as tuberculous meningitis, lues of the central nervous system, typhus, and some cases of whooping cough in the convulsive stage, present changes in the spinal fluid in many instances strikingly similar to those of poliomyelitis. The finding of the tubercle bacillus will at once establish a diagnosis of tuberculous meningitis. But we find the bacillus in smear in only about 50 to 60 per cent. of known tuberculous fluids. That leaves about 40 to 50 per cent. of tuberculous fluids against which to strike a differential diagnosis. This would seem to present an insurmountable difficulty, but it is fortunate for the clinicians that the diseases which present changes in the spinal fluid so much like that of poliomyelitis are clinically easily distinguishable. Whooping cough and typhus have characteristics which separate them easily. Lues can be put aside by history and Wassermann reaction. That leaves tuberculous meningitis in 40 to 50 per cent. of cases. In the great majority of cases a differential between tuberculous meningitis and poliomyelitis presents no difficulty. In the former there is a slow, gradual subfebrile onset, cold in type, with meningeal symptoms developing after a week or two. In the latter there is most commonly an abrupt onset, with high fever, florid in type, with meningeal symptoms appearing very early in the disease. This method of diagnosis serves in the great majority of cases. There are cases of acute onset with high fever in tuberculous meningitis, but they are, fortunately,

rare. This type, too, is more apt to present the bacillus in smear. Then difficulty may arise when an accurate history is not obtainable. Some rare forms of epidemic meningitis may present a fluid not unlike some that we find in poliomyelitis.

The spinal fluid in poliomyelitis is, as a rule, clear by reflected light. By transmitted light can be seen a suspension of material in a good many instances. Occasionally the fluid is opalescent and even slightly turbid.

Chemical examination shows it to contain albumin, globulin, and a copper-reducing substance, probably dextrose. Albumin and globulin are abnormal constituents, and indicate inflammatory change. The presence of reducing substance is normal, and absence of the same is abnormal. The absence of the reducing substance is very uncommon, and when it is met with it is in the severest cases of the meningitic form. The diminution or absence of the reducing substance indicates that the pathological process has involved the choroid plexus, which is the mechanism that secretes this substance into the spinal canal. The quantity of these constituents is graded from 1+ up to 4+, depending upon the intensity of the reaction.

The cytology of poliomyelitis fluids is characterized in the great majority of instances by a great preponderance of small mononuclear cells with a fair sprinkling of large mononuclears, or perhaps they may be called endothelioid cells. This latter cell is not commonly found in the fluid of tuberculous meningitis, and therefore may give us a hint as to whether or not the fluid under examination is a poliomyelitis fluid. When this type of cell is found in sufficient numbers, we suspect the possibility of poliomyelitis. It is, however, by no means pathognomonic of this disease.

Another cell which the writer has noted with sufficient frequency to attract attention is a glia-like cell. This cell looks strikingly like the glia cells of the central nervous system, from which, in my opinion, they migrate into the cerebrospinal fluid. The writer has not up to the present time encountered a cell of this type in the fluid of tuberculous meningitis, and when found has considerable diagnostic weight, especially when the clinical history of the case is not very definite. It is a well-known fact that the glia cell of the central nervous system can assume phagocytic properties, and that, in my opinion, is how they find their way into the spinal fluid. The glia cell, as well as both the large and small mononuclear cells, may contain very small, deep-staining granules and rod-like bodies, the significance of which is at the present time unknown.

As to microorganisms in the spinal fluid, none have up to the present time been found. While the spinal fluid presents no specific characteristics *per se*, yet it presents, in the great majority of cases, definite changes, without the knowledge of which great numbers of abortive and atypical cases would go begging for a diagnosis. To summarize, the changes in the spinal fluid of poliomyelitis are as follows:

1. The fluid is increased and many times under pressure.

2. It is in nearly all cases clear to the naked eye, but occasionally it may be opalescent or even slightly turbid.

3. Albumin and globulin are increased as a rule to 1+, and not infrequently to 3+ and rarely to 4+.

4. Fehling's solution is in the great majority of cases promptly reduced.

5. The cells are definitely increased at some stage of the disease, usually in the early stage.

6. The predominating cell type is the small mononuclear up to 90 per cent. of the total. There are a number of fluids, particularly those which are opalescent or slightly turbid, in which there is a preponderance of the polynuclear cell up to as high as 75 per cent.

The fluid that offers the greatest difficulty of differentiation is that of tuberculous meningitis. Normal fluids, while impossible of differentiation macroscopically, show no abnormal constituents from either the chemical or the cytological aspect.

Lumbar puncture is a simple and safe procedure, and resort to it should be had whenever there is question of diagnosis of a condition which presents evidences of meningeal and brain or cord disease. Many an obscure condition may be rendered simple by the thorough examination of the spinal fluid.

Prognosis in poliomyelitis is at best a hazardous venture. Cases which the clinician considers very grave may clear up within 24 to 48 hours and present the most astonishing improvement. On the other hand, there are cases which, apparently mild, will rapidly develop fulminating symptoms and pass out in a few hours. In most of the rapidly fatal cases death occurs within the first six or seven days from the onset; usually it is three to four days. Therefore, if a case lives for one week, the chances of preservation of life are much improved. This is true particularly of the spinal form. The cortical and meningitic types, however, may go on to two or three weeks before passing out. There are some unusual cases of the disease which present symptoms of the abortive type. These clear up rapidly in a day or two and one will consider the danger past. Four or five days later the child will be seized with an acute onset, high fever, and paralysis which may prove to be of the Landry type. This form is sometimes called the relapsing form. There is another type of the mild case in which there are all the initial symptoms of a true case, a subsidence of these symptoms followed by an interval as great as two weeks before the typical flaccid paralysis appears, the paralysis in these cases not being ushered in by stormy symptoms. Of all the types classified above, the spinal form leads in the production of mortality. This is due without a doubt to the great preponderance in numbers of this type over the other. The meningitic and encephalitic forms are just as serious or more so perhaps than the spinal form. When the figures in this epidemic are collected there will be found a higher relative mortality in these types than in the spinal form.

As to the age, the mortality figures cited above indicate that the disease is particularly fatal to children under five years of age. This figure is perhaps misleading inasmuch as the great preponderance of cases occur among children under five years of age. The writer's observations in this epidemic lead him to believe that poliomyelitis in the adult is a very grave disease. The mortality percentage in cases above 16 years of age will exceed the mortality figures of the epidemic at large. It is interesting to note at this juncture that the adult only rarely presents the spinal form, the more common types at this age being the meningitic or encephalitic varieties.

The prognosis as to the residual paralysis is guess work. Some of the rapidly ascending types even with involvement of respiratory center have recovered without a sign of residual paralysis.

This, however, is not common; whereas, cases in which there is only one limb involved may present a permanent paralysis in that limb; 70 to 80 per cent. of cases presenting paralysis have residuals. It is the way of wisdom, especially in the present epidemic, with a mortality of 22 per cent., and the manifestation of marked eccentricities in the course of the disease, to be ultra-conservative. It will prevent many embarrassing situations and preserve brilliant reputations.

Prophylaxis.—The demonstration of the fact that poliomyelitis is transmitted from one human being to another furnishes a rational basis for the prosecution of prophylaxis. However adequate, prophylaxis in the matter of isolation of disease carriers is rendered most difficult by the existence of the very mild cases that go undiagnosed. Until this type of case is taken more seriously by the general profession and unremitting efforts are made to prove whether or not it is poliomyelitis, then and then only shall we approach a more perfect isolation of the virus.

The question of transmission of the disease by healthy adults or other immunes deserves much serious study. This method of transmission will be proved to have had a large share in the rapid dissemination of the disease. In view of these facts, personal contact of all kinds should be reduced to the possible minimum; such as the prevention of gatherings of children and adults, and even of adults. Osculation in time of an epidemic of poliomyelitis is the height of folly. Wherever possible, persons should occupy beds singly.

In view of the finding of the virus in dust, though this work has not been confirmed, it would be no great wrong to advise absolute cleanliness in the home. The possibility of transmission by food has not received serious consideration thus far. It would be well that foods, wherever possible, be boiled or subjected to heat before consumption. The slogan especially in time of epidemic should be a clean body, a clean home, and a clean city.

When diagnosed, all cases should receive strict isolation, preferably in a hospital. Suspicious cases should be strictly quarantined in their homes until diagnosis is confirmed or negatived by examination of spinal fluid.

As to the use of gargles and sprays in the nose and throat, one cannot place too much dependence on them. Contact is *the* method of transmission. Prevent that and there will be no need of gargles and sprays. If one puts too much credence in the efficiency of solutions in the nose and throat one is apt to be careless in the prevention of that most important element in transmission of disease—contact.

There is no method of specific prevention by such means as the Pasteur treatment or vaccination against smallpox. Experimental work on monkeys by Landsteiner and Levaditi,[8] Romer and Joseph,[9] Krause[10] in Germany, and by Flexner[11] and coworkers in this country is decidedly encouraging. Stimulation of search for a method of specific prevention is bound to result from the intense interest aroused in the subject by the present epidemic. When a satisfactory method is evolved, poliomyelitis will have been robbed of its terrors. Epidemics of poliomyelitis will be as rare as those of smallpox are to-day.

Treatment.—Treatment of the acute stage consists chiefly in isolation; absolute rest and good nursing night and day. Urotropin is advised in good sized doses, about five grains every four hours for a child of three to five years of age and graded up and down according to age. When using this drug, keep a sharp watch for bladder irritability. If it appears, diminish the dose or discontinue entirely, preferably the latter. This drug is recommended by Flexner on the basis of some experimental work, in which the incubation period of the disease in a monkey was retarded for a period of forty days through the use of this drug.

Lumbar puncture may prove of great help in the meningeal and cortical types, and in any case which presents marked meningeal symptoms.

Specific therapy by the use of serum derived from persons who have passed through an attack has been tried by the Scandinavian physicians and by Netter[12] of France, with inconclusive results. The rationale of the treatment is as follows: Serum from a recovered case exerts upon active poliomyelitis virus a neutralizing effect when the two are kept in contact for a period of 24 hours, so that when this neutralized virus is inoculated into the brain of a monkey, it no longer produces the symptoms of poliomyelitis; whereas, the control monkey inoculated in a similar manner but with virus not previously acted upon by the immune serum comes down in the usual time and manner. This experiment demonstrates conclusively the presence of antibodies in the blood of persons who have recovered from poliomyelitis. These antibodies have been demonstrated in the blood of persons as long as 30 years after the attack. Flexner[13] has shown in a rather small number of experiments on monkeys that when serum from such persons is administered intraspinally within 24 hours after the active virus is introduced into the brain and when the administration of the serum is continued for several days after the infective virus has been so introduced, such animals fail to come down with poliomyelitis. Experiments in treatment of actual monkey poliomyelitis by immune serum has to the writer's knowledge not yet been recorded. These facts, then, offer the basis for treatment with immune serum.

As to the possibilities of harm from the intraspinal administration of this serum, the practice is too recent and too limited to afford adequate observations on that point. From personal experience in a very few cases and from theoretical considerations, I fear that in some cases it is not without harm.

The introduction of a therapeutic serum into the subdural space of a case in which there is no evidence of meningeal inflammation as determined by the examination of the spinal fluid is followed in many instances by a marked meningeal reaction. Subsequent fluids withdrawn after the introduction of serum reveal evidences of meningeal inflammation. The fluid is usually turbid, due to great increase of cells; there is a 3 + to + 4 albumin and globulin, and there may be a diminution of the reducing substance. In other words, there are all the evidences of a purulent meningitis without the presence of microorganisms, an aseptic meningitis.

An aseptic meningitis in some cases is likewise set up in poliomyelitis upon the introduction of immune serum into the spinal canal. The writer feels that the superimposing of this condition upon an already existing edema and congestion of such a delicate and vital structure as the gray matter of the spinal cord may have, in some cases, a power for harm. Personally, I feel that it ought not to be

used in the spinal form for fear of stimulating the attack by the virus of the vital center of respiration. It is too delicate a mechanism to tamper with. Perhaps in the meningitic variety with no involvement of the cord it may prove of value. A study of this method of treatment is now under way at the Willard-Parker Hospital under supervision of the New York Department of Health Laboratories. When the figures are collated and assorted perhaps then we shall gain a true idea of the value of this method of therapy.

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DREAMS AND DREAMERS.

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"And Dreams in their development have breath,
And tears and tortures, and the touch of joy;
They have a weight upon our waking thoughts,
They take a weight from off our waking toils,
They do divide our being."

—Byron.

Dreams! What a wonderful, lace-like network of varied images the mere word suggests. What mysterious vistas of boundless mansions with sky-high ceilings and bottomless staircases—what terrible experiences o'er fearful precipices and blood-curdling encounters with ferocious beasts—what fabulous fortunes gained and spent—what grotesque combinations of numerous, widely varied images into wonderful, mysterious phantasies are exhibited to us by the evanescent pictures called dreams. How often does it seem a pity that these gloriously beautiful soap bubbles are doomed to vanish to eternity on awaking! Almost as mysterious a question as that of the hereafter, the subject of dreams confronts us as a silent sphynx; and though it has attracted the attention of man from the dawn of history, the sifting of the vast amount of material written on the subject reveals nothing but a few vague ideas of but relative rather than absolute practical value. The study of some of the phases and plausible theories of this peculiar state of mankind constitutes one of the most fascinating forms of mental recreation.

The literature of man is rich in dream fancies, and because of its very intangibleness and vagueness the dream has inspired facts to sweet songs, and has often even furnished the plot of a successful drama. Shakespeare found that "We are such stuff as dreams are made of, and our little life is rounded with a sleep." Novalis, the German poet, has written so beautifully of dreams that we cannot help quoting: "The dream is a barrier against the regularity and commonness of life—a free recreation of fettered fantasy, in which the pictures of life are united together, interrupting the seriousness of grown-up men with joyous children's play. Without the dream we should surely age earlier, and thus the dreams may be considered, perhaps, not a gift directly from above, but a delightful task—a friendly companion through life's toils."

It is said that Alexander's army would have been annihilated were it not for a dream in which Dionysius directed the means of safety.

In the Bible, dreams are considered the chosen method of the supernatural power to manifest itself. It was in a dream that Abraham was made the founder of nations by the Lord, who appointed him to teach the pagan world the errors of polytheism.

When Jacob was on his way to seek a wife among the daughters of Laban, he dreamt that he beheld a ladder extending from earth to Heaven, on which the Angels of God were ascending and descending, and he was promised that his seed should be as the dust of the earth. Subsequently the Angel of God spoke unto Jacob in a dream, saying: "Lift up now thine eyes, and see that all the rams which leap upon the cattle are speckled, ring-streaked, and grizzled; for I have seen all that Laban doeth unto thee. Now arise, get thee out from this land, and return unto the land of thy kindred." Thereupon Jacob, with Rachel, his wife, and Leah, stole away with their children, their cattle, and their goods, unawares to Laban, the Syrian. The third day after Jacob's flight Laban first heard of it, and after a seven days' journey overtook him in the Mount Gilead. Meantime, God came to Laban, the Syrian, in a dream by night, and said unto him: "Take heed that thou speak not to Jacob either good or bad." When Laban met Jacob he chided him for going away secretly and said: "It is in the power of my hand to do you hurt, but the God of your father spake unto me yesternight, saying, 'Take thou heed that thou speak not to Jacob, either good or bad.' "

It was the recital of one of his dreams that instigated Joseph's brethren to sell him into Egypt. Having correctly interpreted the dreams of the King's chief butler and chief baker (who were his fellow-prisoners) his fame spread through the land, so that when the King himself had a perplexing dream, Joseph was sent for; and so impressed was the king by his ability that Joseph became very powerful, and virtually ruler over all the land of Egypt, and was thus enabled subsequently to save his brethren and prepare the way for the escape of the Children of Israel from bondage to a land flowing with milk and honey.

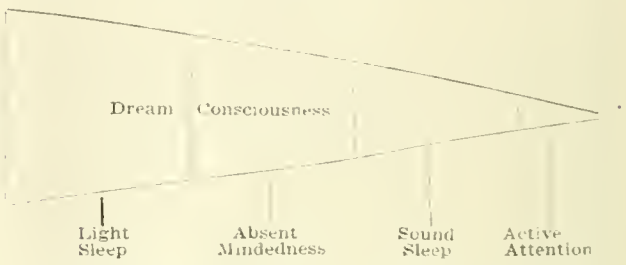
While Daniel and his three comrades were living at the court of Nebuchadnezzar—"God gave them knowledge and skill in all learning and wisdom," and Daniel became proficient in the interpretation of all visions and dreams. "When two years later Nebuchadnezzar had a dream which he had forgotten, he issued a decree for the slaughter of all his wise men and magicians, because they could not make known to him the dream and its interpretation." Daniel saved their lives and his own by revealing to the king "the visions of his head upon

his bed," and their interpretation. One of the memorable results of this dream was that Nebuchadnezzar at last confessed to Daniel that his God was the God of gods and the Lord of kings, and he made Daniel himself to rule over the whole province of Babylon and to be chief governor over all the wise men thereof. Nebuchadnezzar in due time had another dream, which Daniel was called upon to interpret. It was of painful import. The king was to be driven from men; his dwelling was to be with the beasts of the field, he was to be made to eat grass as oxen, and to be wet with the dew of Heaven, and seven times were to pass over him until he should know "the Most High ruleth in the kingdom of men and giveth it to whomsoever he will." "At the end of these days," said Nebuchadnezzar in his official proclamation of this experience, "I lifted up mine eyes unto heaven, and at the same time mine understanding returned unto me; and for the glory of my kingdom excellent greatness was added unto me."

The definition of the term "dream," as of other mysterious natural states and forces, is practically impossible. We are able usually to distinguish between the shock produced by electricity and the heat experienced when a boiling kettle is touched, but neither the term "dream" nor "electricity" is capable of a concrete, lucid definition.

We are possessed of two mind mechanisms, consisting of a consciousness which predominates our thoughts and actions when awake, and a "dream consciousness" or "subconsciousness" which rules, because of sleep or some other reasons, when the usual or "day" consciousness is dormant. The dream consciousness is usually present also in the waking state, the degree depending chiefly on the mental or psychological make-up of the individual. We all do a certain amount of dreaming during the performance of our daily duties. In the midst of any mental or physical application, the trained observer will easily catch himself in moments of dream consciousness, to find that he made brief mental excursions to some distant lands. On the perusal of this article, the reader may at the same time recall that he dreams often or rarely; and perhaps, from time to time images of people met or thoughts of duties performed or to be performed will flit through his mind. The vividness of these day-dream images and their individual duration will, of course, be in inverse proportion to the degree of the concentration of attention to the article before the reader. This other self, acting independently, may conjure up thought upon thought, despite the fact that the reader is interested in this paper and assimilating its essential points. These subconscious impressions of the waking hours closely resemble dreams; indeed, it is impossible to strictly separate them from the dreams of the night, excepting that in the latter the images are often exaggerated, often confused into a chaotic jumble, frequently presenting conditions physically impossible; while in the former, though fleeting, the images do not crowd, are more orderly, and actions are physically possible. There is in our conscious life a luxuriant halo of these subconscious associations; but the normal person's mind is developed and trained to keep them where they belong—in the background, a condition consistent with sanity and mental efficiency. The ability to suppress these subconscious impressions constitutes the essence of mental attention and concentration. The more absent-minded we are the more vivid, coherent and prolonged these subconscious associations become, the next step being light sleep, then sound sleep. The chronically absent-minded person, therefore, rightly deserves to be considered in a degree asleep and a dreamer.

Active attention and sound sleep hold the substratum of mental activity or dream consciousness in obeyance; the most favorable conditions for dreaming being light sleep and absent-mindedness. The gradations of frequency and vividness of dreams, in ratio to the degree of waking consciousness, may be thus diagramatically illustrated:



However sound a sleep may be, dreams probably occur, though one may not be able to recall them on awaking. The mind is never entirely asleep; all experimental evidences seem to confirm this opinion. The more imperfect the sleep, however, the greater the vividness of dreams and the more likely of recall to memory in awaking. The occurrence of sensory stimulation determines the reduction in the soundness of sleep and is in direct ratio with the occurence of "recallable" dreams, varying from the dream image of an orchestra concert in the presence of the buzzing sound of a mosquito close to the sleeper, to the nightmare of being stabbed by a band of ruffians, as a consequence of the gastric insult from the indigestion of a modern banquet the night before, in which perhaps several forms of meat, fish, and lobster were prominent constituents.

Freud, the eminent psychologist, remarks, "Every distinctly perceived noise or other sense impression gives rise to a corresponding dream picture. The rolling of thunder takes us into the thick of a battle; the crowing of a cock may be transformed into human shrieks of terror; the creaking of a door may conjure up dreams of burglars breaking into the house. When one of our blankets slips off at night, we may dream that we are walking about naked or that we are falling into water. If we lie diagonally across the bed with the feet extending beyond the edge, we may dream of standing on the edge of a terrifying precipice or falling from a great height. Should our head accidentally get under the pillow, we may imagine a big rock hanging over us and about to crush us under its weight."

There are certain provisions of nature which may be justly regarded as auxiliaries to sleep and universal in their operation, and which seem to have for their purpose the removal of sources of stimuli. At uniform intervals in every twenty-four hours of our life the sun withdraws its light and covers us with a mantle of darkness. This not only invites sleep by withholding a stimulus which discourages it, but practically interrupts or modifies all forms of industrial activity; it interferes seriously with locomotion; it suspends most of the plans and occupations which engage our attention during the sunlit hours of every day, and emancipates us for a few hours from the dominion of our natural propensities and passions, which engross so much of our time and thought by day. Nor is it only by the setting of the sun that we are invited daily to give

pause for a few hours to our worldly strifes. In sleep all the sensorial and other functions dependent upon or under the government of the will are relaxed. To secure this relaxation we seek positions, places and all other conditions best calculated to shelter us from light, noise and all other awakening influences. Like man, the lower animals at such times choose a retired place, assume postures which demand no voluntary effort and which expose them least to external forces which may chance to disturb them. The serpent coils itself up so as to expose as little of its superficial surface as possible to disturbance; the bird conceals his head under his wing; the porcupine covers his eyes with his tail; the skunk rolls himself into a ball; the dog covers his face with his paw. Why should the ploughman leave his plough in its furrow when the sun ceases to light its way? Can any other satisfactory reason be suggested than that he may for a few hours be as one dead to the concerns of his farm and plough, and his soul for a time be freed from their distractions? Whatever else may be the final purpose of sleep, that purpose also obviously must be among the contributory purposes of nocturnal darkness, for that is one of its inevitable and periodical consequences. The subconscious element of our waking state consists of memories which appear and disappear, occupying our mind in turn. But they differ from memories of our dream state in that they are always memories which are closely connected with our present situation, our present action. I recall at this moment the remarks of Herbert Spencer on sleep, because I am discussing the subject of dreams; and this act orients in a certain particular direction the activity of my memory. The memories that we meet while waking, however distant they may at first appear to be from the present action, are always connected with it in some way.

Our memories, at any given moment, form a solid whole, a pyramid, so to speak, whose point is inserted precisely into our present action. But behind the memories which are concerned in our occupations and are revealed by means of it, there are others, thousands of others, stored below the scene illuminated by consciousness. Indeed, it is even said that all our past life is there, preserved even to the most infinitestimal details, and that we forget nothing, and that all that we have felt, perceived, thought, willed, from the first awakening of our consciousness, survives indestructibly. But the memories which are preserved in these obscure depths, are there in the state of invisible phantoms. They aspire, perhaps, to the light, but they do not even try to rise to it; they know that it is impossible and that I, as a living and acting being have something else to do than to occupy myself with them. But suppose that, at a given moment, I became disinterested in the present situation, in the present action—in short, in all which previously has fixed and guided my memory; suppose, in other words, that I am asleep. Then these memories, perceiving that I have taken away the obstacle, have raised the trap door which has kept them beneath the floor of consciousness, and arise from the depths. They rise, they move, they perform in the night of unconsciousness. They rush together to the door which has been left ajar. They all want to get through. But they cannot, there are too many of them. From the multitudes which are called, which will be chosen? Thus arises the apparent *inconsistency* of dream images.

During a brief period of a few minutes dream pictures corresponding to hours of time may be enacted. Thus, a dreamer fell asleep while listening to some one who was reading to him and awoke again toward the termination of a sentence that had been begun when he dozed off. The actual duration of sleep was about ten seconds or less, yet he dreamt of a storm, shipwreck, and heroic rescue which would occupy at least three hours of time in real life. There is no conception of time or space in dreams; we live in an ideal world. These peculiar characteristics of dreams are due to the fact that volition and attention are absent; the mind has no control over the objects that crowd upon it. There is no concentration or fixity of thought necessary for memory. In other words, in the dream state there is a *decentralization* of the mind. Ideas, grotesque, often confused, arise spontaneously, crowd upon the mind, become vivid and vanish. Dreams usually leave only a faint impression on the memory, so that on waking, what was at first vivid and distinct, fades rapidly and insensibly away.

There is a peculiar tendency to exaggeration during dreams. A homely person or object becomes ugly, a beautiful being becomes the most handsome in the universe. A tall person is a giant, a short individual a midget. If we trip and fall down a flight of stairs, the flight is never ending, and we never reach the bottom, but continue on our journey until we awake. An important event relating to ourselves or those near to us may never be dreamed about, but a wart or mole on the forehead of a stranger may be dreamed of repeatedly.

In a dream we become no doubt *indifferent* to logic, but not *incapable* of logic. There are dreams when we reason with correctness and even with subtlety. I might almost say at the risk of seeming paradoxical, that the mistake of the dreamer is often in reasoning too much. He would avoid the absurdity if he would remain a simple spectator of the procession of images which compose his dream. But when he strangely desires to explain it, his explanation, intended to bind together incoherent images, can be nothing more than a bizarre reasoning which merges upon absurdity. The dream is the state into which you naturally fall when you no longer have the power to concentrate yourself upon a single point, when you have ceased to will.

In the dream the same faculties are exercised as during waking, but they are in a state of tension in the one case, and of relaxation in the other. The dream consists of the entire mental life minus the tension, the effort, and the bodily movement.

From this essential difference can be drawn a great many others. We can come to understand the chief characteristics of the dream. But I can only outline the scheme of this study. It depends especially upon three points: the incoherence of dreams, the abolition of the sense of duration that often appears to be manifested in dreams, and finally, the order in which the memories present themselves to the dreamer, contending for the sensations present where they are to be embodied.

The incoherence of the dream seems easy enough to explain. As it is the characteristic of the dream not to demand a complete adjustment between the memory image and the sensation, but, on the contrary, to allow some play between them, very different memories can suit the same sensation. For example there may be in the field of vision a green spot with white points. This might be a lawn spangled with white flowers. It might be a billiard table with its balls. It might be a host of other

things besides. These different memory images, all capable of utilizing the same sensation chase after it. Sometimes they attain it, one after the other. And so the lawn becomes the billiard-table, and we watch these extraordinary transformations. Often it is at the same time, and altogether, that these memory images join the sensation, and then the lawn will be a billiard-table. From this comes those absurd dreams where an object remains as it is and at the same time becomes something else. As I have just said, the mind, confronted by these absurd visions, seeks an explanation and often thereby aggravates the incoherence.

As for the abolition of the sense of time in many dreams, that is another effect of the same cause. In a few seconds a dream can present to us a series of events which will occupy, in the waking state, entire days. When we are awake we live a life in common with our fellows. Our attention to this external and social life is the great regulator of the succession of our internal states. It is like the balance wheel of a watch, which moderates and cuts into regular sections the undivided, almost instantaneous tension of the spring. It is this balance wheel which is lacking in the dream. Acceleration is no more than abundance a sign of force in the domain of the mind. It is, I repeat, the precision of adjustment that requires effort, and that is exactly what the dreamer lacks. He is no longer capable of that attention to life which is necessary in order that the inner may be regulated by the outer, and that the internal duration fit exactly into the general duration of things.

It remains now to explain how the peculiar relaxation of the mind in the dream accounts for the preference given by the dreamer to one memory image rather than others, equally capable of being inserted into the actual sensations. There is a current prejudice to the effect that we dream mostly about the events which have especially preoccupied us during the day. This is sometimes true. But when the psychological life of the waking state thus prolongs itself into sleep it is because we hardly sleep. A sleep filled with dreams of this kind would be a sleep from which we came out quite fatigued. In normal sleep our dreams usually concern themselves rather with the thoughts which we have passed through rapidly, or upon objects which we have perceived almost without paying attention to them. If we dream about events of the same day, it is the most insignificant facts, and not the most important which have the best chance of reappearing.

In accepting the definition that a dream is a condition of physiological delirium we approach a very plausible explanation of dreams. An eminent observer has said: "Find out all about dreams, and you find out all about insanity." While this may appear a trifle exaggerated, yet most alienists agree that dreams and many forms of mental aberration have a great deal in common. Is it not possible, let us ask, for the substratum of mental activities known as dream consciousness, which lacks so much in logic and reasoning, and is totally devoid of will, to gain the ascendency under certain adverse conditions, thus to constitute a form of mental aberration classified under insanity? From the summing up of such evidence as he collected, Ellis concludes: "If we pierce beneath the surface we seem to reach a psychic stage in which the dreamer, the madman, the child, and the savage alike have their starting point. It thus happens that the way of thinking and feeling of the child, the savage and the lunatic each furnish a road by which we may reach a psychic which is essentially that of the dreamer."

Charles Lamb tells us that during the early part of his life he was constrained to retire to a lunatic asylum, where he was detained for several months. In a letter to his friend, Coleridge, written a few years after his recovery, he said: "At some future time I will amuse you with an account, as full as my memory will permit, of the strange turn my frenzy took. I look back upon it at times with a gloomy kind of envy; for while it lasted I had many, many hours of pure happiness. Dream not, Coleridge, of having tasted all the grandeur and wildness of fancy till you have gone mad."

The so-called "nightmare," the terrifying dream, is usually the result of an unpleasant sensory stimulus, often of pathological origin. Dr. Franklin, in a letter once written to a Miss on the act of encouraging pleasant dreams, said: "In general, man, since the improvement of cooking, eats about twice as much as Nature requires. Suppers are not bad if we have not dined, but restless nights naturally follow hearty suppers after full dinners. Indeed, as there is a difference in constitutions, some rest well after these meals; it costs them only a frightful dream, and an apoplexy, after which they sleep till doomsday."

In some dreamers the activity of the cerebrum is such that the train of thought leads to movement, and the sleeper may be heard muttering, tossing about, or making gestures. The extreme cerebral activity in sleep is seen in somnambulism, which is arbitrarily divided into four types: (1) Those who speak without acting (a common variety, often observed in children, and not usually considered somnambulistic); (2) Those who act without speaking (the most common variety); (3) Those who act and speak; (4) Those who not only act and speak but who also have an active sense of touch, sight, and hearing. This fourth class is most rare, and merges into the condition of mesmerism or hypnotism.

Sometimes the actions performed by a subject of somnambulism are of complicated character, and bear some relation to the daily life of the sleeper. Thus a cook has been known to rise out of bed, carry a pitcher to a well in the garden, fill it, go back to the house, fill various vessels carefully without spilling a drop, then return to bed and have no recollection on awaking of what had transpired. Again, somnambulists have been known to write letters and reports, execute drawings, and play upon musical instruments. Frequently they have gone along dangerous paths, executing delicate movements with precision; indeed, the somnambulist seems to have perceptions supernaturally acute, walking with confidence and safety along roofs of houses, on the banks of rivers, and other perilous places where nothing could have tempted him to go when awake. The following is another interesting example of somnambulism: "A girl of twenty-four, a hospital patient, went to the staircase leading to the nurses' quarters, suddenly turned around, and went to the wash house. The door being closed, she groped for a time and went toward the women's dormitory, in which she formerly slept. She went up to the top of the house where this dormitory was, opened a window leading to the roof, went out of the window, walked along the gutter (under the horrified eyes of the nurse who followed her, and who did not dare speak to her), went in again by another window, and proceeded downstairs."

The beloved French literary genius, Voltaire, in

his "Philosophical Dictionary," thus presents his views and experiences on dreams and dreamers: "I have known advocates who have pleaded in dreams, mathematicians who have solved problems, and poets who have composed verses. I have made some myself, which are very passable. . . . It is, therefore, incontestable that consecutive ideas occur in dreams, as well as when we are awake, which ideas as certainly occur in spite of us. We think while sleeping, as we move in our beds, without our will having anything to do either in the motive or in the thought. . . . A man profoundly afflicted at the death of his wife or his son sees them in his sleep; he speaks to them, they reply to him, and to him they have certainly appeared. It is, therefore, impossible to deny that the dead may return; but it is certain, at the same time, that these deceased, whether inhumed, reduced to ashes, or buried in the abyss of the sea, have not been able to reserve their bodies; it is, therefore, the soul which we have seen. This soul must therefore be extended, light, and impalpable, because in speaking to it we have not been able to embrace it.

"Dreams also appear to me to have been the sensible origin of primitive prophecy or prediction. What more natural or common than to dream that a person dear to us is in danger of dying, or that we see him expiring? What more natural than that such a person may really die soon after this ominous dream? Dreams which have come to pass are always predictions which no one can doubt, no account being taken of dreams which are never fulfilled; a single dream accomplished has more effect than a hundred which fail. Antiquity abounds with such examples. How constructed are we for the reception of error! Day and night unite to deceive us! . . .

"But how, all the senses being defunct in sleep, does there remain an internal one which retains consciousness? How is it, that while the eyes see not, the ears hear not, we, notwithstanding, understand in our dreams? The hound renews his chase in a dream; he barks, follows his prey, and is present at the death. The poet composes verse in his sleep; the mathematician examines his diagram, and the metaphysician reasons well or ill; all of which there are striking examples.

"In one of my dreams I supped with Mr. Tourón, who appeared to compose verses and music, which he sang to us. I addressed these four lines to him in my dream:

Thy gentle accents, Touron dear,
Sound most delightful to my ear!
With how much ease the verses roll,
Which flow, while singing, from thy soul!

"In another dream, I recited the first canto of the 'Henriade' quite different from what it is. Yesterday I dreamed that verses were recited at supper, and that some one pretended they were too witty. I replied that verses were entertainments given to the soul, and that ornaments are necessary in entertainments. I have, therefore, said things in my sleep which I should have some difficulty to say when awake; I have had thoughts and reflections, in spite of myself and without the least voluntary operation on my own part, and nevertheless combined my ideas with sagacity, and even with genius. We should never be good philosophers except when dreaming!"

Dreams are not always a confused chaos of events. There are instances in which dreams were characterized not only by the most sane concentration and continuity of thought, but also in which the images were of considerable use to the dreams. Often what appears to be beyond human ability is accomplished through dream ideas and inspirations. There are on record numerous instances of writers who for want of further ideas became discouraged and put aside a work to which they had been devoting a vast amount of energy and time. Suddenly they would awake some morning to find themselves possessed of the key to the successful issue of their toil. The same has been observed of many prominent inventors.

Paganini, the great violinist, once dreamt that the devil was pacing up and down his room playing his violin. The music played by his diabolic majesty was so weirdly mysterious, entrancing, and wonderful, that he was awakened with a start. He looked about, rubbed his eyes, and realizing that it was but a dream, rushed to his work desk to jot down the composition as he remembered it. The result is the wonderful composition known as "The Devil's Trill," recognized to-day as one of the most difficult, beautiful, and wonderful works ever composed for the violin, and is a constituent of the repertoire of every violin virtuoso.

It seems that in the "useful" dreams, occurring at times in inventors, writers, composers, and others, there is the possession in the subconscious mind of the knowledge yearned for, but because of the extreme anxiety of the individual, and also the rush of daily ideas and thoughts upon the mind during the waking hours, the subconscious ideas are crowded out. During sleep those ideas or images are released, coming forward with a sudden bound, like caged birds suddenly freed. The suddenness of this release of the novel idea or image may be great enough to awaken the dreamer with a start.

In conclusion, we cannot help feeling, as intelligent mortals, that dreams are a godsend, and that pleasant dreams should be encouraged. The way to court pleasant dreams is to avoid the causal factors of unpleasant ones. The proper care of the digestive and other functions, the avoidance of emotional excitement, and the maintenance of a cheerful, kindly spirit toward all the world are conducive to the avoidance of nightmares, and the occurrence of sound, healthful, rejuvenating sleep; and if dreams occur they are as a gift of Heaven, or a taste of Paradise. The blissful dream of the man or woman of good habits and clear conscience carries body and soul in a fairy bark away from this vale of toil and tears to lands of joy, of nectar and ambrosia, to return at purple daybreak.

"Sweet sleep be with us, one and all!
And if upon its stillness fall
The visions of a busy brain,
We'll have our pleasure o'er again,
To warm the heart, to charm the sight,
Gay dreams to all! Good-night, Good-night."

1714 North Seventh Street.

Pancreatic Function in Alcoholic Venous Cirrhosis of the Liver.—Udaondo and two others have studied five cases of hepatic cirrhosis with autopsy control. In every case the pancreas was the seat of lesions corresponding to the type of interstitial sclerosis. These undoubtedly aggravated the course of the hepatic disease and hastened death. Pancreatic perturbation was shown clinically by the characteristic diarrhea, precocious cachexia, and sensory syndrome. An exact diagnosis was made by clinical methods in each case. All essential details were present including results of histological examination. Little or no improvement was obtained from treatment. The cachexia was progressive and soon ended fatally.—*Revista de la Asociación Médica Argentina.*

TUBERCULOSIS AND CANCER.

A POSSIBLE EXPLANATION OF THE LONG-DISCUSSED QUESTION OF THEIR MUTUAL ANTAGONISM WITH THE SUGGESTION OF THE USE OF TUBERCULIN FOR THE PREVENTION OF RECURRENCE OF CANCER.

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THE question of antagonism between diseases has long occupied the attention of physicians and that apparent clinically between cancer and tuberculosis has, as is well known, been the subject of a great deal of discussion in the past. The literature on the subject is voluminous, but as the object of this article is to bring to notice certain particular features only it has seemed unnecessary to go into a prolonged discussion of the reasons which finally led the majority of medical men to conclude that this supposed antagonism was apparent rather than real. Suffice it to say that exhaustive and critical autopsy findings finally brought this about, and in fact led some authors to assert that not only was there no antagonism between these diseases, but that tuberculosis in some cases played a definite causative role in the subsequent development of cancer, this being especially true of so-called skin cancer.

That this supposed antagonism is apparent rather than real is probably true as regards tuberculosis in general, but to the writer it has appeared questionable as regards active tuberculosis, and one of the objects of this article is to present the reasons which have led him to adopt this attitude at variance with the trend of opinion of to-day.

When one considers the widespread dissemination of tuberculosis, so widespread, in fact, that it has been stated that practically no individual who has reached the age of 40 years has escaped it, it is evident that autopsy records leading to a verification of the question of the antagonism between these two diseases could reach but one conclusion, especially when one considers the additional fact that cancer may be said to be rare under 40.

Modern physicians and surgeons, being well aware that pathology is to medicine the court of last resort, have naturally accepted their exhaustive and accurate autopsy findings as conclusive and as deciding in the negative the question of antagonism between these two diseases. As showing, however, how firmly rooted the idea has become it is only necessary to state that since the question has been generally accepted as settled, some exponent of the positive side has occasionally arisen, only to be downed by the weight of evidence as presented by an exponent of the negative. Among those in comparatively recent years holding the positive view is G. W. McCaskey, who in an article published in the *American Journal of the Medical Sciences*, July, 1902, stated that he found cancer present in 1.4 per cent. of cases of active tuberculosis, and noted in addition that there had been a retrogression of the cancer after the injection of tuberculin, the use of which he suggested in his article. In spite of all this, however, almost any physician or surgeon of large experience, if asked whether he has ever seen active tuberculosis and cancer combined, will reply either in the negative or that he has seen such a combination very infrequently.

Such being the case, the question arises how can these divergent opinions be reconciled? The writer believes this possible and suggests the following explanation: Pathologists in making complete and careful autopsies would naturally find evidences of tuberculosis which to the physician would be unknown. These tuberculous lesions, although properly classified as such in autopsy reports, are clinically unrecognizable, and as a consequence it is only the active tuberculous lesion which is likely to come to the notice of the examining physician or surgeon. Their conclusions, therefore, as to the supposed antagonism between these two diseases would be largely confined to such cases as presented both diseases in a more or less active state at the same time, whereas the pathologist at the autopsy table must draw his conclusions from the actual anatomic findings. To the writer, consequently, it would seem that an actual antagonism exists between active tuberculosis and cancer, and he offers the following in support of his belief:

Tuberculosis has a tendency to produce a lymphocytosis, and as Murphy and Morton of the Rockefeller Institute have shown in an article published in the *Journal of Experimental Medicine* for August, 1915, lymphoid activity is an essential factor in the immunity process of artificially engrafted cancer, it would seem that those cases of tuberculosis which brought about a condition of lymphoid activity would exert an inhibitory influence on cancer.

Accepting these deductions as facts, the question arises, of what use can they be made clinically? It would seem to the writer that tuberculin which, according to some authors, certainly stimulates lymphoid activity, would meet the requirements. Theoretically, a preparation derived from a case or group of cases of proven lymphoid activity would seem preferable.

Furthermore, although lymphoid activity, as Murphy and Morton have shown, may be a necessary factor in the process of cancer immunity, it is by no means certain that it is the only one, or even the most essential one, and it is possible that tuberculosis may exert other and unknown inhibiting influences on cancer. Should this be true a proper preparation of tuberculin might in all likelihood have the same effect.

There are other and weighty advantages in the use of tuberculin for this disease, should it prove of use at all, and these are (1) its harmlessness properly given, and (2) that it would be applicable to practically all cases of cancer in view of the usual incidence of this disease after the age of 40 and the fact, as before stated, that almost every individual who has reached this age has had tuberculosis, and consequently, in some degree, would be sensitive to the action of tuberculin.

Following out the foregoing trains of thought, the writer has put them to the practical test. He has personally administered tuberculin to two patients suffering from cancer, and through the kindness of his friend, Dr. Hugh H. Young, head of the Department of Urology at the Johns Hopkins Hospital, it has been administered under the supervision of Dr. Norman B. Keith to three patients at the James Buchanan Brady clinic. A sixth case was at the writer's suggestion similarly treated by his friend, Dr. William A. Fisher, at the Union Protestant Infirmary, and a seventh by Dr. Charles W. Larned of this city.

The method of practical procedure varied somewhat as to type of tuberculin, dosage, frequency of administration. Careful differential counts of the

blood, however, both before and after administration of the vaccine, were made in all cases except in the last case, and these counts served as a practical guide.

A few remarks about this case, in which it was impossible to get differential blood counts, would seem proper. Miss X. Inoperable cancer of the esophagus. According to Dr. Larned the improvement in this patient's general condition was so noticeable following the use of tuberculin that members of the family remarked on it and asked what was being used to bring about this change. Her condition after three months or more of tuberculin therapy still continues improved. The treatment is being continued.

The work is as yet in a most unfinished state and naturally few, if any, correct conclusions can be drawn from so few cases, particularly in view of the fact that these cases were all inoperable and presented conditions anything but ideal for putting the foregoing ideas to the practical test. It is interesting, however, to note that of the six cases in which careful blood tests were made, four showed a change in the lymphocyte count following the administration of tuberculin, and from a clinical standpoint two, at least, of the seven showed an entirely unexpected improvement.

This being only a preliminary report, naturally but few cases have so far been tested. It would appear, however, that the results in these few cases would justify the statement that, given the proper preparation, dosage, etc., tuberculin will bring about a lymphocytosis in practically all cases.

There are several additional questions in connection with this subject which it would seem proper to present now. First: The statement has been made that cancer is occurring now at an earlier age than formerly, and that this is true even though one takes into consideration the greater diagnostic skill of the present-day medical man. Granted the truth of this, to what is it due? Is it due to the widespread crusade against tuberculosis and the consequent diminution in the comparative number of cases of what was formerly called consumption? Has the partial elimination of this phase of the tuberculous infection taken away to some extent one of nature's bulwarks, the lymphocyte, and rendered the individual more liable to cancer at an earlier age?

Furthermore, if it be true that cancer does develop now at an earlier age than formerly, would not this fact negative the following criticism which might be leveled against the foregoing ideas, namely, that active tuberculosis and cancer are rarely combined for the reason that the sufferer from active tuberculosis usually dies before reaching the so-called cancer age.

Second: Of what use, if any, would tuberculin be in those inoperable cases treated by radium and allied substances? So far as the writes knows, actual proof of the effect of radium on the blood is not available, but in two at least of the cases which have been cited the lymphocyte count was low. In one of these cases there was a dictinct drop in the lymphocyte count immediately following the first radium treatment, and on this account the low lymphocyte count in the other case was considered to have been the result of several radium treatments given some time previously.

Naturally, no positive conclusions can be drawn from two cases, but these facts, taken in conjunction with the statement made by Murphy and Morton that the *x*-ray exerts a markedly deleterious influence on lymphoid activity, would seem to indicate that the same was probably true of radium. Such being the case, the use of tuberculin to stimulate lymphoid activity during the course of radium treatment would seem indicated.

Third: Granted the use of tuberculin to be indicated in cancer, what form of tuberculin shall be used? Human or bovine? From the fact that bovine tuberculosis usually affects the glands and cancer is primarily disseminated by the lymphatics, would not the bovine appear to be the preparation of choice?

Would it not be possible to solve this question for each individual case by the use of the von Pirquet skin test, with vaccines obtained from both human and bovine bacilli? The preliminary dose to be given each case might also be estimated by the adoption of this method if one used two or more dilutions of each preparation and noted the resulting reactions.

It has been stated that von Pirquet's skin reaction produces a local lymphocytosis, which fact could likewise be made use of in the adoption of this method as a preliminary step in tuberculin therapy, especially in the case of superficial cancer.

It should not be understood that in presenting this article the writer makes any claim for it other than that above stated, namely, that, granted the necessity for lymphoid activity in the production of cancer immunity, any harmless substance which will bring this about would seem theoretically to be of use, and furthermore, it would appear that until the cause of cancer is discovered, any harmless procedure which has a certain amount of backing as the result of both clinical and experimental experience might have its possibilities for good if used in conjunction with surgery and in the inoperable cases with radium and allied substances.

The stimulation of further interest in the principles underlying the supposed antagonism between these two diseases, as well as others, would seem a result well worth the effort, even though the method advocated in the foregoing should prove of no value.

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ANAPHYLAXIS TO MERCURY—WITH REPORT OF A CASE.

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During ten years' experience in the treatment of syphilis with mercury, none of my patients have shown the unusual phenomena which occurred in the case about to be reported.

My usual experience with the intramuscular injections of mercury for syphilis is that at the outset of the treatment the most marked reactions occur, but that after the patient has had a number of injections, about a dozen, these reactionary symptoms gradually diminish in intensity and number and finally disappear entirely. By reactionary symptoms I mean rise of temperature, pulse acceleration, increased headache, backache, and bone pains, occasionally restlessness, even delirium, etc., and do not refer to the ordinary symptoms of mercurialism, to wit, salivation, spongy gums, metallic odor, abdominal pain, gastroenteritis, etc.

The reactionary symptoms present after mercurial intramuscular injections, I have usually ascribed to two causes. First, to the presence in the patient's blood stream of myriads of dead spirochetes and their endotoxins; second, the presence in the patient's body of a foreign chemical, namely mercury.

If this drug (Hg) is continued over a very long period of time, then not only are there no reactionary symptoms, but a great number of patients fail to respond to the drug. That is, syphilitic manifestations which formerly cleared up readily with mercury fail to do so. In other words, for the time being the patient has developed mercury-fast spirochetes similar to the arsenic-fast organisms, as described by Ehrlich.

Under these circumstances it is advisable to discontinue the mercury for a time and administer arsenic in the form of salvarsan or neosalvarsan. This arsenical preparation will kill off many spirochetes that the mercury no longer could affect. It is probable that those remaining that are not killed by this new drug are so damaged and changed in their chemical affinity that on the readministration of mercury the original resistant strain of spirochete will then respond to mercurial treatment, with the result that syphilitic manifestations will again be dissipated.

In starting the patient with mercurial medication, it is advisable to commence with the minimum dose, increasing the same at each injection until the patient develops signs of mercurialism, then continue the treatment with a slightly smaller dose. This dose, of course, varies with different patients, depending on the weight, sex, age, and general robustness. The lower the weight the less dosage, unless the individual has a special idiosyncrasy to this drug, in which case one should give less than the average minimum dose. One usually gives a smaller dose to females, to the aged, and to the alcoholic. If an alcoholic is given a large dose at the outset of his treatment, it may put him into such a state of shock that he may develop delirium tremens. However, if in the alcoholic it becomes necessary to give a large dose of mercury, it is advisable to put him to bed and have him watched by a trained attendent for 24 to 48 hours. This may be necessary only for the first two or three injections. In addition this type of case should receive large doses of bromides.

The dose of salicylate of mercury is one-half to three grains given every fourth to seventh day. The details as to dosage for different patients have been gone into in order to bring out the marked exception in the case here reported. The following is the history of this unusual case:

H. R., age 27 years, single, male, commenced to have intercourse at 16 years, since which time has had intercourse weekly. Denies ever having had either gonorrhea or a chancre..

About one and one-half years ago he noticed a scaly eruption on his testicles and on right palm. This has persisted ever since. In addition he says that he feels "down and out." He tires very easily. Complains of anorexia. Has no bone pains or headache. At present the chief complaint is the palmar and testicular eruption and a feeling of general weakness.

Examination (Sept. 15, 1913) shows a papulosquamous circinate lesion in the center of the right palm, also a number of similar lesions on the scrotum, a few mucous patches on the lateral edge of the tongue, also one on the lower lip and scattered erythematous areas on the soles of both feet. No glandular involvement present. The diagnosis of secondary syphilis was made. Blood was drawn for a Wassermann test, and treatment was withheld until next visit.

Sept. 29. Wassermann of the blood was strongly positive. Some new papulosquamous lesions appeared on the penis. The patient received on this date salicyate of mercury, 4/5 grain, intramuscularly, with ung. hg. ammoniatum 5 per cent. to be rubbed into palms and scrotum.

Oct. 6. The patient feels stronger and much better generally; is not so easily fatigued. Lesions on the scrotum somewhat improved. Received salicylate of mercury, 1 1/5 grains, intramuscularly. Still continued the use of the white precipitate.

Oct. 20.—Says that for the past week the eruption on his testicles has disappeared. Feels stronger and more like working. Missed his treatment last week because he was too busy to call at the office. Is continuing the use of the white precipitate ointment. Received salicylate of mercury, one grain this day.

Oct. 27. A few new lesions have appeared on the penis and testicles. Complains of pain in the right ankle. On this date received 1½ grains of salicylate of mercury, intramuscularly, in addition to white precipitate ointment.

Nov. 5.—General feeling of well being. Salicylate of mercury, 1½ grains intramuscularly.

Nov. 10. Feels stronger than ever. The lesion on his lower lip is still present but improved. Injection given of 1½ grains salicylate of mercury.

Nov. 7. Some improvement in the lesions on the soles of the feet. The tongue and lower lip show additional improvement. Injection of 1¾ grains salicylate of mercury.

Nov. 24. Within an hour of his last injection he developed cold sweats and felt generally tired. This continued the entire night. The next day and during the entire week he felt all right. Received injection of 1 grain salicylate of mercury this day.

Nov. 24, Dec. 1, 8, 15, 22, 29. Received 1 grain salicylate of mercury each of these days without any reaction following.

On Jan. 5 and 16, 1914, he received 1½ grains each day, no reaction following.

Jan. 19. Received neosalvarsan 0.3 gram intravenously. Felt a little drowsy for one hour after the administration, otherwise there were no reactionary symptoms.

Jan. 26. Reports that no reaction occurred after reaching home. Gained 2 pounds during the week. All the lesions on the tongue, lips, and foot have disappeared. Feels very well.

Jan. 26, Feb. 2 and 9, 1914, he received an injection on each date of 1½ grains salicylate of mercury without any reaction following.

Before going into further details as to the subsequent history of this case, it would be advisable to give a summary of the salient features of the action of mercury up to this point. At the very first treatment, this patient received four-fifths of a grain intramuscularly and in addition mercury in the form of ammoniated mercury ointment, 5 per cent., the latter rubbed into the palms and scrotum twice a day. Yet no reaction followed. From that time on received weekly injections, varying from 1 to 1¾ grains. In spite of this dosage, he had but one reaction, and that was after a dose of 1¾ grains. In many instances he received weekly injections of 1½ grains, for three successive weeks, without any reactionary symptoms. I will now continue with the further progress of this case and we shall see what a marked change took place in the patient's tolerance for this drug. He stopped treatment for a period of eight months because he was obliged to leave town.

Oct. 6, 1914. The patient has returned because of recurrence of all of his symptoms, having had no treatment from Feb. 9 to Oct. 6, 1914, a period of about 8 months. Received a salicylate of mercury injection, 3/5 grain, this day.

Oct. 14. Had a well-marked reaction after the previous injection, manifesting itself by extreme degree of tiredness and weakness. This lasted 24 hours, after which he felt stronger than he did prior to his injection. Received an injection of 1½ grains this evening. Had a marked reaction within one hour after this injection. Manifested by cold sweats, vomiting, diarrhea, terrific headache, marked prostration, and

weakness. In fact, his symptoms were so severe that his family thought he would die. I saw him about 5 hours after his injection, and found him in a condition of extreme shock, with general pallor and a weak and rapid pulse. He remained in bed 24 hours. After which time he felt considerably improved, except that he complained of headache and dizziness, which persisted for an additional 24 hours. He was able to return to work on the third day.

Oct. 26. Because of the above-mentioned symptoms I reduced his injection to 1 grain on this date. In spite of this reduction, and in spite of the fact that he had received no injection for a period of twelve days, instead of his usual weekly injection, he again had severe symptoms, manifesting themselves within a few hours by frequent vomiting and a very severe headache.

Nov. 11. Because of previous symptoms from one grain dosage, I reduced his injection on this date to three-quarters of a grain. Within four hours he developed severe occipital headache, with constant "hammering in the head." He was unable to sleep all night. A dull headache continued all the week, in spite of the fact that there was a marked improvement in his specific lesions.

Nov. 18. For experimental purposes I again gave him three-quarters of a grain of salicylate of mercury. He again developed severe headache within three hours, but immediately took bromides and slept all night. Had no reactionary symptoms during the rest of the week.

Nov. 25. Since he complained comparatively little of his last injection, I thought I would try and see what symptoms would occur if I should slightly increase the dose. This day I gave him four-fifths of a grain instead of three-quarters.

Dec. 7. The patient returned to the office and reported that within four hours after the last injection he again developed so severe a headache that he was obliged to remain in bed. The pain this time not relieved by bromides, in fact, it continued without cessation for 36 hours. He also suffered with abdominal cramps, but no diarrhea. The note on my index card for this date was "This patient apparently has become most susceptible to mercury, and I am accordingly obliged to diminish his dose to one-half a grain." This I accordingly did.

During this entire period, from Oct. 6 to Dec. 7, 1914, while he was having such a hard time with his reactionary symptoms from mercury, he nevertheless showed a very remarkable diminution in his manifestations of syphilis.

Dec. 14. Reported that there was no reaction after the last injection of half a grain of salicylate of mercury. The patient's lesions have all disappeared. He again received but half a grain of the drug on this date.

Jan. 2 and Jan. 8, 1915. He developed no reaction from the previous half grain injections. So thereafter I decided to keep him on that dose, which he has been able to stand without any symptoms following.

Summary.—In studying this case carefully one sees that at the outset the patient was well able to take between one and one and one-half grains of salicylate of mercury without any symptoms. Not until one and three-quarters grains were given were there any signs of reaction. In other words, during the entire first period of treatment, that is from September 15, 1913, to February 9, 1914, the patient had absolutely no reactionary symptoms with a dosage varying from one grain to one and one-half grains.

Then came the second or middle period, a period of about eight months, during which the patient had no treatment. It was during this rest from treatment that the patient had a change to develop anaphylaxis. The pathologists have proved that certain foreign material injected into the body can, as a rule, be gradually increased in dosage up to a certain point and the animal or patient can remain at that dosage almost indefinitely; but cease the treatment (injection) for a period beyond three weeks and then recommence the injection and one will find that the body has developed hypersensitiveness to this foreign material. In the human body this may show itself by marked symptoms of anaphylactic shock, occasionally even death. In the lower animals with less resistance death is not at all infrequent.

After the eight-month period of rest, the patient returned for treatment. Immediately upon receiving his treatment he developed symptoms of hypersensitiveness to mercury. On his return I started him on three-fifths of a grain; this was followed by a marked reaction. I increased the drug at the following visit to one and one-half grains, and the patient went into extreme shock, although, as previously mentioned, the patient took this dosage eight months before without any symptoms following. I then cut down the dose to one grain and he still showed marked symptoms. I then diminished the dose to three-quarters of a grain, and within four hours the same manifestations occurred. I repeated the three-quarter of a grain dosage at the next visit with an identical result, showing beyond any doubt that this patient's tolerance for mercury had diminished more than 50 per cent. within eight months. Finally, seeing that even three-quarters of a grain could not be tolerated, I was obliged to cut down to half a grain, which was the only dosage he could take without a reaction.

Conclusions.—1. This case is reported because it is the only one I have ever had in which after a period of cessation of mercurial treatment an intolerance to the drug developed.

2. In spite of his intolerance to mercury he responded in a remarkable manner to the treatment.

3. My usual experience is that after a time the patient's tolerance for mercury is increased, while his response to treatment is diminished.

4. I do not know of a similar case reported in the literature, but in view of the fact that anaphylaxis to mercury may occur after the cessation and recommencement of treatment it behooves one to recommence with small doses, even if the patient has previously taken large doses without any reactions.

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INDUCED PARANOIAC CONDITIONS.

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In reviewing the various paranoiac conditions that frequently come to our attention, that type which might be called Induced Paranoia, that is, paranoid ideas induced by environment, seems to be of particular interest from the fact that it is being separated more carefully and the chances for recovery are much more favorable than were previously thought to be.

Formerly such cases were usually brought together under the general grouping of Dementia Præcox and the prognosis was rated as decidedly unfavorable, but the adoption of some of the later theories regarding the causation of these conditions has led us to look at these cases in a somewhat different manner and to be more optimistic as to their outlook for recovery.

Real paranoia is a form of psychopathic personality, and is a product of necessity arising from the irritations of life, and during the life of the individual these conflict with the other elements of their existence. These people are not in accord with their environment or fellow beings and are continually meeting with difficulties in maintaining their ideas. There is little or no effort on their part to adjust themselves to their surroundings, but there

is often a great tendency to bring other people to accommodate themselves to their views and opinions, and meeting the proper individual this effort is not difficult. An occasional example is seen in the originators of certain religious movements. The true paranoiacs are the incentives; they come in contact with persons of psychopathic natures, force their opinions on them, and are accepted by them as facts, thus bringing them into the fold of the type termed "induced paranoia." The originators are usually strong and active, while the induced are weak and hysterically inclined.

These patients, so long as the stimulus is present, retain these abnormal ideas, and their life and actions are practically under the control of the originator; but remove the stimulus or the originator and those induced can discard the ideas either to accept new ones or not, although during the activity of these induced ideas they are entirely irresponsible for their acts and frequently commit crimes, even murder as a religious sacrifice. These patients often need only such an impetus to make them start to misinterpret things and to carry them out according to their own ideas or the ideas of the originator. If these persons are placed under favorable environment, free from conflicting stimuli, and are given a little assistance along the proper channels they frequently discard the ideas and return to their usual or normal condition.

The following case was one of particular interest:

Family History.—The father was of temperate habits; had been active in church work at one time, but for the past fifteen years took no special interest in religious matters. The mother showed no unusual mental or religious tendencies. No history of any mental diseases elicited.

Personal History.—Was the sixth child in a family of seven; attended school during the winter months from six to fourteen years; learned poorly and had to study hard to gain what the other pupils acquired easily; he often cheated and copied from others. Never received any serious injuries. Had hay fever at intervals since sixteen years of age; used alcoholics and on several occasions to excess. Married at the age of twenty-eight years; domestic life was happy. Worked as a farmer until eight years before his admission, when he began working in the cement mills, gradually advancing to the position of master mechanic and earning about $125.00 per month. Was confirmed in church at the age of sixteen and at twenty-four years was a teacher in the Sunday School and took a very active interest in church work. Later he became less attentive and attended irregularly. Was always inclined to go to extremes in everything.

At the time of his trouble he was about thirty-five years of age and was admitted to the State Hospital at Norristown, June 5, 1908, from a county prison, where he had been held on the charge of murder of his niece.

The records state that in January, 1908, he was out with some friends when one of them mentioned that a common friend had been converted and had "changed greatly for the good." After thinking about it he became dissatisfied with his own spiritual condition, sought out the converted one, talked it over with him and was advised to read his Bible; this he proceeded to do at every opportunity and to the extent that in March, 1908, he obtained two weeks' leave from his work to continue his reading.

About the middle of February, 1908, he received what he thought was his first sign from God and about March 15, while reading his Bible he looked out of the window and saw the "Angels of Light," which he described as "balls of fire" moving about and passing in various directions; also during the day the evil spirit appeared to him three times and tried to tempt him.

He then interested his wife, as well as his brother-in-law, in these new found ideas and during April they frequently held religious meetings, but without any violent outbreaks. However, during the latter part of April the brother-inlaw, his wife, and child came to spend several days at the patient's home, which time they devoted to religion, and each had frequent visions, in fact, was seemingly trying to out do the others. They dined irregularly, the spirit telling them when to eat, etc. During this time the child played about the room and occasionally brought leaves and other trifles to them. They developed the idea that the child was possessed of a devil and that these offerings were temptations from the devil to attract them from their religion. The child continued to annoy them until finally the patient pushed the child to the floor, holding it by the neck to drive out the devil, and in a short time the child was strangled to death. The impulse came to kill, drive out the devil, and thus send the child to Heaven instead of Hell. The next day, when arrested, the patient was still having visions, but was much quieter generally. In prison he showed little of his former excitement.

The hospital records state that on admission the patient talked readily and was mildly exalted spiritually; was positive that he had done no wrong and maintained this attitude until the latter part of December, 1908, when in conversation he stated he had begun to realize that he had "allowed his ideas to take too deep a hold on him" and that he had gone entirely too far. Where the impulse came to kill came from, he did not know, but was willing to admit that it might have been due to the fact that he was temporarily unbalanced mentally.

From this time on a marked improvement was noticed. He worked about the wards and also took charge of some incubators, being successful in the raising of chickens. In January, 1911, when before the staff, he said that when admitted he felt he could not criticise himself for his actions and that he felt justified in doing what he had done, but that about a year after his admission he began to have some doubt as to his actions being proper, but was not sure and would not admit it for that reason; he was unable to tell what changed his opinion, except that since being here and seeing insanity, he felt he might have been insane.

He was discharged February 1, 1911, into the custody of the sheriff, who returned him to the Courts, and who eventually discharged him. He is now living outside, making a fair living, but is rather erratic.

During this writing it has been noticed in the newspaper that a brother of this patient committed suicide by inhaling gas, while out on bail. He had been arrested on charges of conspiracy to kidnap a four-year-old son of his wife's niece, with whom he had eloped, while his own family were in California. It is probable that there was also an abnormal element in this brother.

Another type of induced paranoiac conditions is found in the Imprisonment Psychosis. This occurs in persons of psychopathic natures who are confined or prevented from leading the lives to which they are accustomed; they find they are unable to accommodate themselves to this state of affairs and finally to recompense themselves, develop a psychosis of degrees varying from depressions to active hallucinations. These conditions usually disappear quite promptly when the person is placed under more favorable circumstances either by removal to a hospital or by allowing them more privileges in the prison.

The following case is a clean-cut example of this type:

In the family history, the father at the age of seventy-two years is an excessive user of alcoholics; the mother has a harelip and is "tongue-tied." No definite history of any mental disease can be found.

The patient, a white male, now about forty-one years of age, attended school from his sixth to eleventh year, but never got along well. Worked in a rolling mill up to his thirtieth year, after which he became a telephone lineman. At the age of twenty-one years had a severe attack of pneumonia and typhoid fever; was confined to bed for twenty-two weeks, following which his mother thought he was not as keen mentally as prior to his illness. At the age of thirty years he married and five children resulted from this union.

One child died during infancy, another of convulsions and a third at the age of one week from a "brain abscess." He used alcoholics and at times to excess. Wassermann reaction of blood positive.

Nine years prior to admission he was arrested for striking an officer while intoxicated and served a sentence of one year. Fourteen months before his admission he was arrested for stealing coal, tried, and sentenced to two years. After serving fourteen months he developed mental symptoms and was committed to this hospital, May 28, 1913.

On admission he was depressed and extremely apprehensive; believed that he was going to die and that he was brought here for that purpose. His attention was held with difficulty; admitted the presence of hallucinations of hearing; stated that frequently he heard the warden at the prison talking about him; that he also heard other voices speaking ill of him; declared that the warden and keepers placed poison in his food and abused him without cause; that they refused to obtain a lawyer for him when he was unjustly convicted of stealing coal; also he thought his wife was untrue to him while he was confined in jail.

Under hospital treatment and routine he showed a progressive improvement both physically and mentally. In five months he made a gain of thirty-four pounds in weight. His hallucinations disappeared, but he was suspicious and retained ideas of poisoning. While he denied these, still he was frequently seen picking his food apart and carefully examining it before eating.

On October 25, 1913, he obtained a key and made his escape from the hospital. On January 2, 1915, he was located and returned. While away from the hospital and leading the life to which he was accustomed he regained his normal mental status and on his return talked well, realized his condition, and said that on his first admission he was "pretty sick" and that "his voices and ideas" were the result of his illness; no hallucinations or delusions could be elicited.

January 13, 1915, he was returned from the hospital to the prison to serve out his unexpired sentence. However, when seen a month or so later in the prison he was again becoming apprehensive and developing mental symptoms. The keepers expressed the fear that they would have to return him to the hospital, for he was "getting off again." However, on advice and by a special effort on their part they were able to tide him over to the completion of his sentence.

Another class of cases very closely allied to this type of psychosis is the Psychosis of the Deaf and one which seems to be becoming more prominent; at any rate we are seeing more of these cases at this time. These people are really isolated or imprisoned to a certain extent from their surroundings and being of a psychopathic makeup, with a sense of embarrassment from their affliction, find satisfaction by making explanations to themselves which they magnify until they have developed a psychosis.

Very frequently there is some pathological condition of the ear present that causes a roaring or buzzing and which these cases are prone to interpret as "voices"; they become suspicious, people talking together are surely discussing them, and they feel that they are always the object of conversations. This usually leads to a depression; they think they are being watched; that derogatory remarks are being made about them until finally in order to escape these torments they attempt violence or self-destruction. The following case is rather typical:

Family History.—The father was shot in the head during the Civil War and died at the age of fifty-one years in an insane asylum. A maternal nephew is now in this hospital suffering from paresis.

Personal History.—Patient is a white male about forty-six years of age; his early life was uneventful; attended school from his sixth to twelfth year and learned well. Was a leather finisher by occupation and worked steadily up to several months before his admission.

At the age of seventeen years had typhoid fever, suffering three relapses, and was confined to bed for four months. During his convalescence he became totally deaf and remained so. Two months prior to his admission he first complained that he heard voices which told him people were trying to "put up a job on him," and that his fellow workmen talked about him; he then attempted suicide by drinking iodine, but prompt treatment frustrated his attempt. Several days later he twice attempted to throw himself before moving trolley cars; was picked up by the police and taken home. The next day on the advice of these voices he attempted suicide by cutting his throat with a razor; he was immediately taken to a general hospital and as soon as he had recovered sufficiently he was committed to this institution.

On admission he was depressed; answered questions slowly; his orientation and memory showed no impairment. He admitted the presence of hallucinations, and these hallucinations and the resulting depression were his chief mental characteristics. These voices threaten, call him vile names, and abuse him no matter whether he is playing cards or working. When they are annoying him more than usual he will complain to the physician; occasionally he can be partly convinced that these "voices" are due to his diseased ear condition. This will seem at times to satisfy him, but again this argument will have no effect against his statement that "they are so real to me." He has been in the hospital since 1912 and shows no definite mental deterioration at this time. His memory is good; is well versed in current events; is a good worker and careful in his habits.

This case is interesting from the fact that the patient is able to be convinced up to a certain point, but is then overwhelmed by his hallucinations and lapses back into his former condition.

If the physical condition of these cases is such that it can be cured or even improved by treatment the mental outlook for the patient is good, but if the hearing is completely destroyed the outlook is bad. Occasionally such a patient might be benefited by analysis or by education to the fact that his ideas are developed as a result of his physical disability.

The above cases have been selected from the records of this hospital as typical of the various phases of induced paranoia. Of course, the symptoms may vary in intensity from a few vague persecutory ideas to an elaborate system of delusions and active hallucinations, but the taking into consideration of the entire history of the case and the underlying causes may help to reduce the number of unfavorable prognoses.

DEVELOPMENT OF LITHOLAPAXY DURING SIXTY-TWO YEARS FROM CIVIALE TO BIGELOW.

By CHARLES AUBREY BUCKLIN, M.A., MD.,

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THE first step in the establishment of this operation was made by Civiale of Paris in 1817, who commenced to experiment on lithotrites during that year. His first publication regarding a successful result with the operation of lithotripsy was in 1824, and it produced a great sensation among the surgeons of the world. The second step regarding this operation was the publication of Civiale's ideas among English surgeons who took kindly to them.

Civiale's publication of his successful case of treatment by crushing the stone in the bladder incited John Weiss, a skilled instrument maker, to invent and manufacture in London during the year 1824 a lithotrite, which for large instruments is, in the author's opinion, superior to the one of Civiale's construction. Thanks to Weiss' instrument, members of the English profession were led

to consider lithotripsy with favor; although French surgeons still consider Civiale's construction the best for light instruments, while recognizing the Weiss-Thompson construction as the best for heavy instruments.

Brodie used the Weiss lithotrite in cases that were reported in "Lectures on Diseases of the Urinary Organs" in 1833, Second Edition, page 318. In the spring of 1825 the spring saw was used in the bladder for the reduction of stones to fragments, but without any decided success.

In 1830 the Weiss screw lithotrite was shown to Heurteloup, who within a few months brought out his instrument, in which a hammer was substituted for the screw of the Weiss instrument. In 1833 Brodie reported in the *London Medical and Surgical Journal* cases in which he had used the Weiss lithotrite successfully. In 1833 the Weiss lithotrite was modified so as to act with the screw or the hammer. In 1834 Fergusson published a description of his lithotrite, which was simply that of Weiss, save that it worked with a rack and pinion instead of a screw and was less efficient from a mechanical point of view.

In 1834, on October 7, Brodie wrote to John Weiss the following: "It must be between nine and ten years since you first showed me a lithotrite that you made for the purpose of crushing calculi in the cavity of the bladder by means of a screw. I have not the slightest doubt but the credit of having contrived a lithotrite for crushing calculi in the bladder by means of a screw belongs to you."

In 1834 Anthony White of the Westminster Hospital stated in a letter to John Weiss that "the first of your lithotrites shown to the surgeons of London was in the year 1824." Thompson became intensely interested in lithotripsy in 1863, and, after inspecting Civiale's, Weiss', and all the lithotrites then in the market, he made certain suggestions regarding what it was necessary for lithotrites to possess in order that they might become popular. Thereafter the Weiss lithotrite was called the Thompson instrument, not because of any original suggestions made by Thompson but because it was considered politic to change the name.

The third step was the invention by Bigelow of litholapaxy at Boston in 1879; his first publication appeared in that year. Two lithotrites purchased at Paris in the spring of 1878 were laid away because the author became disgusted with the lack of success attending lithotripsy in relieving the irritation of the bladder which was due to the fragments of calculi remaining within its cavity. One of these lithotrites was Civiale's and the larger one was Thompson's instrument. They were not brought out again until 1882, when the author commenced to practise the operation of litholapaxy by Bigelow, which he has followed since this last date, usually relieving the patient of every trace of an irritable bladder by one operation.

The evacuating apparatus purchased by the author in 1882 is known as Bigelow's first evacuating apparatus; there are now a second and a third evacuating apparatus by this author for evacuating the fragments of crushed stone from the bladder, also several unimportant imitations of Bigelow's instruments, all of which the author has seen used in the hands of other men. The first instrument of Bigelow's is the most perfect instrument ever devised for removing the crushed fragments of stone from the bladder. There are not any breaks in this bag which exhausts this instrument except-ing at the two extremes, where there is little or no motion produced by closing the bag. In this instrument it is much easier to produce a bag that will not continually leak than in any of the newer forms of this instrument. There is not a cock or valve attached to the apparatus, as there is in some of the newer forms of evacuating instruments. Its extreme simplicity is its merit. The separation of the fragments of stone from the bladder is more rapidly accomplished by the first instrument recommended by Bigelow than by any other differently constructed instrument.

The special advantage of the first instrument of Bigelow's is a lengthy piece of tubing which connects the bag with the proximal end of the urethral tube, which enables the operator to appropriate the fullest effects of gravitation in separating the fragments of stone from the urine or fluid in the bladder by lowering the bag to the lowest possible position while the instrument is being used for the above purposes. It certainly has advantages over all other forms of evacuators in this separation act.

Browne of London, in his eulogy of the late Clover published in the *Lancet* on May 12, 1866, attempts to place his name first regarding the aspiration of foreign pieces of calculi from the bladder. Dr. Flemming of Dublin published in the *Dublin Journal of Medical Science* in February, 1866, a device similar to Clover's for evacuating fragments from the bladder after lithotripsy, the only difference being that in Clover's instrument the catheter projected into the cylinder that was intended to collect the fragments, which Clover claimed was the only difference between his satisfactory instrument and Flemming's unsatisfactory instrument. It will be observed that in both of these instruments there was an uninterrupted wash through the receiving chamber every time that the pumping bag was squeezed, and that neither of these instruments could have been satisfactory for the purpose it was intended to fill.

The perfection of the operation of litholapaxy was published by Bigelow of Boston in his methods of operation. His work is now known all over the world and is generally appreciated. His first instrument was perfect, as is confirmed through the removal, by a man of Browne's experience, of the valves within his evacuators, and thus reducing them to the simple first instrument of Bigelow.

The mechanical instincts of every practitioner of surgery should condemn Clover's apparatus as not being of any practical value in removing the fragments of stone from the bladder after a crushing operation. Thompson used Clover's device long before the apparatus of Bigelow was published, and abandoned it; suffice it to say that he never abandoned Bigelow's device.

After the two lithotrites described in this paper Bigelow's device is necessary to complete the operation.

It may be interesting to compare the operation as performed with Bigelow's device with Civiale's and Thompson's attempts to rid the suffering patients of the annoying bladder irritations occasioned by the presence of fragments of stones within this organ.

It is a common experience to see the patient entirely relieved of his irritable bladder by a single operation of litholapaxy, a result never obtained from the operation lithotripsy in the practice of Civiale or Thompson.

One-fifth of a grain of morphine is given to the

patient every twelve hours for the first four days after the operation, and this is followed by a tablespoonful of heavy magnesia at the close of the fifth day. No unpleasant symptoms accompany this operation if the above instructions are strictly followed.

Stricture of the male urethra is a frequent complication which has to be obviated before the patient submits to an operation for stone in the bladder by litholapaxy.

The male urethra should always be examined for determining the normal caliber of this canal. The Otis or Kollmann urethrometer has invariably been used by the author for the above purpose. The distended portions of these instruments should always be covered by a rubber cap for the purpose of preventing the mucous membrane of the urethra from falling between the distended springs of the instrument. Both the instrument and the cap should be sterilized every time before being used. Should a stricture be encountered, the author's portable quadruple-action crutch for exposing the perineum should be used and the strictured portions divided by external urethrotomy (MEDICAL RECORD, January 4, 1913), so that a tube of the normal caliber of the urethra may be readily introduced after the meatus has been properly stretched to receive this urethral tube.

The unscrewing of a lithotrite the bill of which has been hooked into the meatus is the handiest way of stretching the meatus to receive this properly sized urethral tube for performing litholapaxy. When the crutch is used while treating a stricture of the urethra it is desirable that it be retained in position during treatment for the stone.

23 MANSION HOUSE ROAD.

ANOMALOUS CASES OF MASTOIDITIS.

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THE difficulties that beset the surgeon in a mastoid operation depend a great deal on the anatomical configuration of the mastoid process and the relationship of the structures in intimate contact with it. In the average temporal bone the mastoid process is cellular in character, of pneumatic, diploic, or mixed type, and the position of the sigmoid sinus and of the floor of the middle fossa to the mastoid process is more or less definite.

The following cases of mastoiditis show anomalies in the anatomical structure of the bone, abnormality in the position of the sigmoid sinus and an atypical character of osseous involvement.

CASE I.—H. W., age 21 years, was admitted to Peoples Hospital March 29, 1916. Patient complained of a continuous discharge from the left ear for last six months following a severe attack of influenza. For a few weeks previous to admission, the discharge was more profuse, and he had severe pains on the left side of the head. Physical examination showed abundant pus in the external canal, and a large perforation in the anterior inferior quadrant with prolapse of the posterior canal wall. The functional test revealed diminished hearing for voice and whisper in the left ear, the other ear being occluded by the Barany noise apparatus. Marked tenderness over the antrum was elicited on pressure. Diagnosis: Subacute purulent otitis media with complicating mastoiditis.

A simple mastoid operation was performed, with curettage of the Eustachian tube through the perforation in the drum membrane. On removing the cortical layers of bone the sinus was found to lie well forward and superficial, the knee impinging on the supromeatal triangle area, and coming in contact with the posterior canal wall. In fact, the sinus completely filled the mastoid process. This position of the sinus rendered the exposure of the antrum difficult and tedious. No other mastoid cells were found. The necrosis had involved the tegmen antri with exposure of the dura, which was found covered with granulations.

The point of interest in this case was the extreme forward position of the sigmoid sinus, with the rudimentary development of the mastoid, and the absence of all cellular structure. The mastoid process was of the kind commonly seen in infants.

CASE II.—E. H., age 20, gave a history of a persistent discharge from the left ear, with deficient hearing for the past five years. At the time of admission to the hospital, January 23, 1916, an otoscopic examination showed a chronic purulent otitis media, associated with all the symptoms of an acute mastoiditis. The lower half of the drum was gone, the discharge was profuse, and there was marked tenderness especially over the upper part of the mastoid.

On account of the long and narrow condition of the process, with the possibility of a forward sinus, chiseling was begun from the suprameatal spine downward, along the anterior border and continued in a groove until the antrum was reached. Further curettement revealed the sinus well forward and the middle fossa plate unusually low; in fact, it was considerably below the linea temporalis. No necrosis was found anywhere except in the zygomatic region, where the cells were completely broken down. The bridge between the tympanum and antrum was removed and the posterior canal wall lowered on a level with the external semicircular canal. The incus and malleus were found intact and were left in. The attic was cleaned out, and the Eustachian tube curetted through the posterior opening. The retroauricular incision was sewed up almost completely, a small opening being left at the lower end for packing and drainage.

The interesting points in this case were the localization of the infection to the zygomatic cells, the rest of the process being free from inflammatory changes, and the unusually low position of the dura which called for exceptional care to avoid injuring it.

CASE III.—J. W., 21 years old, was admitted to Peoples Hospital December 10, 1915, with a history of a discharging left ear for the last three months. Examination showed a subacute exudative otitis media associated with a purulent condition of the mastoid cells. A mastoid operation was performed. A perpendicular incision was made through the soft tissues down to the bone and the flaps retracted. Directly underneath the periosteum the bony wall of the sigmoid sinus came to view. This extreme superficial position of the sinus rendered it liable to injury if a secondary horizontal incision would have been made. An anatomical anomaly of this kind contributes greatly to the accidents of mastoid surgery. The cells were found filled with detritus and granulations, necessitating a thorough exenteration. Healing was uneventful and rapid.

CASE IV.—P. G., age 70. Operated upon October 29, 1915.

This case was fully reported in a previous publication, the case history showing a chronic purulent otitis media with a latent suppurative labyrinthitis and a complicating mastoiditis. It is mentioned in the present instance as illustrating the extreme development of cells in the temporal bone. The cells were widely distributed, surrounding the sigmoid sinus and extending far back into the occipital bone, high above the linea temporalis into the squamous portion, deep down around the pyramid of the petrous portion, and showing marked development at the zygomatic region extending upward and forward as far as the apex of the glenoid fossa.

This case together with the one with the rudimentary mastoid shows the two extremes in the cellular development of the adult temporal bone. Com-

plete removal of all the cellular structure exposed a very extensive area.

Case V.—M. S., 40 years old, was admitted to my service at the Peoples Hospital May 26, 1916, with the history of a discharging ear for the past three weeks. Careful inquiry failed to show any previous ear trouble. Examination gave all the signs of an acute purulent otitis media and mastoiditis. The mastoid process was exceptional large size, broad and flat. Tenderness elicited only over the emissary vein. The main subjective symptom was a severe headache, especially at night.

On operating, the mastoid process was found dense and compact, showing complete sclerosis such as often occurs in a chronic purulent otitis with involvement of the mastoid cells. In this case, previous aural infection was ruled out by the history. With the exception of the antrum there was complete absence of cellular tissue, the mastoid space being occupied by massive bone. The sigmoid sinus was situated deep, and far back from the external meatus. On exposing the antrum a slight trace of muco-pus was found, but elsewhere there was no visible inflammatory involvement. The region at the posterior root of the zygoma, and the tip, also the space around the knee of the sinus, were cleaned out and searched for necrosis, without any trace being found. It was finally decided to close the wound, when on further curettement free pus oozed out from the space between the upper surface of the bend of the sigmoid sinus and the floor of the middle fossa. This area was now thoroughly cleaned out, leading to a denuded dura and sinus, the two surfaces almost coming in contact. A smear of the pus on examination showed the pneumococcus.

The points of value in this case were the compact character of the interior of the mastoid process, in an acute otitis media, with the absence of any cellular structure, also the localized point of degeneration, far removed from the source of infection. Except for the completeness of the operation, this localized area would have been overlooked and might have caused serious consequences.

The anomalous conditions enumerated in the above cases show the necessity of preparation and care in mastoid surgery. The examination of the mastoid process as to its shape and size will often give an indication of the location of the sigmoid sinus.

Skiagraphy offers valuable information as to the site of the sinus and of the floor of the middle fossa and may locate deep and hidden points of infection.

The case of P. M. shows the necessity of the complete operation in mastoiditis and every otologist is acquainted with numerous instances where exenteration of apparently normal cells led to and revealed unsuspected areas of necrosis.

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A CASE OF GASTRIC ULCER.

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The following case is one of a very common disease, but with a number of unusual and most instructive features:

Mrs. J. R., æt., 47, consulted me in March, 1914, complaining of epigastric pain running around the abdomen to the back, heartburn, and constipation. She was afraid to eat. The symptoms used to come on two hours after meals, but of late have appeared at various times and were relieved only partially by alkalies. Her symptoms had started fifteen years before. Twelve years before she had two profuse hemorrhages and was treated for ulcer, remaining in bed some weeks.

Abdominal examination showed the stomach to be hypertonic. There was slight general tenderness with a point of greater tenderness localized midway between the naval and gall-bladder region. Examination of the stomach contents showed free HCl 60, and a total acidity of 74. There was faint occult blood in the stool.

She was put on an ambulatory treatment for several days without improvement. She was then radiographed and a marked spasmodic incisura was seen extending half way across the stomach and opposite a tender spot on the lesser curvature, half the distance from the cardia to the pylorus. Physical examination at this time showed marked tenderness and irritability of the stomach and she was advised to have an operation without delay.

She determined to await advice from her son who was an intern in a Western hospital and just one week later she was seized at four in the afternoon with terrific pains in the abdomen, chills, and fever. I saw her at 10 o'clock the next morning at which time there was great general abdominal tenderness but no rigidity. There was slight fever, a pulse of 90, nausea, but no vomiting. A subacute perforation was suspected. Morphine, gr. ¼, was given and everything stopped by mouth.

At 1 P. M. her condition was about the same except that the pulse had gone to 100. Leucocyte count at this time was 4,400. She was taken to the hospital and Dr. L. H. Reichelderfer saw her with me at 5 P.M. Her temperature on admission was 99.8° and was steadily rising, while her leucocyte count had fallen to 3,200. We decided to watch her carefully and try to hold off operation until the arrival of her son, but at 10 P. M. her condition seemed worse with temperature of 101.8°, pulse of 110, and a white blood count of 2,850 with 73 per cent. polymorphonuclears, so that we were afraid to delay further in spite of the absence of much rigidity.

Operation by Dr. Reichelderfer revealed a mass of fresh adhesions on the lesser curvature about two inches from the pylorus and beneath these a blood red, congested area. The peritoneal covering of the whole stomach was somewhat congested but this spot was fiery in color. Careful palpation showed that there was no thickening to indicate induration and palpation alone would not have located the ulcer. It had progressed partly through the peritoneal coat and there was probably a pin hole perforation, as the gross appearance was such, although the opening could not be found. The ulcer area was turned in and a gastroenterostomy performed. The whole stomach was carefully examined for other ulcers or scars and none were found. The temperature dropped at once to normal and the leucocyte count rose, showing plainly cause and effect. Recovery from the operation was uneventful.

This is one of the most instructive cases of ulcer I have ever had, and I will emphasize several points. There is such a thing as a chronic non-indurated ulcer or a non-indurated surgical ulcer, some writers to the contrary notwithstanding. This same ulcer had undoubtedly existed for fifteen years, as periods of remission were comparatively short during that time and no scars of other ulcers could be found. Such a non-indurated ulcer may progress to hemorrhage (three years) and to perforation (fifteen years).

It is often difficult and at times impossible for the surgeon to find a known ulcer. Touch is usually depended upon. No thickening could be felt in this case and had it not been for the unusual reddening it would not have been possible to have found it.

In view of the foregoing, a medical diagnosis based on signs and symptoms, but not symptoms alone, is of greater value than a surgical diagnosis made at the time of an exploratory incision. Therefore, every patient should have a complete examination and localization of the ulcer before operation, when conditions permit, in order that the surgeon's task may be easier. The ulcer is not always under the tender spot. No ulcer is safe from dangerous complications. There may be trouble in a month or not for many years.

Although perforation often develops without warning it is occasionally possible, as in this case, to determine that the ulcer is in a very irritated condition a week before perforation.

The rising temperature and falling leucocyte count in this case indicated very poor resistance. One of the counts of 4,400, 3,200, and 2,850 was the lowest that I have ever encountered. It was corroborated by several counts. That the low count was directly due to the patient's condition is evidenced by the fact that it arose immediately after operation.

I have maintained several of the views emphasized above for some time and have a number of cases illustrating each, but it has never been my good fortune before to have one patient presenting proof of so many of them.

THE ROCHAMBEAU.

Medicolegal Notes.

Privileged Communication Statute Does Not Apply to Will Contests.—The South Dakota statute, Code Civ. Proc., Sec. 538, declares that a physician or surgeon cannot without the consent of his patient, be examined in any civil action as to any information acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient. Section 12 defines an action as an ordinary proceeding in the court of a justice, by which a party prosecutes another party for the enforcement or protection of a right, the redress or prevention of a wrong, or the punishment of a public offense. The South Dakota Supreme Court holds that, in view of Section 486, excluding testimony as to transactions with deceased persons in both civil actions or proceedings by or against executors, etc., and the limitation in Section 538 to civil action, a will contest is a proceeding and not a civil action, and a physician of the testator may testify as to the latter's incompetency; for the statute making physicians incompetent, being in derogation of the common law, should be strictly construed.—In re Golder's Estate (S. Dak.) 158 N. W. 734.

"Practice of Medicine"—Wisconsin Law.—In proceedings for practising medicine without a license it was contended that the provisions of the Wisconsin statute, Section 1435, Stats. 1913, arbitrarily attempt to define what is to constitute the practice of medicine and surgery, and condemns practices which do not, in substance, constitute the practice of medicine and surgery, and hence deprive persons of rights guaranteed them by the State and Federal Constitutions. The defendant claimed that the provision of the section penalizing all persons who shall append to their names the words or letters, "Doctor, Dr., Specialist, M. D., D. O., or any other title, letters, combination of letters or designation which in any way represents him or her, or may tend to represent him or her, as engaged in the practice of medicine, surgery, or osteopathy in any of its branches, or who shall for a fee or for any compensation of any kind or nature whatsoever prescribe or recommend for like use any drugs or other medical or surgical treatment or osteopathic manipulation, for the cure or relief of any wound, fracture, bodily injury, infirmity or disease," is an arbitrary classification as medical and surgical practitioners of persons who are not necessarily engaged as such practitioners, and thus deprives them of the liberty to do these things, contrary to their constitutional rights. The court said the contention overlooked the fact that the use of the words or titles so appended to a name is denounced by the law whenever they represent, or tend to represent, the person as a practitioner of medicine, surgery, or osteopathy, or if he as such a practitioner does anything by way of treatment or gives a prescription for a fee. All the prohibited acts are limited to persons who in fact do these things as practitioners of medicine, surgery, or osteopathy.—Piper v. State (Wis.), 158 N. W. 319.

Injury as Cause of Typhoid.—In an action for personal injuries by being run down by an automobile, the Wisconsin Supreme Court holds that testimony of a physician that typhoid fever may be caused by polluted water or food, but that in his opinion there was a connection between the plaintiff's injury and his contracting typhoid, is insufficient to warrant a finding that the illness was caused by or had any connection with the injury.—Slack v. Joyce (Wis.) 158 N. W. 310.

X-Ray-Picture Evidence. — The Michigan Supreme Court holds, in an action for personal injuries, that an expert witness will not be allowed to testify as to what an *x*-ray picture showed, in the absence of the picture. The picture is the best and only evidence of what it did or did not reveal, and while it is matter of common knowledge that the correct reading of such a picture is a thing for experts, there can be no proper cross-examination of an expert interpreter in the absence of the thing interpreted.—Jolman v. Alberts (Mich.) 158 N. W. 170.

Practising Without License Not a Joint Offense.—Section 8315 of Missouri Revised Statutes, 1909, makes it an offence to practise medicine without a license, and under Section 8313 the license to practise medicine must be procured by individuals. The Kansas City Court of Appeals holds that the joint participation in an act of treatment constitutes no joint offence, but may constitute one or two offences according to whether one or both of the parties is without a license. The failure to procure a license is necessarily an individual and not a joint matter, so that a conviction of two jointly indicted for practising medicine without a license when the jury fixed the punishment at $50 for both defendants, and the court entered judgment for $5 against each, was reversed.—State vs. Hendricks (Mo.), 187 S. W. 272.

Revocation of Licenses—Advertising Cure of Incurable Diseases.—In a prosecution for revocation of a practitioner's license for wrongful advertising it appeared that the defendant advertised his ability to cure many diseases either wholly incurable or nearly so. The Washington Supreme Court held that to prove the offence of wrongful advertising denounced by the statute moral turpitude need not be shown. But it was also held that it is not merely unethical but immoral to get money from the poor, the simple, or the ignorant by advertising the cure of what is incurable, and the courts will call that incurable which the present stage of knowledge so pronounces. Nor is it incumbent on the State to show whether there was any actual harm done to any one through the defendant. The statute aims to protect the purse as well as the health from quacks, and the other burden, if cast on the board, would, through the many conflicting and contributing influences on the health of patients, make proof exceptionally difficult. — State Board vs. Jordan (Wash.), 158 Pac. 982.

Practising Without License. — The Washington Supreme Court holds that a system of "Suggestive Therapeutics," in which the defendant indulged in prayers, laying his hands on the patient, manipulating the muscles and nerve controls, and claimed cures, is "practising medicine," and the name and method a mere subterfuge to escape the requirement of license.—State vs. Pratt (Wash.), 158 Pac. 981.

Expert Testimony as to Malpractice in Adjustment of Splints.—In a malpractice action it appeared that the injury to the plaintiff, a child, was due to undue pressure caused by adjustment of splints on a broken arm by the defendant not allowing for the usual swelling accompanying such cases. It was held that the question as to whether the omission to properly adjust the splints constituted negligence was one for expert testimony.—Priestley vs. Stafford (Cal.), 158 Pac. 776.

Chiropractors Require Certificates in California.—A person who was a teacher and demonstrator of a chiropractic system in a chropractic school and treated afflicted subjects who sought and received treatment at his hands free of charge was held guilty nevertheless of practising a system and mode of treating the sick and afflicted without possessing a certificate of the California State Board of Medical Examiners.—People vs. Oakley (Cal.), 158 Pac. 505.

Practising Without Certificate—Gratuitous and Emergency Services.—In an action for practising a system of chiropractics without a certificate it is held that the California statute covers such practice whether the service is compensated or gratuitous. Where persons had previously had the attention of physicians, their ailments being more or less chronic, and the defendant's services being sought to some extent as a last resort, and after other practitioners had failed to afford relief, the treatment rendered by him could not be classed as emergency services not prohibited by the medical act.—People vs. Vermillion (Cal.), 158 Pac. 504.

Users of Narcotics as Witnesses. — The habitual use of opium, morphine, cocaine, or other like narcotics, as it tends to impair the mind, destroy the memory, and pervert the moral character of a witness, may be shown for the purpose of affecting his credibility or the weight that should be given to his testimony, but is not ground for the exclusion of his testimony unless it satisfactorily appears that he was under the influence of the drug to such an extent that he was unbalanced when a witness. State vs. Fong Loon, Idaho Supreme Court, 158 Pac. 233.

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CAROTID TUMORS.

THE first exhaustive American paper upon this subject was contributed in 1906 by Keen and Funke (*Journal of the American Medical Association*, 1906, XLVII). By including all cases found by a careful search of the literature, they were able to present reports of 29 cases—27 in the living, and two that had been discovered at autopsy. After this time sporadic case reports appeared in medical journals in various parts of the world so that seven years later, when Callison and MacKenty (*Annals of Surgery*, December, 1913) had occasion to report a case and reviewed the literature, it was found that theirs was the thirty-first case that had been reported since Keen and Funke published their article, thus making a total of sixty. The latest addition to the literature of this subject is contributed by Randolph Winslow (*Annals of Surgery*, September, 1916), who brings the number up to 72 by reporting in detail two cases (one of which was operated upon by himself, the other by his colleague, Dr. A. M. Shipley) and adding brief references to ten other cases, reports of which he had found in the literature since the publication of Callison and MacKenty's article. We may add that the list is still incomplete since we know of at least one case (F. S. Mathews, *Annals of Surgery*, May, 1914, page 752) that is not included in Winslow's references. It is thus seen that more cases have been reported in the last decade than Keen and Funke were able to collate in 1906 from all previous literature. Whether this should be accredited to the greater skill of the present generation of surgeons or to the more general study of pathological specimens in recent years is a question; for certainly there seems to be no good reason why there should be an actual increase in the percentage of individuals having carotid tumors, as the above statistics would seem to indicate.

The carotid body is briefly described by Winslow as a small structure situated at, or just posterior to, the bifurcation of the common carotid artery. It is not a gland in the usual acceptation of the term, but appears to belong to the sympathetic nervous system and to the chromaffin group. It is best developed in early fetal life and gradually disappears in later life. If it remains it is liable to change into a tumor presenting evidences of malignancy. The function of this ganglionic mass is not known. Winslow also says: "That this structure is prone to evil is shown by the ever-increasing number of 'carotid tumors' that are being reported. These cases occur with practically equal frequency in males and females and are found in almost the same ratio in the decades from 20 to 60. A few cases have been reported under 20 years of age and about an equal number above 60. The youngest case reported was 7 and the oldest 74. The type of tumor is usually endothelioma or perithelioma, which is generally benign or but slightly malignant at first, but if not removed tends to become cancerous."

The symptoms seem to be quite indefinite. Winslow finds that generally there are no distinctive subjective symptoms, though there may be alteration of the voice from pressure on the recurrent laryngeal nerve, cough, slight dysphagia, radiating pains, or a sense of discomfort or tenderness. Sometimes there is an irregularity of the pupils from pressure on the cervical sympathetic ganglia. "Usually the patient seeks advice on account of a slow-growing lump in the upper part of the neck, which has either taken on a more rapid growth or has increased gradually to such an extent as to produce deformity and to cause embarrassment." The growth is occasionally rapid, but there is generally a history of a lump that has been present for several years, and when advice is sought it may be as large as a pigeon's egg or a hen's egg. The tumor is single, egg-shaped, and usually unilateral; but at least three cases of bilateral carotid tumor have been reported. The location of the tumor is opposite the thyroid cartilage and may extend upward to the base of the skull or downward toward the clavicle. The tumor is smooth, firm, movable laterally but not vertically, and sometimes there is an upheaval pulsation with bruit and thrill, from its relation to the carotid arteries. The growth is originally encapsulated and does not infiltrate the surrounding tissues until malignancy is well advanced. Sometimes, as in Mathews' case, these growths are extremely vascular.

Positive diagnosis has seldom been made before operation; but Winslow finds that the condition is being recognized more frequently as its clinical features are becoming better known. He made a tentative diagnosis of carotid tumor before operation in the case he reports, though he admits that he was not sure of the diagnosis until the tumor had been exposed and he saw its relation to the carotid artery. Carotid tumor has been most frequently mistaken for a tuberculous lymph-node, aberrant thyroid, carcinoma, or sarcoma of glands. In Winslow's opinion, "a single, slow-growing, firm, smooth, discrete, usually painless oval lump, more or less fixed, situated in the superior carotid triangle opposite the thyroid cartilage and anterior to or under the sternomastoid muscle, should always cause us to suspect a neoplasm of the carotid body."

The treatment is operative; but operation should be undertaken only by the expert since there is danger of wounding the hypoglossal, recurrent laryngeal, or pneumogastric nerves, and since ligation of the common carotid and internal jugular, with its attendant dangers, cerebral and otherwise,

may be necessary. In some cases the growth may be shelled off the vessels, though danger of recurrence is much greater than when the vessels and tumor are removed *en masse*. Keen's statistics showed a mortality of 27 per cent.; but Winslow found that in the entire 59 cases in which the tumor has been reported extirpated there have been 12 deaths, a mortality of about 20 per cent. Since the only hope of removing these growths without ligation of the carotid and without danger of recurrence is in the early period of their development, while they are firmly encapsulated and loosely attached to the vessels, general practitioners as well as surgeons should bear them in mind when consulted by one having a deep, fixed tumor in the carotid region and promptly refer the patient to a surgeon competent to deal with it.

IS LAUDABLE PUS LAUDABLE?

It is not so long ago that we used to speak much of laudable pus, not so long ago in the history of medicine, that is. Those of us who are young in years—we are all young in spirit—remember our professor of surgery saying during one of his first lectures something like this, "Formerly it was not believed that a wound was healing properly unless a quantity of typical creamy pus was present. This was called 'laudable pus,' because it was thought that it was really beneficial. Now we know that for a wound to heal in an ideal manner there should be no pus whatever." As a matter of fact, the old-time doctors were not so far off after all. This kind of pus to which they referred was usually a staphylococcus infection, had little tendency to spread, and showed an active resistance of the tissues to the infective organism. So that while as a purely academic proposition it may be conceded that the ideal wound is a pusless wound, still in actual practice it is sometimes better to let the pus alone.

Of this opinion are Drs. Donaldson, Ament, and Wright, who published a report in the *British Medical Journal* for August 26. These doctors entered upon their military practice firm in the belief that pus has no place in the modern surgeon's scheme of things; experience taught them that in many cases the pus should be left alone, and the patient would get along the better for it. There did not seem to be any delay in healing, the patient's general condition remained good, and his pulse and temperature stayed down. The patients themselves were put in a more cheerful frame of mind by doing away with frequent, painful dressings, and the tissues were allowed to remain in a state of rest, most favorable for healing. There is, to be sure, an esthetic objection in the odor arising from the seldom-dressed septic-case, but this would seem to yield in importance to other considerations.

The writers quote a number of cases illustrating the success of their method, which is, briefly, as follows: The wound is thoroughly opened up, irrigated, then packed with gauze containing saline tablets and covered with a moist dressing. About a week intervenes before redressing. Sometimes symtoms arise which appear alarming, and self-restraint and confidence are necessary. Unless increased swelling, a persistently rising pulse, tenderness, and edema arise, the policy of non-interference should be maintained. Many objections to this method have, of course, been made, say its advocates, but the only one which does not apply equally to the other methods is the one based on smell, and this may be partially invalidated in various ways. Concluding, the writers say that they are aware that a method so diametrically opposed to current practice will meet with harsh criticism, chiefly on theoretical grounds, but they urge, and with a show of reason, that their method is not founded on theory, but on practice, and should be given a thorough practical trial by any sceptics before being discarded.

It is just such methods as these that American physicians can learn with benefit. In the event of war, which recent history has taught us is by no means impossible, we should have large numbers of wounds to attend to, most of them being frankly septic. We should be confronted with the problem of curing these cases as completely and as quickly as possible, and at the same time the procedure which would require the least work on the surgeon's part would be the method of choice, for there is no doubt that such an eventuality would find our profession fearfully overworked.

EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

The subject of early diagnosis of pulmonary consumption is becoming more and more complex. One sanatorium expert regards it as almost fatal to wait for bacteriological and stethoscopic signs and lays stress solely on the pulse, evening fever, cough, and slight wasting, this syndrome often antedating the resources of physical diagnosis. A second expert takes the view that in many so-called incipient cases in which recovery occurs the patients never had tuberculosis, but have become objects of suspicion by sojourn in the sanatoria. There appears to be warrant for almost any extreme of opinion because of lack of standardization of diagnostic criteria. The discovery of bacilli in the sputum is still the only criterion, but since it is of limited prognostic value it must have backing of some sort. At present the Schrön-Much granules are the object of search of the bacteriologist, and if these are absent tuberculosis is regarded in some quarters as practically excluded. A great advance was made in this field when very small quantities of sputum were made to yield positive finds. The chance of finding bacilli varies directly with the amount of sputum available for repeated tests, and with the amount of time at the bacteriologist's disposal. From the latter viewpoint any method which can cut short the time without prejudice to thoroughness should be welcome to the clinician.

In *Il Policlinico* for July 9, Martelli publishes the following method for early recognition of bacilli in the sputum when expectoration is almost absent: 1. Give the patient up to one gram of iodide of potassium daily, with expectorants (senega, ipecac) for two or three days. 2. Collect from 100 to 200 c.c. of sputum and treat it in the usual manner with antiformin in equal parts, leaving it from 2 to 4

hours in the thermostat. 3. Centrifugalize with high velocity, decant, and wash with saline solution, repeating this several times. 4. Make three very thin smears on slides, fix, and color with Giemsa stain in order to reveal ordinary bacteria, cell residues, etc. 5. Stain a slide with Ziehl's carbol-fuchsin with consecutive decoloration with acid and alcohol; another slide may be treated by Much's method, reserving a third one in case of failure of one or the other method, or of a double negative result. This technique may reveal the presence of a few isolated bacilli and of a few clusters of Schrön-Much granules and thus establish a diagnosis of incipient pulmonary tuberculosis. The author has been able to make this diagnosis in cases which clinically were regarded as examples of pretuberculous fever, Addison's disease, febrile anemia, chlorosis, etc.

Precisely the same technique may be used successfully in glandular tuberculosis by substituting borings from the glands for sputum.

Operative Treatment of Chronic Obstructive Jaundice.

There is little doubt that in cases of obstructive jaundice operation is generally if not always called for. Drs. Erdmann and Heyd, writing in the *American Journal of the Medical Sciences* for August, 1916, say that in most circumstances any operative intervention will be in the nature of a palliative procedure to provide drainage for the biliary secretion or excretion. Given an obstruction in the common duct or its terminus, the ampulla of Vater, there is the choice of a variety of operations. The simplest is external drainage by means of a cholecystostomy. Such an operation entails a rapid loss of bile salts and body fluids and should not be the procedure of choice, but an anastomosis between the gall bladder and some nearly approximate portion of the intestine is physiologically and anatomically correct. However, the choice of a particular operation will depend upon a number of factors such as (1) the physiological efficiency of the procedure; (2) the ease of technical accomplishment; (3) the relative immunity from ascending infection; and (4) the immediate and remote effect upon the patient's metabolism. The following are the conclusions reached by the author of the article referred to: (1) All cases of obstructive jaundice are entitled to operative consideration. There is a certain definite percentage of cases that are cured because there has been a mistake in the diagnosis. (2) Any of the above operations are not prohibitive, considering the severity of the disease and its hopeless outlook. (3) The immediate relief from itching, in addition to the prolongation of life, is an exceptionally strong argument for operation. (4) Operation obviates the development of "pressure pain" from increasing distention of the biliary apparatus. (5) These operations are advised solely as palliative procedures, and as such their purpose must be clearly understood.

The Scrotal Sign in Pellagra.

The commonly held impression of the onset of pellagra is that it begins with erythema of some exposed part of the skin, usually the backs of the hands. Some recent investigations* seem to disprove this theory and call attention to a new sign which in all the cases studied appeared first and would have been overlooked had it not been for the peculiar circumstances of the investigation. These were the production of pellagra experimentally in previously healthy adult males. As a means of checking up the conclusion that a restricted diet, chiefly of carbohydrates, is responsible for pellagra, a record of the experimental production of this condition in healthy persons by such a diet is extremely valuable. Such an experiment is recorded in a recent Public Health Report. At the farm of the Mississippi State Penitentiary, about 8 miles east of Jackson, Miss., about seventy to eighty convicts were stationed. Twelve of these volunteered for experiment and were put on a restricted diet. This consisted of biscuits, mush, grits, gravy, syrup, sweet potatoes, and collards. The twelve volunteers and twenty "controls" were kept under constant observation, their entire skin surface being examined every day. About five months after the beginning of the experiment the first symptoms appeared. In every case the first appearance of the lesion was on the skin of the scrotum. Later lesions appeared on the backs of the hands and in one case on the back of the neck. In view of the fact that these experiments afforded, probably for the first time, an opportunity to observe cases of pellagra from the beginning and that in all these cases the scrotal sign was the first one, it would naturally suggest the examination of the scrotum as a routine measure in physical examinations made in the districts where pellagra is rife. It will next be necessary to perform the same experiment on a group of women to determine the corresponding initial lesion in that sex.

News of the Week.

Centralization of Red Cross.—The demand for the courses of instruction conducted under the direction of the National Committee on Red Cross Nursing Service has developed so rapidly that some of the Red Cross chapters in the larger cities have organized teaching centers. This centralization of instruction has been found to result in greater economy, more uniform teaching, better control, and better classification of those who complete the courses. Centers have already been established in Cincinnati, Chicago, Los Angeles, and New York. To facilitate the dissemination of information about the needs of European war sufferers among its chapters, the American Red Cross has established a special bureau in the Metropolitan Tower, New York.

Status of Red Cross Base Hospital Units.—The American Red Cross has recently issued a circular defining the status of the base hospitals which have been or are being organized under the Department of Military Relief, and pointing out that these have a strictly war-time purpose, and are not available for civilian relief after disasters other than war. The statement says: Base hospitals are purely military units, organized at the request of the Medical Departments of the Army and Navy, and equipped with a view to the needs of the military service only. In both organization and equipment they are too massive and too immo-

* "Experimental Pellagra in the Human Subject Brought About by a Restricted Diet," By Joseph Goldberg and G. A. Wheeler, U. S. Public Health Service.

bile for civilian relief work. The muster-in pledge contemplates only national service, when called into the military service of the United States; and it has been decided by the Judge Advocate General of the Army that the law does not authorize the calling out of these units by the President except in time of war or when war is imminent.

Health Insurance.—A public meeting on Compulsory Health Insurance will be held under the auspices of the Committee on Medical Economics of the Medical Society of the State of New York at the Academy of Medicine, 17 West Forty-third Street, New York City, on Thursday evening, November 23. The speakers will include men of national reputation and experts on Health Insurance.

Health Insurance in Canada.—The *Weekly Bulletin* of the Department of Health, New York, states that the plank for the compulsory health insurance of wage earners has been adopted by the National Liberal Party of Canada as a part of its platform for the election following the conclusion of the war. It is anticipated that the Conservative party will adopt a similar progressive program, and that health insurance laws will be enacted in Canada in the early days of reconstruction. "Compulsory health insurance of wage earners, based on joint contributions from the State, employers, and employees, has been established in Germany, Austria-Hungary, Russia, Great Britain, Holland, Norway, Roumania, and Serbia. In most of these countries both cash and medical benefits are provided for the insured workers, and effective campaigns for the prevention of sickness have become general," says the *Bulletin*. In this country a bill has been drafted by the American Association for Labor Legislation, and will be introduced next year in more than twenty State legislatures.

Harvey Society.—The second lecture of the present series of the Harvey Society will be given at the New York Academy of Medicine, 17 West Forty-third Street, on Saturday evening, November 4, at eight-thirty, by Dr. F. M. Allen of the Hospital of the Rockefeller Institute. The subject of the lecture will be, "The Rôle of Fat in Diabetes."

Personals.—Dr. Charles Lincoln Furbush of Philadelphia has been appointed special assistant to the American Embassy at Berlin, as medical inspector of prison camps in Germany.

Dr. Fernando Calderon y Roca, a Filipino, has been named to succeed Dr. William E. Musgrave as medical director of the Philippine General Hospital. Dr. Musgrave's resignation was recently accepted by the Governor-General.

Dr. Harry Vaughan of Morristown, N. J., is a candidate for the governorship, standing as the joint nominee of the National Prohibition and the Local Option parties.

Dr. Walter H. Brown has resigned as State epidemiologist of Massachusetts, and will preside as executive officer of the Board of Health of Bridgeport. Conn. It is planned to establish in Bridgeport a series of clinics modeled after the outpatient department of the Massachusetts General Hospital.

Prof. John Scott Haldane of the University of Oxford, who came to this country last month, and has delivered several lectures here, sailed from New York on October 27 for London.

Gifts to Charities.—By the will of the late Mrs. Emily Lavanburg of New York, bequests of $10,000 each are made to Mt. Sinai Hospital, the Home for Aged and Infirm Hebrews and the Montefiore Home, New York.

A Public Clinic in Genito-urinary Diseases will be held every Thursday evening at 8.30 o'clock by Dr. Abr. L. Wolbarst, at the West Side German Dispensary and Hospital, 328 West Forty-second Street, New York. The clinics will begin on November first, and will end in April. Physicians and medical students are cordially invited.

Clinical Society of the New York Polyclinic Medical School and Hospital.—A regular meeting of this society will be held in the surgical amphitheater of the Polyclinic, 341 West Fiftieth Street, on Monday evening, November 6, at 8.30 P. M. The discussion will be on goiter and the thyroid gland.

Maine Medical School.—The Medical School of Bowdoin University, Brunswick, Me., began its ninety-seventh annual course of instruction on October 16, with a registration of 55. The requirements for admission were raised this Fall to two years of college work, including physics, chemistry, biology, and either French or German. A number of changes have been made in the faculty.

Emmanuel Movement.—The status of what is known as the Emmanuel Movement, an employment of the principles of psychotherapy by the clergymen of the Episcopal Church, may shortly be determined before the Supreme Court of the State of California. The Rev. Parker Boyd of San Francisco, said to be head of the Emmanuel Health Institute of that city, was recently arrested on a charge of diagnosing without a medical license, and the case will probably be taken before the highest court. The health institute is described as part of the Emmanuel Movement, devoted to suggestive therapeutic treatment.

Ambulance Work on Film.—A private view of the film of the American Ambulance Field Service, "Our American Boys in the European War," was recently given in New ork. The picture shows every detail of the work of the young American college boys in caring for the wounded.

Hospital Destroyed.—A fire in the Roman Catholic Hospital at Farnham, Quebec, on October 26, completely destroyed the building and resulted in a serious loss of life, the estimate being that five children, eight women, and six men had perished.

Healthy Jersey.—During the month of September there were reported in New Jersey 2,139 cases of communicable diseases, as compared with 3,558 during August, a decrease of 1,419. Cases of infantile paralysis dropped from 2,114 in August to 957 in September; typhoid fever showed a slight increase, 331 cases as against 287, but both scarlet fever and diphtheria declined.

Medical Relief for Palestine.—The Zionist Committee, New York, has secured permission from the Department of State for the sending of a medical unit and a large quantity of drugs to Palestine, the drugs to be shipped on the Syrian relief ship which is to sail shortly under the joint auspices of the Syrian Committee and the American Red Cross. The medical unit, which will be sent as soon as sufficient funds are collected, will consist of ten doctors and five nurses, and will deal with the epidemics of typhus and cholera now raging in Palestine.

Birth Control Clinic.—After spending several days in a still hunt, the New York police succeeded

on October 26 in locating and raiding the birth control clinic established by Mrs. Margaret Sanger in the Brownsville section of Brooklyn. Mrs. Sanger and her assistant were arrested and held in $500 bail each.

Death of Centenarian.—Mrs. Mary Simpson Clingman of Cedarville, Ill., died at her home on October 23, within two months of her 107th birthday. She leaves four children, the oldest 74 and the youngest 65.

Barnert Hospital Dedicated.—The new Nathan and Miriam Barnert Memorial Hospital, erected at a cost of $150,000, and presented to the city of Paterson, N. J., by Mr. Nathan Barnert, as a memorial to his wife, was dedicated on October 24. The hospital covers an entire city block at Broadway and East Thirtieth Street.

Beriberi Case.—The Board of Health of New Bedford, Mass., announced on October 24 that a case of beriberi had been discovered in the city. The patient arrived in this country recently on a packet from Cape Verde.

Civil Service Examinations.—Open competitive examinations will be held in various places in New York State on December 2, 1916, for the purpose of filling vacancies in the positions listed below. Full particulars may be obtained by application to the State Civil Service Commission, Albany, N. Y.

Women physician, regular or homeopathic, State hospitals and institutions. Salary, $1,000 to $1,500 and maintenance. Candidates must be licensed medical practitioners of the State of New York, and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine.

Physician, State prisons and reformatories. Salary, $2,000 without maintenance. Examination open only to men who are licensed medical practitioners in this State, who are not less than 25 years of age, and who have had at least three years' practice. It is expected that one appointment will be made at Sing Sing in the near future.

Deputy medical examiner, Bureau of Deportation, State Hospital Commission. Salary, $3,500. Applicants must be physicians licensed to practice in New York State, and with not less than five years' experience in the practice of Medicine. Minimum age limit, 30 years. Applicants will be expected to have a knowledge of the Insanity Law and experience in the care and treatment of the committed or alleged insane in the New York State Hospitals, or elsewhere, or knowledge and experience of the problem of the alien insane and their deportation.

Dentist, Monroe County service. Open to men only. Candidates must be graduates of a recognized dental college, and eligible to enter the State licensing examination. A vacancy exists at the Iola Sanatorium at $60 per month.

American Medical Editors' Association.—The Forty-seventh Annual Meeting of this Association was held at the Hotel McAlpin, New York City, October 25 and 26, under the presidency of Dr. Edward C. Register of Charlotte, N. C. The report of the secretary shows the affairs of this organization in a thriving condition both financially and as regards membership. Twenty-five applications for membership were received during the past year. In his presidential address, Dr. Register spoke on "The Freedom of the Medical Press," making a strong plea for the independently owned and edited medical journal, and sounding a word of warning against the tendency to put medical journals officially and irrevocably under the control of medical organizations. An entire session was devoted to a symposium on "The Duty of the Medical Editor in Harmonizing the Doctor with Medical Legislation and Its Administration, and in Securing His Aid, Coöperation, and Support in Framing and Enforcing Proper Laws, with Special Reference to Antinarcotic Legislation." Dr. C. F. Taylor of Philadelphia gave a résumé of the antinarcotic laws in the various States, which showed that in a number of States the law forbids the dispensing of narcotics by the physician. He said: "Medical editors do not seem to have grasped the idea now being fought out in regard to the dispensing of remedies by physicians. One of the errors they have fallen into is to regard dispensing as a method of selling drugs. That is totally wrong. It is simply the idea of preserving to the doctor his right to dispense remedies to his patients as he desires to do so. The question is whether the doctor shall be allowed to carry a medicine case and have the customary supply of medicines in his office, or whether his armamentarium shall be reduced to a prescription pad. Many times the doctor must be prepared to do something for his patient immediately. To go empty-handed, and write a prescription for the patient to get the medicine when the druggist pleases, will leave many a patient in a bad situation." A dramatic feature of this discussion was the plea of an aged physician, who had for thirty-five years been a morphine habitué, and who had taken thirteen cures, without avail, for mercy and justice for others in a like plight. He said that society condoned the weakness of a man who was a slave to whiskey, while it made of the man who was addicted to the use of a drug a social outcast, without ever attempting to understand his disease. What was now needed was a better understanding of the evil and a wiser course of dealing with it than by the passage of unreasonable laws. Judge C. M. Collins of the Court of Special Sessions told the story of the criminal and the underworld, as he saw it from the court room, and said that drastic laws were needed and had come to stay. The judge, however, could interpret the law with discretion, and the legitimate practitioner of medicine had little to fear. As for those who used their profession as a cloak under which to carry on illicit traffic in drugs, the medical profession should devise some way of dealing with them by which their licenses would be revoked. He suggested an organized method, such as the legal profession now had, for dealing with offenders against the rules and regulations governing the practice of law. Mr. B. C. Keith, representing the Department of Internal Revenue, explained that the Bureau which he represented was engaged simply in enforcing the Harrison law, and that they needed the support of all physicians. He stated that a conservative estimate placed the number of drug habitués in the United States at 1,000,000. Dr. Ernest F. Bishop of New York City urged the study of the problem of drug addiction from the clinical side. His experience showed that the solution of the problem rested with the medical profession and the medical journals, who must teach that drug addiction is a disease which belongs to the province of internal medicine, and can be dealt with successfully from this standpoint.

Among other papers read and discussed were the following: "Latin and Greek as Prerequisites of the Study of Medicine," by Dr. Abraham Jacobi of New York; "The Responsibility of American Journalism," by Dr. George M. Piersol of Philadelphia; "Book Reviews in Medical Journals," by Dr. H. S. Baketel of New York; "Editorial Individuality," by Ira S. Wile of New York; "The Editor's Prerogative in Editing Original Contributions," by Dr. H. Edwin Lewis of New York; "The Medical Journal and Its Sphere in Medical Progress," by Dr. A. S. Burdick of Chicago; "Independence in Medical Journalism," by Dr. Llewellyn Eliot of Washington, D. C.; "The Function of a State Medical Association Journal," by Dr. George W. Kosmak of New York; and "The Editorial Collaborator," by Dr. Samuel F. Brothers of Brooklyn.

The following officers were elected: *President*, Dr. George M. Piersol of Philadelphia; *First Vice-president*, Dr. Charles Wood Fassett of St. Louis; *Second Vice-president*, Dr. Robert M. Green of Boston; *Secretary and Treasurer*, Dr. Joseph MacDonald, Jr., of New York.

The annual banquet of the Association was held at the Hotel McAlpin on the evening of October 26.

Medical Society Elections.—VERMONT STATE MEDICAL SOCIETY: Annual meeting at St. Johnsbury on Oct. 12 and 13. Officers elected: *President*, Dr. Clarence H. Beecher, Burlington; *Vice-president*, Dr. Charles W. Howland, Shoreham; *Secretary*, Dr. William G. Ricker, St. Johnsbury; *Treasurer*, Dr. E. H. Martin, Middlebury.

NEW MEXICO MEDICAL SOCIETY: Annual meeting at Albuquerque on October 13 and 14. Officers elected: *President*, Dr. C. S. Losey, East Las Vegas; *President-elect*, Dr. John W. Kensinger, Roswell; *Vice-presidents*, Dr. Charles A. Frank, Albuquerque; Dr. F. H. Crail, East Las Vegas; and Dr. Hugh V. Fall, Roswell; *Treasurer*, Dr. Frank E. Tull, Albuquerque; *Secretary*, Dr. R. E. McBride, Las Cruces.

HENDERSON COUNTY (TENN.) MEDICAL SOCIETY: Annual meeting at Lexington on October 11. Officers elected: *President*, Dr. William I. Howard, Wildersville; *Vice-presidents*, Dr. J. P. Joyce and Dr. J. B. England; *Secretary*, Dr. Samuel T. Parker, Lexington.

ST. LUKE'S GUILD OF CATHOLIC PHYSICIANS (Boston): Annal meeting at the Carney Hospital, Boston, on October 18. Officers elected: *President*, Dr. John T. Bottomley; *Vice-president*, Dr. John R. Slattery; *Secretary-Treasurer*, Dr. John J. Sullivan.

Relation of the Chemist to the Public Welfare.—A meeting of the New York Section of the American Chemical Society will be held at the Chemists' Club, 50 East Forty-first Street, New York City, at which the following papers will be read: "The General Problem of Public Service Training," by Prof. Charles A. Beard of Columbia University and of the Training School for Public Service; "The Status and Compensation of the Chemist in Public Service," by Prof. Frederick E. Breithut of the College of the City of New York; "The Chemist in Public Service," by Dr. Harvey W. Wiley; "The Chemist in the Service of New York City," by Dr. Otto H. Klein, director Central Testing Laboratory.

New Societies Formed.—The New England Surgical Society, which was organized early this year with a membership of 75 representative surgeons from the six New England States, held its inaugural and first annual meeting in Boston on October 5, 6 and 7. The sessions were held at the Harvard Medical School, at several of the Boston hospitals, and at the Copley-Plaza. During its first year the officers of the society have been as follows: *President*, Dr. Samuel J. Mixter, Boston; *Vice-president*, Dr. John B. Wheeler, Burlington, Vt.; *Secretary-Treasurer*, Dr. Philemon E. Truesdale, Fall River, Mass.; *Executive Committee*, Dr. John W. Keefe, Providence, R. I.; Dr. Joseph M. Flin, New Haven, Conn.; Dr. Lyman Allen, Burlington, Vt.; Dr. Herbert L. Smith, Nashua, N. H.; and Dr. William L. Cousins, Portland, Me. The society will meet once a year in various cities in New England.

The alumni of the College of Medicine of Fordham University, New York, at a meeting held in this city on October 27, formed an association. The following officers were elected: *President*, Dr. James McSweeney; *Vice-president*, Dr. John J. Sheridan; *Secretary-Treasurer*, Dr. Francis McGovern. Father J. Tiernan addressed the members of the association on "The Menace of Birth Control."

Obituary Notes.—Dr. LOUIS MCLANE TIFFANY of Mount Custis, Va., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1868, and a member of the Medical Society of Virginia, the Medical and Chirurgical Faculty of Maryland, the Baltimore City Medical Society, and the American Surgical Association, professor emeritus of medicine at the University of Maryland, and consulting surgeon of Johns Hopkins Hospital, St. Joseph's German Hospital and the Church Home and Infirmary, died from heart disease at his home, on October 23, aged 73 years.

Dr. DAVID BRADEN KYLE of Philadelphia, a graduate of Jefferson Medical College of Philadelphia in 1891, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania and the Philadelphia County Medical Society, died at his home on October 23 from pneumonia, after a short illness, aged 53 years. Dr. Kyle was professor of laryngology at the Jefferson Medical College, and a member of the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Otological Society, the College of Physicians of Philadelphia, the Puget Sound Academy of Ophthalmology and Oto-Laryngology, the Philadelphia Pediatric Society, the Pathological Society of Philadelphia, the Philadelphia County Medical Society, and the Medical Society of the State of Pennsylvania, and also a fellow of the American Medical Association.

Dr. ALEXANDER A. UHLE of Philadelphia, a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1898, died suddenly following an injection of cocaine preliminary to an operation on the tonsils on October 21, aged 42 years. Dr. Uhle was a member of the College of Physicians of Philadelphia, the American Medical Association, the Medical Society of the State of Pennsylvania, the Philadelphia County Medical Society, the Philadelphia Academy of Surgery, the American College of Surgeons, the American Association of Genito-Urinary Surgeons, the American Urological Association, the Philadelphia Genito-Urinary Society, and the Pathological Society of Philadelphia. He was assistant instructor in genito-urinary diseases in the University of Pennsylvania, assistant surgeon to the dispensary for genito-urinary diseases of the University Hospital, assistant genito-urinary surgeon to the Philadelphia General Hospital, assistant surgeon to the dispensary of the German Hospital.

Correspondence.

PRONUNCIATION OF POLIOMYELITIS.

To the Editor of the Medical Record:

Sir:—Here in New York somebody imagined that euphonics would be mollycoddled by pronouncing "poliomyelitis" as though it were spelled "pohliomyeleetis"; "pohlio" as in "folio," "eetis" as in "Musketeer." This pronunciation appears to be contagious, and it may give some young phonetist a bad spell. The difference between doctors and educated people is this: erudite folks were spanked in school days if they did not know that in the poliomyelitis question they were dealing with omicron, and not with omega; consequently they now pronounce the first part of the word as it is pronounced in the first part of the line ending with "wants a cracker." The last part of the word when leaving Athens for New York becomes pronounced "itis" with an eye upon the first "i" in sturdy English, although there is equally good authority for pronouncing this "i" like "ee" in "teeth." One may follow his mentor so far as this particular point is concerned.

The public will lose that confidence in doctors which it should not have had in the first place, if we take liberties with the property of the English language. In professional circles we know that not one gynecologist in five can pronounce the name of his specialty correctly. We may understand that to mean that the other four are equally careless in their diagnoses, and likely enough to treat a flexion of the uterus by mechanical means when the autonomic ganglia of a susceptible patient responding to distant peripheral irritation are in need of belladonna only. That is a trade secret, and the public willingly goes on paying bills for work that should not be done. When it comes to a matter of pronunciation of a word that is in everybody's mouth, however, a sapient public will feel that doctors are not to be trusted with the care of an infection if they cannot be trusted with a word which enters at the very threshold of a case.

Robert T. Morris, M.D., F.A.C.S.
616 Madison Avenue, New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE PROPOSED NEW CENTRAL MEDICAL BOARD—PROTEST BY DUKE OF BEDFORD—DIFFERENCE BETWEEN "MEDICALLY UNFIT" AND "NOT LIKELY TO BECOME AN EFFICIENT SOLDIER"—DUTIES OF RECRUITING AND APPROVING OFFICERS—SELECTION OF MEN FOR R. A. M. C.—HEALTH OF LONDON FOR 1915.

London, October 7, 1916.

The Duke of Bedford has made a vigorous protest against the government's proposal to set up a new Central Medical Board, and he gives an illustration of the way in which recent alterations in the recruiting forms permitted an epileptic to be enlisted and posted to a battalion; he served with the colors for 158 days, spent about 90 days in hospital, and on one occasion had an epileptic fit at physical drill. He was discharged from the army as "not likely to become an efficient soldier"—his character marked "good." Since his discharge his general health has further declined, his fits increasing in frequency so that he cannot resume his former occupation. If he had been discharged as "medically unfit" he would have been entitled to a pension, but not as it is. The duke remarks that it is the duty of medical boards, recruiting officers, and approving officers to guard taxpayers from financial liability arising from the enlistment of men whose health shows that in a few months they will be discharged in a worse state than on entrance. Unsound men on discharge have a claim for compensation for injury to their health and wage-earning capacity while in the service. These unsound men who are sure to have spent part of their time in hospital are a dead loss to the State for they deprive sound men of training and armament, or occupy beds wanted for men invalided from the front. The duke objects that this will only be a source of expense and give no relief to taxpayers for past failures of the existing system, and further he adds that these boards and officers are paid to prevent men who can only become a burden on the public purse from being compelled to serve in the army. He asks why when such officers fail in their duty should the whole cost be thrown on the taxpayers and says it is a sound principle that those who run up the bill should contribute toward its payment. They can easily be identified, as the names of the officers responsible for their enlistment appear on different army forms. The local committee should have the power of compelling the attendance of approving officers to explain the circumstances under which unfit men were enlisted, and, if no satisfactory explanation is given, of recommending that the offending officers should contribute from their pension, pay, or allowances to the compensation that may be awarded.

It is suggested that the position of the central medical war committee should be defined in the military service bill now before Parliament and in any other measure by which it is affected. At present doctors who enroll do so through the committee which selects out of the whole number men as required by the R. A. M. C. It seems of the first importance that under compulsory service the same arrangement should continue and that the selection of *unenrolled* medical men should be entrusted to the central medical war committee, and this in justice both to the profession and to the civil population.

The medical officer of the London County Council reports that the health of the metropolis for 1915 does not compare favorably with recent years, not so much on account of any influence of the war, as owing to increase of deaths at relatively high ages, attributable no doubt to a prevalence of influenza and of other respiratory diseases during the winter months.

The marriage rate of London for 1915, assuming the population to be four and one-half millions, works out at 25.9 per 1,000 living—higher than any previous year. This rate has been slowly increasing annually since 1908, but the bulk of the increase last year must be attributed to the war. It is probable, however, that many marriages registered in London were not residents here. The birth-rate which has been falling for a number of years past was 23.6 in 1915 as compared with 24.3 in 1914 and 25 in the period 1909-13. Discussing the continuous fall in the birth-rate for the past 40 years, the medical officer says that a theory which ascribes it to a "change in the moral tone of the community and to the artificial limitation of families has met with some acceptance." Against this one of the most cogent arguments is the fact that the fall is widespread throughout Europe and affects certain other civilized communities.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 19, 1916.

1. Surgery of the Thyroid Gland. C. A. Porter.
2. Recent Advances in Our Knowledge of the Active Constituent of the Thyroid. Edward C. Kendall.
3. Conditions Affecting Secretion of the Thyroid Gland. W. B. Cannon.
4. The Clinical Value of Metabolic Studies of Thyroid Cases. Walter M. Boothby.
5. Partial Thyroidectomy with Local Anesthesia, Scopolamine and Morphia. Frank H. Lahey.
6. The Treatment of Graves' Disease by the Roentgen Ray. Malcolm Seymour.
7. The Excretion of Hexamethylenamine by Damaged Kidneys. George Gilbert Smith.
8. The Ileocecal Valve and the Chronic Intestinal Invalid. John Bryant.

1. **Surgery of the Thyroid Gland.**—C. A. Porter analyzes 185 cases of goiter in hospital and private practice of which 85, showing definite Graves's disease or hyperthyroidism present, or very definite in the immediate past, were subjected to operation. In these 85 cases there were 31 ligations and 19 hemithyroidectomies; in 17 the right lobe was removed with ligation of the vessels on the left; in 18 the major portion of both lobes, leaving a bit of the upper or lower poles, and a posterior strip of the gland. In the writer's opinion partial lobectomy is a more severe and bloody operation than hemithyroidectomy, but he feels that it is followed by more immediate improvement and that the danger of recurrence is less. Of these 85 cases operated upon 20 are absolutely cured, 18 much improved, 4 not improved, and requiring further operation; 16 have not reported. Medical treatment of the cases not subjected to operation is discussed and the conclusion reached that if, after a patient has had a reasonable course of rest, medical treatment, and *x*-ray treatment, the symptoms persist, operation should be advised. Among wage-earners, who cannot give up the time, and in the chronic cases, in which the disease has advanced too far to allow of delay after a preliminary rest, operation should be performed. Whether this be a preliminary ligation, or lobectomy under local or general anesthesia, must be determined in each case. Finally, in chronic cases, in which there is doubt as to whether the patient is suffering from existing toxemia or has been poisoned irreparably by the disease, modern tests, of which basal metabolism is probably the most important, will aid the surgeon much in deciding for or against operation.

2. **Recent Advances in the Knowledge of the Active Constituent in the Thyroid; Its Chemical Nature and Function.**—Edward C. Kendall recalls that about eighteen months ago he reported the isolation from the thyroid of a crystaline compound containing 60 per cent. iodine. Since that time he has perfected the method for its isolation and has studied its chemical property and functions. He has experimented on animals and obtained a large number of results from clinical observations from which it appears that the entire activity of the gland is manifested by the administration of this crystaline compound alone. There appears to be no other substance in the thyroid secretion which acts directly. After the administration of the compound there is no apparent effect for many hours. There is no increased pulse rate or drop in blood pressure. However, if the thyroid hormone and amino acids are injected simultaneously, the pulse rate is enormously affected, and even death may result, due to the apparently great increase in metabolism going on in the animal. It appears very probable that the thyroid hormone manifests its activity by reacting in some way with amino acids.

4. **The Clinical Value of Metabolic Studies of Thyroid Cases.**—Walter M. Boothby states that diseases of the thyroid gland, with their extreme variations in basal metabolism, afford a most striking example of the significance of metabolic studies. Basal metabolism for clinical purposes can be obtained with a high degree of accuracy by collecting, measuring, and analyzing the expired air. In normal persons the basal metabolism rarely varies more than 10 per cent. from a normal figure, depending upon age and sex, when compared by surface area determined by DuBois height-weight curve. Several cases of thyroid dystrophies, in which the basal metabolism was determined, are cited, and these show that in conditions of thyroid overactivity the metabolism may increase to over 100 per cent. above normal, and in conditions of underactivity it may be decreased to 50 per cent. below normal. They have found that the patient's condition, judging from the sum total of the objective and subjective symptoms, correspond very strikingly to the numerical expression of the basal metabolism.

6. **The Treatment of Graves' Disease by the Roentgen Ray.**—Malcolm Seymour writes that they have had under Roentgen ray treatment at the Massachusetts General Hospital 144 cases of Graves' disease, the treatment of most of these having been carried on since August 1, 1915. Of these 144, eighty have been given at least two treatments and all of these have shown improvement, with the exception of seven cases. Nearly all have gained in weight, the average gain having been seven pounds. The pulse rate has been lowered in all but a few cases, the average being twelve beats. The writer outlines his method of treatment and concludes that the advantages of the Roentgen ray treatment are that there are no fatalities; there is no resulting scare, as after operations; it is painless and, if unsuccessful, an operation may be done with less risk, because of the favorable action of the *x*-ray on the thymus gland.

7. **The Excretion of Hexamethylenamine by Damaged Kidneys.**—George Gilbert Smith has been investigating the statement made by Falk and Sugiura that in a number of pathological cases involving the impairment of kidney function, abnormally small amounts of hexamethylene tetramine were excreted. The cases studied, fourteen in number, fell into two groups: (1) the surgical kidneys resulting from renal calculus ob-obstructing prostate, etc., and (2) the medical nephritis of chronic interstitial or glomerular type. As positive evidence on the question of the output of urotropin by infected kidneys, facts are presented drawn from a study of ten cases of undoubted renal disease of this type. In every case urotropin was excreted; in three cases, in a strength of 1 to 10,000; in two, 1 to 30,000; in one 1 to 40,000. It was weaker in the other four although strong enough to give a definite test with Burnam's method. In chronic nephritis of advanced degree, in three cases a diminution in the output of urotropin which would be a serious factor in its employment as a therapeutic agent. Fortunately, in such cases it need seldom be employed. In kidneys damaged by infection, even to a very marked degree, the drug may be excreted in a strength as high as 1 to 10,000. The fact must be borne in mind that, no matter how much urotropin is excreted, it will be useless as a bactericide unless it is broken up into formaldehyde by urine, which is definitely acid.

8. **The Ileocecal Valve and the Chronic Intestinal Invalid.**—John Bryant presents a preliminary note on valvular incompetence, together with a number of case reports demonstrating successful non-surgical therapy in this condition. He states that his personal experience seems to justify the following assertions: (1) In the mild or ambulent group of chronic intestinal cases, the frequency of incompetence may be distinctly

in excess even of the accepted ratio of one to five. (2) When present, incompetence should be treated as an undesirable pathological entity; an entity, however, usually responsive to intelligent treatment. (3) Under adequate medical treatment the patient may be assured at least some degree of improvement, with corresponding alleviation of symptoms; surgery is only secondarily indicated. (4) Medical treatment may even restore the valve to complete competence. (5) The progress and results of treatment are under absolute control through the agency of the bismuth-Roentgen meal and enema. Given a case with a chronic intestinal history, with local pain, coarse crepitation on pressure over the right iliac fossa, excessive gas formation not easily relieved, constipation, stasis, and evidences of toxic absorption and a presumption of valvular incompetence is created, which should be subjected to proof by the *x*-ray.

New York Medical Journal.

October 21, 1916.

1. Considerations in the Medical Treatment of Goiter. J. M. Anders.
2. The Early Diagnosis of Tuberculosis. Edward O. Otis.
3. Removal of a Third Lobe of a Cystic Goiter. A. Ernest Gallant.
4. Focal Points of Infection. Noble P. Barnes.
5. Laryngeal Abscess. Milton J. Ballin.
6. Leiomyoma of the Pylorus. Joseph R. Eastman and Harry K. Bonn.
7. Gravid Uterus Duplex. W. R. Jackson.
8. Tuberculosis of the Bronchial Glands. Mary E. Lapham.
9. Pyorrhea Alveolaris. R. G. Hutchinson, Jr.
10. Chauffeur's Fracture of the Radius. A. C. Burnham.
11. Pseudoscarletina. Bernard Frankel.

1. Considerations in the Medical Treatment of Goiter. J. M. Anders says that the medical treatment of goiter must have special reference primarily to the particular clinical variety. For example, if the given case in hand is of the non-toxic form, then iodine and thyroid extract are indicated; if of the toxic type, or exophthalmic goiter, then these medicaments would be for the most part pernicious in their nature. It has always seemed to him to be the part of wisdom to discontinue the iodine in cases in which the thyroid extract is exhibited, on account of failure of the former remedy to bring about a cure. If, however, the dessicated thyroid extract, like the iodine, fails when employed alone, then these remedies should be given simultaneously, their action being almost identical, notwithstanding. Should untoward results follow the thyroid medication, they may be successfully combated by two or three minim doses, thrice daily, after food, of Fowler's solution. Disappearance of goiter should be the signal for the discontinuance of the remedy but a recurrence, however slight, should lead promptly to its readministration. An ointment of biniodide of mercury with massage over the gland favors absorption of the hyperplasia. The treatment of this type of goiter is entirely satisfactory, provided that the condition is recognized early enough, and iodine and other agents recommended are judiciously and promptly employed. Among the prominent causative factors of Graves's disease are emotional excitement, shocks, tuberculosis, rheumatism, syphilis, and intoxication from the intestinal canal, and each of these should receive proper and careful attention. Of the numerous available remedies which have been advocated, two are worthy of mention, quinine hydrobromide and antithyroidin Möbius.

2. The Early Diagnosis of Tuberculosis.—Edward O. Otis treats of this subject and concludes that the diagnosis of early clinical tuberculosis depends upon the careful and painstaking assembling, correlation, and study of the symptoms, together with the evidence of the temperature and pulse and such definite physical signs as can be clearly discerned. The main reliance must be upon the symptoms, the pulse and the temperature. If the physician spent the major part of his time and efforts in studying the symptoms and less upon the attempt to determine uncertain physical signs, fewer cases would slip through his hands unrecognized.

3. Removal of the Third Lobe of a Cystic Goiter.—A. Ernest Gallant reports this operation upon a woman with exophthalmos and the points of interest which led to a report of this case were as follows: (1) The mother and five sisters had goiter and were said to have been cured by medicine; (2) the successive enlargement of the right and left lobes after removal of the middle lobe, with intervals of fourteen and four years, respectively; (3) the aphonia following the second operation, and restoration of the voice after the third operation; (4) the very disagreeable effects when thyroid gland or potassium iodide was administered; (5) the almost uninterrupted discharge from the sinus, and the serious discomfort and "queer feelings" whenever the sinus closed temporarily and the secretion could not escape; (6) the marked diminution of the exophthalmos; (7) the return of a considerable growth of hair in a woman of her age (fifty odd years).

5. Laryngeal Abscess.—Milton J. Ballin reports three cases which he believes are clear examples of laryngeal abscess in which the localized suppuration was situated, as in the majority of instances, on the left side, and in which complete recovery ensued after timely intralaryngeal measures. The main purpose in presenting this subject is to call attention to the infrequency of this laryngeal infection and to emphasize the fact that if it is recognized in time and urgent intralaryngeal measures are adopted, alarming complications can be prevented, and a satisfactory outcome can be obtained in the majority of the cases.

6. Leiomyoma of the Pylorus.—Joseph R. Eastman and Harry K. Bonn state that since the stomach is the primary seat of approximately two-thirds of all gastrointestinal carcinomata, it follows that the diagnosis of any tumor of the stomach is especially important in patients at the cancer age. For this reason they deemed this case of leimyoma of the pylorus, occurring in a man fifty-eight years of age, of sufficient interest to justify its report. It serves to emphasize the following points: (1) Benign neoplasm of the pylorus, especially the myomata, may simulate early carcinoma. (2) Even though the patient has reached the cancer age, benign neoplasm cannot be excluded. (3) Careful sectioning and study of benign neoplasms is necessary for correct diagnosis. (4) The frozen section method cannot be considered an infallible method of diagnosis in this type of neoplasm.

8. Tuberculosis of the Bronchial Glands.—Mary E. Lapham says that the symptoms of tuberculosis of the bronchial glands are caused by the absorption of toxins and by pressure on adjacent structures. The syndrome of tuberculous toxemia is the same as that from the lungs; it is the pressure symptoms that are of particular interest in this form of tuberculosis. Compression of the great vessels may cause cyanosis and edema of the face or even edema of, and hemorrhages into the meninges. It is possible that compression of the superior vena cava may have something to do with the rapidly fatal cases of cynosis, dyspnea, unconsciousness and death, so typically fatal in the bronchial gland tuberculosis of infants. It is also possible that the stasis in the meningal circulation explains the association of tuberculosis meningitis with that of the bronchial glands. As a rule, the meningitis attacks children in apparently good health, and without the knowledge acquired at autopsy there would be no reason for suspecting that meningitis may be secondary to absolutely concealed tuberculous processes in the bronchial glands. Autopsies teach that this association always exists, and

it is inferred that the rapidity of meningeal processes leaves no time for slower developments. Pressure upon the sympathetic may cause irritability of the vasal motors, evidenced by rapid changes from palor to blushes; unequal or unilateral flushing of the cheeks; circumscribed reddening of the second intercostal space, associated with menstrual rises in temperature, a consciousness of unstable heart action, of flutterings and palpitations and quickened pulse; unequal pupils and protrusion of the eyeballs. It is probable that a certain class of gastrointestinal disturbances, characterized by lack or suppression of functional activities, may be due to pressure upon the sympathetic nerves, because these disturbances are present in tuberculosis of the bronchial glands when pulmonary tuberculosis cannot be proved. It is possible that the rhachialgias and intercostal neuralgias preceding the discovery of tuberculosis of the spine may also be caused by enlarged bronchial glands and the infection of the spine may prove to be a secondary condition. Pain in the region of the trapezius is one of the earliest symptoms of tuberculosis of the bronchial glands, as is also pain over the root of the lung. Pressure upon the fibers of the recurrent laryngeal may cause pain in the larynx, laryngospasm, and paralysis of the vocal cord. Changes in the quality of the voice may be one of the very early manifestations of enlarged bronchial glands.

Journal of the American Medical Association.

October 21, 1916.

1. Fertility and Sterility: A Histological Study of the Spermatozoa, the Ovaries, and the Uterine and Vaginal Secretions in Their Relation to This Question. Edward Reynolds.
2. Experimentally Transplanted and Transposed Whole Metatarsal Bones. W. L. Brown and C. P. Brown.
3. The Etiology of Epidemic Poliomyelitis: Preliminary Note. E. C. Rosenow, E. B. Towne and G. W. Wheeler
4. Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis. John W. Nuzum and Maximilian Herzog.
5. A New Instrument for the Clinical Measurement of Dark Adaptation. Harry S. Gradle.
6. Immune Human Serum in the Treatment of Acute Poliomyelitis. C. W. Wells.
7. A Report of One Hundred Consecutive Cases of Fibromyomata Uteri Subjected to Operation. Stephen E. Tracy.
8. Operative Treatment of Fibromyomatous Uterine Tumors. John B. Deaver.
9. Recent Progress in the Treatment of Uterine Cancer. J. H. Jacobson.
10. Bacterial Vaccines in Treatment of Pulmonary Tuberculosis. Impressions as to Clinical Value. S. G. Bonney.

1. Fertility and Sterility: A Histological Study of the Spermatozoa, the Ovaries, and the Uterine and Vaginal Secretions in Their Relation to This Question.—Edward Reynolds. See MEDICAL RECORD, June 17, 1916, page 1113.)

2. Experimentally Transplanted and Transposed Whole Metatarsal Bones.—W. L. Brown and C. P. Brown relate the experiments they have made on dogs and present a number of *x*-ray photographs showing the results obtained. In describing their technique they state that all the dogs' feet and sides for the transplants were prepared after the dog was anesthetized with ether by shaving and painting with full strength tincture of iodine. Following the operation, all wounds on the feet were dressed with a liberal quantity of phenolated gauze and adhesive plaster. The wounds of the thighs and backs were always dressed with collodion and cotton. There were no infections. They state in conclusion that: 1. True transplantation of a part or whole bone into the tissue, where it has no function to perform, is a very different matter from transposing an entire bone into the bed of its fellow of the opposite side. 2. Whole metatarsal bones covered with periosteum, their articular ends included, and transposed into the position occupied by their fellow of the opposite side will live, functionate, and grow, but when truly transplanted under like circumstances into the tissues, where they do not act as an integral part of the bony framework and have no function to perform, they are invariably absorbed, as are all other transplants under like circumstances.

3. The Etiology of Epidemic Poliomyelitis; Preliminary Note.—E. C. Rosenow, E. B. Towne, and G. W. Wheeler. (See MEDICAL RECORD, October 21, page 7739.)

4. Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis.—John W. Nuzum and Maximilian Herzog state that they have obtained from the postmortem material in typical cases of poliomyelitis, from tissues of the central nervous system, tonsils and mesenteric glands, and from the cerebrospinal fluid obtained by lumbar puncture during life, a grampositive micrococcus which grows well on dextrose ascites broth to which a sterile piece of rabbit's kidney has been added—but always better aerobically than anaerobically. Cultures of this organism, when injected into monkeys, produced the typical clinical and pathologic picture of acute poliomyelitis. Definite flaccid paralysis has been produced in dogs and in many young rabbits. In rabbits, however, as others have pointed out before us, there is a variation in the microscopic picture, although many of the changes attendant on the disease in man and monkeys are present in the central nervous system of the rabbit following paralysis. Anaerobic cultures in fluid mediums were passed through Berkefeld filters V, and inoculations of the filtrate into suitable mediums produced a growth of the larger form of the organism seen in aerobic cultures. This would seem to indicate that the organism under anaerobic conditions assumes a form so small that it may pass through the Berkefeld filter. The virus of rabies, as is well known, presents itself in a large form, the Negri bodies, and in the small punctiform granules which can evidently pass the filter. In considering the gram-positive coccus in its etiologic relation to acute poliomyelitis, we must remember that it may act as a carrier of a real ultramicroscopic invisible virus which, together with this micrococcus, might still be transferred in the cultures and passed along in the inoculations. In tissues from the central nervous system of poliomyelitic material preserved in 50 per cent. sterile glycerin, this same micrococcus was alive after a period of thirty-five days, and could be cultivated in pure culture on suitable mediums.

6. Immune Human Serum in the Treatment of Acute Poliomyelitis.—C. W. Wells reports a series of fifteen cases of acute poliomyelitis treated by the administration of immune human serum. He says the administration of immune human serum in acute poliomyelitis is based on the recognized principles of immunity. Because the lesions are not confined to the nervous system, and because the lesions therein consist essentially of perivascular infiltration, intravenous injection of serum appears to be rational procedure, either alone or in combination with intraspinal injection. The intravenous injections of serum should, if possible, consist of doses of from 50 to 100 c.c. or more daily. Following the intravenous or intramuscular injections of serum, spinal fluid should be withdrawn. The intraspinal injection of the serum usually produces an increase in the number of leucocytes with increase in the proportion of polymorphonuclear cells in the spinal fluid. No ill effects have followed the use of serum in this series, either by intravenous or intraspinal injection. In all cases after the intravenous injection, and to a less degree after intraspinal injection, a noticeable improvement usually occurred, which unfortunately in some cases was only transient. The early administra-

tion of the serum is urged, necessitating therefore an early diagnosis of the disease. In severe cases late administration of the serum has produced little if any noticeable influence on the course.

7. **Report of 100 Consecutive Cases of Fibromyomata Uteri Subjected to Operation.**—Stephen E. Tracy. (See MEDICAL RECORD, July 8, page 87.)

8. **Operative Treatment for Fibromyomatous Uterine Tumors.**—John B. Deaver. (See MEDICAL RECORD, July 8, page 87.)

9. **Recent Progress in the Treatment of Uterine Cancer.**—J. H. Jacobson. (See MEDICAL RECORD, July 8, page 87.)

10. **Bacterial Vaccines in the Treatment of Pulmonary Tuberculosis—Impressions as to Clinical Value.**—S. G. Bonney writes that from the data so far obtained his position is that vaccine therapy should by no means be permitted as a routine measure in the treatment of tuberculosis. It has a place as a tentative procedure in a class of cases subject to certain modifying limitations. The careful adjustment of the dosage is vitally important. The results obtained are very uncertain. The gain established in a few cases is, however, impressive. The proportion of cases exhibiting improvement is disappointing. Vaccines not infrequently are shown to possess vast possibilities of injury. In the use of vaccines the attitude of the profession should be one of the utmost conservatism. The cautious employment of baterial vaccines would seem to be appropriate chiefly for persons who fail to show gratifying improvement under conservative management and should be restricted largely to this class of patients. It does not from this follow that vaccines are indicated for all patients who are doing poorly. It may, however, be granted that a demonstrated inability to respond favorably to an intelligent regimen suggests the expediency of specific therapy. On the whole the writer's experience with vaccines in far advanced cases have been disappointing, though he has had one or two instances in which the clinical picture was unexpectedly transformed. The results obtained in a fair proportion of cases in which there was moderate fever have been such as to encourage the further cautious employment of vaccine therapy. This is also true to a large extent in afebrile cases. The greater proportion of such invalids may be expected to make fairly satisfactory progress under proper supervision without recourse to vaccine therapy, but occasional indications for its administration may be found in patients with distressing cough and abundant expectoration. In this class of patients the application of vaccine therapy is sometimes gratifying.

The Lancet.

September 30, 1916.

1. An Inquiry into the Natural History of Septic Wounds. Kenneth Goadby.
2. The After-care of Persons Suffering from Pulmonary Tuberculosis. P. C. Varrier-Jones.
3. An Inquiry into the Clinical and Radiological Diagnosis of Intrathoracic Tuberculosis in Children of School Age. Walker Overend and Clive Riviere.
4. Enucleation of the Tonsils. Walter W. Howarth.
5. Treatment of Cloth by Antiseptic Substances in Relation to Wound Infections. Mary Davies.

1. **An Inquiry into the Natural History of Septic Wounds.**—Kenneth Goadby presents the second section of this report which was prepared for the Medical Research Committee. In the first section, published in *The Lancet*, July 15, sinus formation and the bacteria present in sinuses and sequestra were considered. This section of the report deals more particularly with vaccine therapy. The incidence of organisms found in the examination of 200 cases of septic wounds, according to the day of examination after wounding, is presented and detailed data with reference to the vaccine treatment given. Out of the total of 200 cases, the malignant edema group of organisms was found in 38 per cent.; the *B. perfringens* in 75 per cent.; *B. hibler* closely follows malignant edema; *B. proteus* and *B. coli* occur in 47 per cent. and 40 per cent. respectively; streptococci in 81 per cent., and staphylococci in 86 per cent. Or it might be stated that anaerobic bacteria were present in some 50 per cent. of badly wounded cases and about 20 per cent. of simple flesh wounds, but the incidence of aerobic bacteria is more common, being met with in about the same relative proportion in all the wounds examined. These wounds were examined at least two days after the injury. The investigation warrants the conclusion that anaerobic bacteria present in a large proportion of the wounds owe their infectivity to the association with anaerobic species, and that among these species the proteus and coli groups and streptococci, some of the latter being facultative anaerobic, are to be regarded as largely concerned in the development of acute septic processes within and around the wounds. Two series of cases were treated, one with vaccine and one without, the treatment being exactly parallel in other respects. The comparison of these series was based on the determination of the duration of the febrile period as determined by temperature charts and by the period during which the patient remained in the hospital. Examining the two series critically, the evidence is overwhelming that the protection afforded by the vaccines was responsible for the absence of secondary hemorrhage in the vaccine cases. No vaccine case developed acute gas gangrene, although the bacterial flora and the physical condition of the wounds were certainly highly potential. There is a difference of ten days in the duration of the fever in favor of the vaccine cases and a difference of 27 days in the hospital. As a result of this investigation the author recommends the following routine treatment: Polyvalent vaccines should be prepared from strains of organisms isolated from the infected wounds, consisting of (1) streptococci (aerobic and anaerobic varieties), sensitized with antistreptococcal serum; (2) *B. proteus;* (3). *B. lactis acrogenes*, and (4) *B. coli.* A mixed vaccine of sensitized polyvalent streptococcus 5,000,000, with *B. proteus* 10,000,000, should be given to all septic cases when admitted, pending the bacteriological report. In cases of gas gangrene streptococcal vaccine combined with *B. proteus* and *B. lactis acrogenes* should be used in strengths of 10,000,000 each. The inoculations as indicated by the bacteriological examination should be repeated on the third day, and the dose raised to 10,000,000 streptococci with 20,000,000 of the appropriate bacilli. Meanwhile, autogenous vaccine may, if necessary, be prepared for special cases when desirable. The author also discusses plating and wiring in septic fractures and states that in severely septic wounds it is not invariably followed by the disastrous results sometimes attributed to this method. When plating and wiring are carried out in immunized subjects the results seem highly satisfactory.

3. **Inquiry into the Clinical and Radiological Diagnosis of Intrathoracic Tuberculosis in Children of School Age.**—Walker Overend and Clive Riviere give this résumé of an investigation undertaken for the Local Government Board of London. The material of inquiry was formed by 61 children between the ages of five and ten, being resident in the district of Bethnal Green. They belonged to three classes, the first containing children with no known source of tuberculous infection in the house, the second exposed to infection of slight or limited extent, and the third to severe infection, one or both parents having in many cases died of the disease. Of 23 children from healthy households, 12

showed abnormal physical signs in the chest; of 19 cases with a limited household infection only four were free from signs of the disease, while of 19 cases with a severe household infection five were free from physical signs of the disease. It was found that the reflex bands of impairment suggestive of active lung involvement showed a notably higher incidence in the first two classes than in the last, suggesting that with longer exposure the active processes have time to die down. Enlarged supraclavicular glands were found in a few cases and appeared to be of some value where found. Radiographical examination for the most part accorded with the clinical findings in this series. Wherever clinical evidence of the involvement of the tracheo-bronchial glands existed this was confirmed by the *x*-ray. In a few cases radiograms showed tracheo-bronchial opacity unnoted at the clinical examination. Bifurcation glands were visible in nearly all cases on the oblique radiogram; evidently a definite degree of enlargement is necessary to produce the characteristic right paravertebral dullness observed on clinical examination. The relation of hilum opacities to pulmonary glands could not be clearly established. In commenting on his observations in this series of cases the author expresses the opinion that it serves to increase our sense of the artificiality of the distinction between tuberculous "infection" and tuberculous "disease," and that it not only appears that tuberculous infection is widespread, as has long been known, but also actual tuberculous disease of a degree that can be detected clinically. These facts would seem to call for a readjustment of our clinical concepts.

5. **Treatment of Cloth by Antiseptic Substances in Relation to Wound Infections.**—Mary Davies, in collaboration with Kenneth Taylor, has made an investigation to ascertain whether antiseptic substances incorporated with cloth will have any power to inhibit the growth of bacteria after the cloth so treated has been exposed to the open air for some time before being heavily infected. A variety of antiseptics were tested, the one finally chosen for further experimentation being pyxol, a compound of cresols and soft soap. This compound has the advantages of being easily procurable, fairly inexpensive, and inoffensive as regards color. Garments are saturated with a 5 per cent. solution and worn before the antiseptic has thoroughly dried on them. Experimentally it has been possible to prevent cloth from becoming a focus of infection in the test tube and in wounds by treating it with an antiseptic before it is contaminated with infected material. Some degree of bactericidal value is retained even after a month's constant exposure to hot sun and storms of rain. An open wound coming into contact with antiseptic clothing would be less likely to become badly infected, even if both clothes and skin were extremely dirty at the time, than is the case where neither clothes nor skin have any property of inhibiting the growth of bacteria with which they become saturated during trench fighting. If these deductions prove correct the practice of periodically impregnating the clothing of armies upon active service with an antiseptic would fully repay its cost in reducing the proportion of highly septic wounds. Antiseptics of the cresol type seem to be most useful and practical.

British Medical Journal.

September 30, 1916.

1. Radical Abdominal Operation for Carcinoma of the Cervix Uteri: Result of One Hundred Cases Reckoned on an Absolute Cure Basis. Comyns Berkeley and Victor Bonney.
2. The Use of Insecticides Against Lice. A. Bacot.
3. A Fatal Case of Gastroenteritis Due to *Bacillus Aertrycke vel Suipestifer*. E. J. McWeeney.
4. Perchloride of Mercury Poisoning by Absorption from the Vagina. A. F. Wilkie Millar.
5. Case of Puerperal Septicemia Treated by Autogenous Vaccine, with Recovery. William Grier.
6. A New Solid Medium for the Isolation of the Cholera Vibrio. H. Graeme Gibson.
7. Note on the Value of Hexamine in Aural Suppuration and in Meningitis. Douglas Guthrie.

1. **The Radical Abdominal Operation for Carcinoma of the Cervix Uteri.**—Comyns Berkeley and Victor Bonney report their experience with a series of 100 cases of carconoma of the cervic uteri operated on between April, 1907, and September, 1911, by the radical abdominal method, using a very thorough operation consisting of the removal of the uterus with its cervix contained in a bag formed of the upper half or two-thirds of the vagina, closed by a clamp, designed for this purpose. The ovaries are removed with the uterus and upper portion of the vagina, also the Fallopian tubes, broad ligaments, parametric and paravaginal tissue down to the upper surface of the levator ani, and the glands and cellular tissue occupying the obturator fossæ and investing the external and internal iliac arteries and veins. In cases in which the glands about the external iliac artery and vein are obviously carcinomatous, the dissection is carried up to the bifurcation of the aorta. The results of the operation in this 100 cases, among which were many who had been dismissed from other hospitals as inoperable, were as follows: Died of the operation, 20; died of recurrent growth, 32; died of other diseases, 2; lost sight of, 7; cured, 39. In every case the regional glands removed at operation were microscopically examined, and in thirty-five were found to be malignant. Of the thirty-nine cured cases all were known to be well at the present time. These writers report an operability rate of 62.5 per cent. and have found from the large number of cases they have dealt with that patients suitable for operation presenting themselves to the surgeon for the first time have, on an average, had symptoms for six months. The life expectation of these women is, therefore, on an average one year and three months. It may, therefore, be stated with confidence that where the patient survives the operation for three years or over, her life has been prolonged by the operation. On this basis the present series showed that out of eighty cases that survived the operation, forty-nine, or 61.2 per cent., had their lives prolonged.

2. **The Use of Insecticides Against Lice.**—A. Bacot describes the various experiments that he has made to determine the insecticidal effect when substances were used in diluted condition to impregnate cloth. Cytisine was found satisfactory from an experimental point of view, but offered the objections that in the concentration in which it was effective it might have a toxic effect and the cost of production would make it an expensive remedy. Further experiments suggest that a practical remedy may be found for preventing the spread of lice among troops by the use of a crude liquid carbolic acid and soft soap emulsion for the impregnation of shirts and underclothing. The emulsion should consist of 45 to 50 per cent. of soft soap, combined by heating with 50 to 55 per cent. of the crude carbolic. A 5 per cent. solution in warm water should be used to impregnate the garments. To determine the practicability of this suggestion tests should be made to ascertain the percentage of men likely to have irritable skins which might be susceptible to this percentage of cresol and the efficacy of the remedy to keep the men free from lice in the field.

4. **Perchloride of Mercury Poisoning by Absorption from the Vagina.**—A. F. Wilkie Millar reports a case of perchloride of mercury poisoning which occurred as the result of placing a tablet in the vagina under the impression that it would serve the same surpose as when

dissolved and used as a douche. Twelve hours later the symptoms of poisoning appeared and progressed rapidly to a fatal termination. Particular interest attaches to the typical nature of the symptoms produced and the manner in which mercury picks out the lower end of the small intestine, the cecum, and the ascending colon as its selective site. The changes found in the kidneys showed the marked action of the mercury on this organ. This case is also interesting from its medicolegal aspect.

6. **A New Solid Medium for the Isolation of the Cholera Vibrio.**—H. Graeme Gibson describes his method of preparing an alkaline medium, which possesses differentiating properties which should be especially useful in the detection of cholera carriers, as the feces emulsified in broth can be plated directly on it. The method is based on the fact the cholera vibrio alone of all the intestinal organisms acidifies starch. In the case of water examination, after enrichment in peptone water for a few hours, a drop or two of the peptone water is plated and a tentative diagnosis can then be arrived at in eighteen hours owing to the allied vibrios taking a longer time than the true cholera vibrio to bring about acid production. After forty-eight hours, if the cholera colonies are in excess and the plate spread somewhat thickly, the medium itself becomes distinctly acid, and colonies other than those of cholera take on a distinctly pink tinge; the cholera colonies, however, can still be distinguished by their deeper red center which other colonies lack.

7. **Note on the Value of Hexamine in Aural Suppuration and in Meningitis.**—Douglas Guthrie has made a number of experiments to determine the correctness of the findings reported by Crowe that hexamine given by the mouth could be detected in the cerebrospinal fluid withdrawn by lumbar puncture one hour later, and that after the subdural inoculation of dogs and rabbits with streptococci the administration of hexamine appeared in many cases to avert the onset of meningitis. Barton, following up these observations, suggested that the drug might be useful in middle ear suppuration as he had been able to recover it from aural discharges. The writer finds two sources of fallacy in the results and deduction of these workers. First they employed Hener's sulphuric acid test, which does not differentiate between the drug hexamine and its decomposition product formaldehyde. Secondly, hexamine is not split up and hence can be of no antiseptic value in any but an acid medium. Ear discharges and cerebrospinal fluid are alkaline. His experiments show that after the administration of hexamine it appeared in the urine in all cases, but in no instance could it be detected in the aural discharge even when the most delicate test, the Rimini-Burnam reaction, was employed. The drug was given in large doses and symptoms of intolerance appeared in two cases. With regard to the cerebrospinal fluid, results seem to point to a similar conclusion, either that the drug does not make its way into the fluid at all or appears in such small quantities as to be of no therapeutic value. Intradural injections of hexamine may conceivably have some effect on the meninges near the site of injection, but oral administration is useless.

Revue Médicale de la Suisse Romande.

September 20, 1916.

The Von Pirquet Reaction in the Schools of Lausanne.—Weith, after a general outline of the results of this reaction and of the incidence of tuberculosis, states that Lausanne has a comparatively low death rate for this affection, one, moreover, which is virtually stationary. In comparison with other Swiss cities, however, it is high, and it has been proposed to use the von Pirquet in the schools. Is it wise to test thousands of children with the result that a few more lives may be saved? According to authorities 95 per cent. of all children are tuberculous, *i.e.* have the condition in a latent form. What would be the good if all were "pirquetized?" By rights, according to theoretic conditions, one would need to be "pirquetized" weekly, for those not infected could readily become so. Would a negative reaction guarantee that a child was not tuberculous? The advocates of the test admit that such children as are candidates for tuberculosis betray this lack of resistance in many ways. These are the real suspects. Nevertheless should universal tests be practised? To cause a reduction in the incidence of tuberculosis prophylaxis seems the logical course. This means general sanitation, rigidly carried out, plus school hygiene. The author and other opponents of "pirquetization" are not opposed to the test *per se*, *i.e.* they have no fear of complications, nor do they shrink from the physical effort, nor are they old fogies. The task, however, increases with each year because both positives and negatives must be followed up, along with all new pupils. There can be no common ground between "pirquetization" and vaccination for smallpox, for the latter is meant to protect directly the individual and the public.

Progressive Lipodystrophy in a Child.—Boissonnas relates the case of a boy of six years, of good antecedents, and normal in appearance until three and one-half years of age, when he developed whooping-cough, with sequential emaciation of the face. Later he was attacked by influenza, as a consequence, perhaps, of which he developed a nephritis. The lipodystrophy may or may not have been determined or aggravated by some of these illnesses, but only the pertussis seemed responsible for its onset. Examined he showed normal growth, skeletal configuration, etc., but the face showed a remarkable contrast to the rest of the physique, which in general was in a flourishing state. The face was thin and pinched, the cheeks furrowed, the eyes sunken. The skin of the face was supple and normal, but contained no subcutaneous fat. The muscles of the face were all intact as were those of the tongue. The neck was thin, and one did not encounter a panniculus until the level of the clavicles and upper border of the scapulæ. The panniculus of the trunk was normal. There was an accumulation of adipose on the buttocks and upper portion of the thighs. The genitals were well developed. The legs were plump, but there was no obliteration of the knees and malleoli or dorsum of the foot. Of the cases of this malady on record the majority have been in females. Thus far treatment is without influence on the progress of this dystrophy.

Hydrophobia in the Foxes of Alaska.—Captain Ferenbaugh, U. S. Army, mentions the fact that so-called crazy foxes were seen in the Yukon Delta region in the spring of 1915. With mouths hanging open and dripping with foam they would approach settlements and try to bite the dogs. Demented, stiff, and emaciated, they were easily killed. Nevertheless five dogs were bitten and succumbed to rabies. In the interior of Alaska the disease seems to have been unknown until 1914, when a man died of the disease three weeks after the bite of an Esquimaux dog. During the crazy fox episode a soldier was bitten by one of the infected dogs. He was hurried to San Francisco, took a Pasteur cure and has since remained well. The Esquimaux have in general regarded the craziness of the fox as the result of starvation. But any naturally shy animal which unprovoked attacks men and dogs is best regarded as rabid.—*The Military Surgeon.*

Book Reviews.

THE INFLUENCE OF JOY. By GEORGE VAN NESS DEARBORN, Instructor in Psychology and in Education, Sargent Normal School, Cambridge, Mass., etc. (Mind and Health Series. Edited by H. ADDINGTON BRUCE, A.M.) Price, $1 net. Boston: Little, Brown & Co., 1916.

SEVERAL books have already appeared in this series, which might be called one of popular psychology. This volume is based chiefly on certain experiments made by the author and others demonstrating the physiological effect of certain emotions, particularly the benign one of joy, on bodily systems. The whole theory is, of course, a further application of the conditioned reflex as discovered by Pavlov in the last decade of the Nineteenth century. It is, in fact, a scientific support of the "New Thought" doctrines formulated for popular reading. The only defect is that while admittedly a book primarily for popular consumption, the writer finds difficulty in reaching the level of his audience. Thus we have such statements as "Kinesthesia may be considered the dynamic index of organism always in motion in relation to mind, and in emotion this principle is more obvious than elsewhere" (p. 21). And again, "Suggestion then is the more or less impulsive determination of a motive through influence exerted on the associative 'resultants' of the cortex, and implies a lessened control from the more purely voluntary and personal correlations as well usually as a narrowing of the field of consciousness" (p. 139).

Dr. Dearborn in the first part of his book describes the action of joy in stimulating secretions in the gastro-intestinal tract, its influence on the circulation; he describes the effect of good humor and enthusiasm on the nervous system, and finally its beneficent effects on the love-life. In the second part he lays down a philosophy of life something after the style of the Cheeryble brothers. He indicts in somewhat familiar phraseology the fiends of indolence and worry and praises work and play, both to be done of course with an ostentatious joyousness. Finally he alludes to the pragmatic side and points out the economic value of joy to the world.

The latter part of the book has a much wider appeal than the earlier part and is much easier for the lay reader to understand. The book as a whole should find its audience chiefly among physicians, educators, nurses, and employers of labor.

DIET FOR CHILDREN, A Complete System of Nursery Diet with Numerous Recipes; Also Many Menus for Young and Older School Children; A Home and School Guide for Mothers, Teachers, Nurses and Physicians. By LOUISE E. HOGAN (Mrs. JOHN L. HOGAN). Author of "How to Feed Children," "A Study of a Child," "The Introduction of Domestic Science in the Schools of New York City," U. S. Government Bulletin No. 56, etc. Price $.75. Indianapolis: The Bobbs-Merrill Company, 1916.

ONE of the most hopeful signs in these times of restless feminine activity is the awakening to the needs of rational and thoroughly intelligent feeding not only of babies but of children and older boys and girls, by the mothers and other women engaged in caring for the young of the race. Louise Hogan has made a successful attempt to meet this demand. She quotes the great Abernathy in saying that one-fourth of what we eat keeps us and the other three-fourths we keep at the peril of our lives. This book is a wise endeavor to reduce this peril.

OBSTETRICS NORMAL AND OPERATIVE. By GEORGE PEASLEE SHEARS, B.S., M.D. Professor of Obstetrics and Attending Obstetrician at the New York Polyclinic Medical School and Hospital; formerly Instructor in Obstetrics, Cornell University Medical College; Attending Obstetrician at the New York City Hospital; Senior Attending Obstetrician at the Misericordia Hospital. With 419 illustrations. Price, $6.00. Philadelphia and London: J. B. Lippincott Co., 1916.

THROUGH the irony of circumstances, the author of this work died suddenly while the result of his labors was going through the press. His aim, although he was of scholarly cast of mind, was to produce a purely practical book and in this he has succeeded well, although not a few treatises on obstetrics are written with this very aim. The more practical a book the more individualized it must be, for it is certainly not altogether practical to cite the teachings of other men save when the latter are endorsed fully by the author from his own experience; and the author has certainly written a personal book. In turning over the pages we see relatively few citations. As a test, under obstetric surgery, we do not find mention of a single contemporary author in forty consecutive pages of text, and this is not an isolated instance. On the other hand he has borrowed illustrations very freely, with due credit to the source. In regard to the burning questions of the day he advocates a partial substitute for twilight sleep —two small injections of morphin-hyoscin in the first stage. He does not even mention nitrous oxide under anesthesia, save that in obstetric operations "it should never be given until after delivery." In puerperal sepsis he is a strong advocate of the serum treatment. He prefers Dew's method in asphyxia neonatorum and of mechanical methods Holden's apparatus. The general attitude of the author is conservative, which is no doubt wise from the teaching standpoint. Still the public is entitled to a full mention of recent matter of importance, which might be given in fine print, or in some other way which would not interfere with a conservative attitude in the principal text. There is a very large per cent. of students who wish to lean, and rather heavily, upon a one-man text-book while others differently constituted, find the study of such a work a useful discipline, for they too must in time depend chiefly upon the results of their own experience for practice and teaching. Hence Dr. Shear's book should meet with a ready sale.

OPERATIVE MIDWIFERY. A Guide to the Difficulties and Complications of Midwifery Practice. By J. M. MUNRO KERR, M.D., C.M., Glas. Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow; Hon. Fellow, American Gynecological Society; Professor of Obstetrics and Gynecology, Glasgow University (Muirhead Chair); Obstetric Physician, Glasgow Maternity Hospital; Gynecologist, Royal Infirmary, etc. Third edition. Price, $6. New York: William Wood & Company, 1916.

THE first edition of this work appeared in 1908 as a successor to the volumes on the same subject by Barnes and Herman. The present edition contains twenty more pages of text and fourteen more cuts than the original book. When we bear in mind that the work is for all practical purposes a manual of operations and that only accredited procedures can be recommended, and also that it is very largely a personal book, we can understand why numerous remedies are omitted, such as mechanical methods of reanimating the newly born, lumbar puncture in eclampsia, etc. On the other hand, the new edition is particularly full on cesarean section, the number of indications for the latter being now very large. The book is a worthy successor of Barnes's "Obstetric Operations" and Herman's "Difficult Labor."

ABNORMAL CHILDREN (Nervous, Mischievous, Precocious, and Backward). A book for Parents, Teachers, and Medical Officers of Schools. By BERNARD HOLLANDER, M. D., Author of "The Mental Functions of the Brain." Price, $1.25 net. London: Kegan Paul, French, Trubner & Co., Ltd. New York: E. P. Dutton & Co., 1916.

AS noted on the title page, this book is addressed to an audience chiefly lay in character, and is subject to the implied limitations. It is, as a matter of fact, a brief description of feeblemindedness, precocity, and neurotic manifestations in children, with some glittering generalities offered in the way of treatment. As often happens to the writer who attempts to present medical matters in a popular vein, the author is obliged to be superficial and dogmatic, at times even to the verge of misrepresentation. Thus he says, "Heredity is by far the most frequent and the most potent predisposing cause of nervous and mental disease." And again, "A man who can drink continually for a number of years and keep out of a lunatic asylum, a prison, or a hospital, must possess an inherently stable physical and mental organization." Like most English writers, he uses the unfortunate terms "lunatic" and "insane" freely. He also speaks of sexual immorality as if it were peculiar to urban life, says that somnambulists can read, and after alluding to the Binet-Simon tests in a paragraph, makes the interesting observation that they have been criticized as not being individual enough, and concludes by saying, "Anyhow, the principle is right, and it should be easy to improve upon the details." Goddard, Yerkes, Bridges, Healy, et al., take notice! But aside from these statements, to which the hypercritical might take exception, as they might to his individual phrenology, the book is quite readable, and we should imagine could not be read by the parent or teacher without benefit.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-sixth Annual Session, Held at Scranton, September 18, 19, 20, *and* 21, 1916.

(Special Report to the MEDICAL RECORD.)

(*Continued from page* 701.)

SECTION ON MEDICINE.

Chairman's Address.—Dr. J. WESLEY ELLENBERGER of Harrisburg referred to the average increase of human life from twenty-five years in the sixteenth century to forty-seven years at the present time, which increase he attributed to the work of the medical profession. He suggested as possibly an ideal system for the better service of the many the grouping in one building of an internist, a surgeon, a laboratory man, and other specialists with individual offices; the fees to be divided according to the amount of service given and in harmony with established prices. Attention was called to the prospective health insurance bill and the co-operation of physicians urged that a satisfactory bill might be presented to the Legislature.

Types of Pneumococci in Infants and Children.—Dr. A. GRAEME MITCHELL of Philadelphia said the present study was undertaken to ascertain whether the same types of pneumococci were present in infants and children with pneumonia as in adults. He found that the so-called fixed types of pneumococci were of infrequent occurrence in infants and children as compared with adults; that the pneumococci without definite agglutination reactions and classed as Type IV were of more frequent occurrence in infants and children than in adults; that the mortality of infants and children infected with the fixed types (I, II, III) seemed to be lower than in adults. The fixed type occurred at all ages from six months to eleven years. Type IV was found often to cause as severe an infection as the fixed types. Type I seemed to cause a mild infection. Type IV was found to be the most frequent infecting organism in bronchopneumonia, although the fixed types might be found. Complications were found more frequently with Type IV.

The Specific Treatment of Acute Lobar Pneumonia.—Dr. RUFUS COLE of New York stated that the specific treatment of a disease consisted in treatment directed toward the destruction or inhibition of the growth of the etiological agent in the body, or neutralization of the injurious substances produced by this agent. With present knowledge, specific treatment might consist in the employment of drugs having a specific action (chemotherapy) or the use of measures based on established principles of immunity (immunotherapy). In the latter case, at least, exact knowledge of the etiologic agent in each individual case must be obtained. This, he said, was especially important in pneumonia, for different races of pneumococci showed well-marked immunological differences, there being at least four different types of pneumococci. Methods were now known for determining quickly in each individual case the type of pneumococci concerned. To increase the patient's resistance, it was observed that he might be stimulated to produce immune bodies himself (by the employment of vaccines) or immune bodies might be administered to him by giving him immune serum. At present the author stated that there was no experimental evidence and no conclusive clinical evidence indicating that the first method was effective. There was reason for believing, however, that the use of immune serum would be of value. Clinical experience indicated that an immune serum effective against Type I pneumococci had great clinical value. Immune sera against the other types, however, were at present not of therapeutic importance. The only specific chemotherapeutic agent against pneumococci now known was ethylhydrocuprein (optochin.) In the employment of this drug proper dosage was said to be of fundamental importance. The proper dosage had been determined through experimental and clinical studies. Clinical studies, employing this proper dosage, suggested that this drug might be of considerable therapeutic value.

The Treatment of Pneumonia by Other Than Specific Methods.—Dr. M. HOWARD FUSSELL of Philadelphia regarded fresh air, rest and most vigilant watchfulness as the principal factors in the care of croupous pneumonia. Cardiac weakness demanded digitalis, caffeine, camphor. Food should be nourishing and of moderate amount. Alcohol was of use when there had been addiction during health. It was useful as a food in small quantities, not more than 2 or 3 ounces in twenty-four hours. Strychnine might be given fairly continuously.

Dr. LAWRENCE LITCHFIELD of Pittsburgh, discussing Dr. Mitchell's paper, referred to Type IV being the infection most frequently found in children, and suggested in this type the term "Group" rather than Type, since this group was made up of different types. Regarding Dr. Fussell's paper he emphasized especially the importance of keeping the patient warm when he was being cared for in a cold room or on the porch. There should be plenty of woolen blankets under the patient as well as sufficient covering over him, and if the weather were very cold he would put the patient between blankets. He also emphasized the value of using abundance of water. If not readily taken by the mouth it should be used intravenously and with dextrose rather than sodium chloride.

Osteomalacia.—Dr. LAWRENCE LITCHFIELD of Pittsburgh gave a brief consideration of skeletal disorders more or less closely related to osteomalacia; different theories as to etiology—disorders of the ductless glands, acidosis, calcium metabolism and infection, with report of a case. In conclusion the author said that it would seem that at the present time the rational procedure is a case of osteomalacia should be an attempt to secure the best possible hygienic environment, a generous diet, rich in phosphorus and calcium, the avoidance of termination of lactation, the avoidance of pregnancy, adrenalin therapy, and if no improvement were noted, sterilization of the patient by the *x*-ray; if then no improvement, ovariectomy, possibly followed by a return to the administration of phosphorus and the hypodermic use of adrenalin.

Acidosis.—Dr. J. HAROLD AUSTIN of Philadelphia defined acidosis as an abnormal diminution in the amount of carbonates and phosphates of the blood. To the severe grades of acidosis having the peculiar hyperpnea without cyanosis he applied the term acid intoxication. For determining the mild forms of acidosis and the more accurate diagnosis of all forms mention was made of several of the newer laboratory methods. The depleted base in the blood should be replaced and this was best accomplished by the administration of bicarbonate of soda. Alkali might bring about a cessation of the hyperpnea of acid intoxication and diminish the laboratory evidence of acidosis. In the severest cases of acid intoxication, however, death occurred even when the urine had been rendered alkaline.

Dr. ALFRED STENGEL of Philadelphia called attention to the tendency of overlooking subsidiary conditions of greater importance perhaps than the definite ascertained disease under treatment. This tendency was particularly to be remembered in the treatment of acidosis so frequently associated with other diseases. For example, a patient might be more seriously threatened by an accompanying cardiac decompensation than the acidosis. Similarly in renal disease the accompanying acidosis might be the more serious condition. He felt that the general impression that cases of acid intoxication were necessarily fatal was not correct. He, personally, had seen two cases recover.

The Failing Heart; Recognition and Care of Certain Types.—Dr. HOWARD S. ANDERS of Philadelphia regarded the relation of the failing heart to heart failure as that of incipient tuberculosis to the advanced stage of the disease. He believed the failing heart to be almost invariably curable. One of the best danger signals of the condition was a ventricular flutter, palpable and audible near the apex beat and limited to the area bounded above by the third interspace and within by the left parasternal line. Intestinal autotoxemia he regarded as one of the most palpable causes of a heart that is failing functionally. Digestive disturbances with gastric and colonic distention and acidosis were also frequent elements in failing heart.

Dr. JAMES D. HEARD of Pittsburgh cited two cases demonstrating the inability at times to discover the underlying pathology in cardiac failure. The first case was an instance of auricular fibrillation in which autopsy showed a lesion of the sino-auricular node; the second, one of complete heart block without demonstrable causative organic lesion. Emphasis was given to the great prognostic value of early recognition of alternation of the pulse. The longest survival of any patient recorded was in a patient of Tabora who was alive six years after the arrhythmia was noted. Dr.

Heard regarded it as improbable that the majority of such patients would live more than a year.

The Curability of Certain Cases of Chronic Nephritis.—Dr. ALFRED STENGEL of Philadelphia discussed the question of chronic nephritis as a chronic condition, offering the proposition which he believed to be in keeping with the teaching of most pathologists, that chronic nephritis, like some other so-called chronic diseases, is not at all a chronic disease in the sense that it is a process which once initiated through the impetus originally given goes on and on as a progressive malady. Chronic arthritis, chronic myocarditis, and sclerosis of the liver were cited as not being in a strict sense chronic diseases in that they had inherent tendency to progressive deterioration as a result of the original impetus. They required for their increase a repetition of stimuli or of assault similar to the original one or the same as the original one. This he regarded as an important fundamental principle and defensible in regard to chronic nephritis. Evidence was submitted to show the relation of nephritis to infections and the probability that repeated reinfections occasion a gradually increasing involvement of the kidneys. Clinical evidence was cited as showing that removal of foci of infections is sometimes followed by an arrest of the disease, or, if not too far advanced, by complete disappearance of the evidences.

Dr. DAVIS RIESMAN of Philadelphia suggested the possibility of the over-emphasis at present of the subject of focal infection. This, however, was not entirely without merit, since subsequent to the over-emphasis, the little that was useful would remain. He believed that heredity was an etiological factor in nephritis and cited the case of a child dying from chronic parenchymatous nephritis. The father of the child had had chronic interstitial nephritis. He believed that the mistaken diagnosis of nephritis is sometimes given upon the discovery of albumen. A stone, while giving no classical symptoms, might be the focal cause of albumen and casts. Such had been proved to be the condition in a man who had been refused life insurance because of the urinary findings. In a boy of eight years of age regarded as a case of hopeless chronic nephritis perfect recovery followed removal of the tonsils, which apparently were the site of focal infection.

Dr. JAMES D. HEARD expressed his belief that the question of focal infection was not sufficiently considered in connection with the so-called degenerative conditions of kidney, heart, and blood vessels. Removal of sources of infection from the cardiac mechanism offered corroborative evidence of the influence of focal infection; a case in point was one of temporary fibrillary auricle in a diabetic patient in which upon the Allen treatment the urine became sugar free and the blood picture returned to normal.

Dr. GEORGE E. HOLTZAPPLE of York regarded the relationship between focal infection and chronic nephritis and other degenerative diseases so important and yet so apt to be overlooked that it should be continually emphasized. Carefully taken histories would frequently reveal evidence of chronic interstitial nephritis with but little to account for it beyond the presence of some infection, such as scarlet fever, in childhood. He emphasized the fact that focal infection might exist without local manifestation at the portal of entry and was discoverable only by the *x*-ray. Even when not found he was not unmindful that focal infection might exist.

Dr. HARRY M. KELLER of Hazleton agreed with Dr. Stengel concerning the relationship of focal infection of the teeth and tonsils to disease of the kidneys and other degenerative affections. The point confronting the general practitioner, however, was that of deciding when to pull out all the teeth of his patients, which decision might be rendered increasingly difficult by the opposing views of two or more *x*-ray specialists.

Dr. STENGEL, in closing, observed that nephritic patients were liable to local diseases, secondary to the nephritis and that a discovered focus might be the result of an existing nephritis rather than the cause of it. No harm could be done, however, in treating the lesion known to exist. Replying to Dr. Keller, it was obvious that sundry healthy teeth would have to seek that Valhalla where some of the appendices of surgical patients had found their place. Mistakes would be made by the over-enthusiastic and uninformed. He was not, however, addressing himself to that sort of practitioner, but calling attention rather to the importance of the proper investigation in all chronic diseases in which should be included nephritis.

Typhoid and Typhophors.—Dr. SAMUEL G. DIXON, Commissioner of Health of Pennsylvania, reviewed the work of the Bureau of Health in the prevention of typhoid fever and quoted its statistics of 3917 deaths from typhoid fever in 1906 and 1025 in 1915. There were reported in 1906 sick of typhoid fever 24,471; in 1915, the number was 8048. The name of typhophor was suggested as brief and distinctive for the "carrier" of typhoid fever. The history of a "carrier" was given who had been traced in an outbreak of typhoid fever in Perry County in the spring of last year. Under treatment with kaolin and autogenous vac. in the Hospital of the University of Pennsylvania in the service of Dr. Alfred Stengel the patient had regained her normal health. Emphasis was given to the importance of the protection of watersheds against pollution and possible carriers among construction and repair workers.

Dr. ALFRED STENGEL referred to the use of kaolin in the case under discussion as a beautiful illustration of the introduction of physical chemistry into medicine and surgery, the credit of which was due to the bacteriologists. After six negative cultures had been secured he had regarded the patient as *probably* cured. Three negative cultures required by some health boards he did not believe were adequate.

The Attitude of the Department of Labor and Industry Toward the Problem of Occupational Diseases.—Mr. JOHN PRICE JACKSON of the Department of Labor and Industry of Pennsylvania reviewed the results of the Workmen's Compensation Act since its inauguration on Jan. 1. and called attention to the proposed amendments of the law, notable the problem of what should constitute an occupational disease. He urged the importance of reports upon occupational diseases being forwarded to the department and of the holding of clinics of such diseases that the question might be adequately considered in the preparation of the proposed amendments. The profession was urged also to give thoughtful consideration to the proposed compulsory health insurance, and to its corrollary, old age insurance. Were such attention not given the possibility was mentioned of a resultant paternalistic and injurious governmental system.

Dr. J. W. SCHERESCHEWSKY of the United States Public Health Service called attention to inconsistencies arising in the general objection to industry bearing the economic loss due to certain forms of occupational disease. Such an instance was to be observed in the case of a man being suddenly overcome by benzol fumes while waterproofing a tank; in contrast to which a girl working in a cannery might become chronically poisoned by benzol fumes and death result. The only difference in the two cases would be the period of time in which death ensued. The inference was logical that if compensation were due in the first instance it was equally so in the second. Social insurance was to be regarded as the next most important social advance. Were the cost of such social insurance conditioned in a special locality or industry by the general prevalence of disease, obviously it would create a strong financial stimulus to preventive measures.

Dr. H. F. SMYTH of Philadelphia said that in defining an occupational disease there must be considered the patient's previous occupation, general health and physique, personal habits and home hygiene as well as the general hygiene of the plant where he was employed and precautions taken to minimize the particular hazard. To increase the number of compensable diseases full reports upon all occupational diseases he felt should be compulsory, such tabulation showing also the proportion of diseased to healthy individuals in the industry. He had had occasion to note the entire lack of such statistics throughout the United States.

Dr. JAMES I. JOHNSTON of Pittsburgh cited as illustrating complexities arising under the administration of the act the case of a coal miner who had had a fracture of the rib and in whom tuberculosis had become established. It was suggested as not improbable that the man had had tuberculosis and that his resistance to the disease had been lowered by the accident. How to settle the question equitably to all concerned offered some difficulties.

Dr. FRANCIS D. PATTERSON of the Department of Labor and Industry, in closing the discussion for Commissioner Jackson, urged that the medical profession of Pennsylvania formulate a definition of occupational disease which would stand an "acid test."

Some Phases of Chronic Colitis.—Dr. EDWIN ZUGSMITH of Pittsburgh considered the more common forms

of mucous and membranous colitis. Usually the discovery of mucus in the stools would establish the diagnosis. The amount of mucus varied from microscopic quantities to great masses constituting the entire discharge. Record had been made of a single evacuation of several pounds. The anemia and nervous irritability often present in colitis, the author stated, were frequently responsible for the diagnosis of neurasthenia. Pain, fatigue and meager endurance were mentioned as prominent features of the disease. Colitis was said to be often a secondary process resulting from infectious states of the gums and teeth and other focal infection. The relief of the bowel condition subsequent to the cure of pus was mentioned as an indication of the septic origin of colitis. In the absence of the pancreatic juice and bile or their diminution or alteration colitis was practically certain to follow. Ptosis, said by some to be invariably present in colitis, was considered a predisposing cause. The relationship of colitis and appendicitis was said to be very close, and special attention to the colon following appendectomy was advised. Colitis, while often a secondary process, might give rise to other conditions, such as neurasthenic symptoms and joint affections. Severe inflammatory rheumatism was considered as a frequent resultant of a diseased colon. Confusion in diagnosis was said to occur from absence of examination of the stools. The proximity of the hepatic flexure also caused confusion in diagnosis. Because of the widespread teaching that pain after eating indicated ulcer colitis was sometimes mistaken for ulcer of the stomach or duodenum. Such teaching Dr. Zugsmith regarded as fallacious. With proper food and under hygiene and medication many cases of colitis were cured, while most of the cases were helped to the point of complete comfort.

Dr. Samuel G. Gant of New York regarded colitis and constipation as much more frequently of rectal than of abdominal origin. He believed that such patients were often over-treated. Local treatment should be given in chronic ulcerative colitis, catarrhal or specific. The *x*-ray and the microscope he believed to be overrated, since in chronic ulceration and diarrhea diagnosis could be made by the symptoms, proctoscopic inspection of the rectum and microscopic examination of the stools. Care should be taken to see during irrigation that the medicament came in contact with all sides of the bowel. He advised as the best non-operative treatment the placing of the patient in the inverted position and filling the colon with about a quart of coal oil. Flushing of the colon with a solution of 20 grains of nitrate of silver and a quart of water would reduce the number of stools. Resultant pain was to be treated by washing out the colon with a saline solution. Such a patient should be placed upon a diet of baked potatoes and unsalted butter.

Dr. Lawrence Litchfield of Pittsburgh regarded the giving of too many enemas one of the commonest causes in the mild type of chronic colitis. He had found one of the heavier forms of liquid paraffin useful in the constipation, and has been particularly impressed with the association of chronic colitis and neurasthenia and hysterical conditions. In cases enteroptotic, congenital or acquired, he had seen the greatest benefit from a course of rest and feeding as suggested by William Gerry Morgan in Washington.

Dr. Zugsmith, in closing, said that the association of colitis with ptosis was so frequent that it was of necessity found in many patients who were nervous. This nervousness was increased by the absorption from the bowel with the consequent irritation; as these conditions improved the nervousness disappeared to a very great degree.

The Chemical Diagnosis of Gall-Bladder Disease.—Dr. Martin E. Rehfuss considered the diagnosis of gall-bladder disease, and particularly stone, from the standpoint of the examination of the blood serum for the cholesterol content, examination of the bile obtained by means of duodenal intubation, and the microchemical studies of the feces. Attention was directed to the importance of a definite increase of serum cholesterol in the causation of calculi. He had found in thirty cases of various conditions, sixteen being stone, a positive increase of serum cholesterol in every one. In the majority of another series of forty cases hypercholesteolemia was found. The importance of the microchemical examination of the feces was emphasized, inasmuch as gall-bladder and hepatic disturbances were, as a rule, accompanied by disturbances in fat digestion and in bile elimination.

The Diagnosis and Treatment of Chronic Intestinal Indigestion in Children.—Dr. Robert K. Rewalt of Williamsport emphasized the importance of recognition and treatment of this most frequent condition found in children to which too little attention was paid. The diagnosis was to be based upon the symptomatology which was rather comprehensive, and included irritability, capricious appetite, coated tongue, irregular fever, abdominal pain, tympanites and flatulence, constipation, poor physical condition, secondary anemia, indicanuria, and peculiar nervous phenomena. Treatment was to be based upon general management, strict diet with intelligent co-operation of mother and nurse, and drugs.

Dr. Harry Lowenburg of Philadelphia said it was not always possible to determine whether the digestive features present in these cases were primary, or the secondary effects of an underlying etiological factor. Such factor might be assumed to be a biochemical toxin which, interfering with the nervous mechanism of the gut prevented digestion and assimilation of food. It was also true that this toxin might be secondary to a disturbance of the digestive function as the result of prolonged injudicious feeding or of psychic shock incident to vicious environment. The non-digestion and subsequent fermentation, however, were dependent upon the character of food and the intestinal bacterial flora, and not upon the inherent defect in the gut. The term toxic diathesis in Dr. Lowenburg's opinion would better describe the condition discussed than chronic intestinal indigestion. Cases exhibiting irregular temperature extending over some time Dr. Lowenburg would attribute in all probability to chronically diseased caseous tonsils or to some other focus of suppuration in which case the digestive symptoms would be secondary. He would urge a systematic examination of the urine and of the stools in all of these cases. Diet was to be considered individually. In his experience the elimination of milk for a month or so was beneficial. Milk and scraped beef he believed to be incompatible, and he would substitute the term pancreatization for peptonization, being more comprehensive and self-explanatory. Evacuation of the bowels was better secured by the use of general measures, the local use of suppositories, glycerin and water enemas and the administration of toxic laxatives, than by purgation.

The Value of Roentgen Rays in the Diagnosis of Pulmonary Tuberculosis.—Dr. Willis F. Manges of Philadelphia presented this paper, and among the conclusions from his study the following are noted: That tubercles of macroscopic size, miliary or conglomerate, cast recognizable shadows on the sensitive plate; that the presence of tubercle shadows was essential to definite *x*-ray diagnosis, regardless of the variety, stage or extent of the lesion; that the lesion in the depth of the lung was as easily recognized as one at the surface; that in the acute exudative stage of bronchopneumonic phthisis the tubercle shadows might be obscured by the exudate shadows, and that there might be other cause of localized exudate than tuberculosis; that the roentgenogram frequently revealed tuberculosis overlooked clinically, and that in the Roentgen rays there was at hand a means of diagnosis as positive as the findings of tubercle bacilli in the sputum and available at a much earlier period in the disease.

Dr. George E. Pfahler of Philadelphia said that by means of well prepared stereoscopic plates the skilled roentgenologist could detect tubercles in the lungs when no larger than a pin head. In every case, however, there should be careful physical diagnosis as well as Roentgen study. The old idea that tuberculosis could not be definitely diagnosed until tubercle bacilli were found in the sputum must be abandoned in the interest of this class of patients. While a Roentgen study was valuable in all cases it was especially so in early and recurrent cases and in the chests of children. The difficulty in *x*-ray diagnosis of pulmonary disease, he said, was not so much in not detecting the disease as in determining its nature when recorded upon the photographic plate. Here even the most expert must still be in doubt upon certain points. By co-operation of physician and Roentgenologist, however, these points would be illuminated and a decided advance made in the diagnosis and treatment of pulmonary tuberculosis.

Dr. James I. Johnston of Pittsburgh emphasized the importance of supplementing the physical study of suspected tuberculosis with the *x*-ray plate. In the very early cases and in the determination of the activity of the lesion it would seem to an internist that the opportunity of the medical man were greater than that of the Roentgenologist.

Epidemiology and Clinical Features of Infantile

Paralysis.—Dr. Charles A. Fife of Philadelphia said that the epidemicity of infantile paralysis was first recognized in 1890. The disease had evidently been observed, however, by Underwood in 1774 and by Jork in 1816. While the theory of contagion by personal contact he said was supported by more evidence than any other he thought it probable that a specific carrier would be found. He regarded infantile paralysis as essentially a general infection in which the organisms and possibly toxins had a special affinity for the nervous system. Such a disease might cause innumerable combinations of signs and symptoms. The importance of the so-called abortive type and the preparalytic stage of the other types were emphasized in connection with public health considerations. Many children, he said, had developed paralysis some days after "an attack of indigestion" which might have been prevented by rest.

Dr. Alfred Hand, Jr., of Philadelphia described several widely varying cases of infantile paralysis which had been under his care. One was that of a man aged 48 who had sore throat, restlessness, inability to sleep, loss of appetite, with twitching of the muscles of the left side of the face. Bell's palsy of the left side of the face developed, and two days later paralysis of the right shoulder spreading to the leg. Unconsciousness and paralysis of the bladder and rectum followed, and death occurred in nine days. Sections of the medulla studied by Dr. Spiller showed lesions of acute anterior poliomyelitis.

Dr. Theodore H. Weisenburg of Philadelphia referred to his study of infantile paralysis from the neurological standpoint. Practically all deaths had been due to respiratory paralysis. The meningeal cases had been very numerous. In the meningeal cases there was in most instances marked increase of cerebrospinal fluid, although in one or two cases a dry tap had been obtained. He had seen a large number of bulbar cases; blindness, but once. He regarded lumbar puncture the best treatment, to be repeated as frequently as indicated. He was not enthusiastic concerning serum treatment; he believed that adrenalin offered a little more hope. He placed much emphasis upon the importance of rest.

Dr. Theodore LeBoutillier of Philadelphia believed the number of abortive cases of infantile paralysis in the present epidemic to be quite large. While he believed that the abortive type would give acquired immunity to a child for life, the case of one child had been observed who had an apparently authentic history of a second attack of the disease. In the transmission of the disease he was inclined to believe that dirt and dust, especially the latter, might be as great a carrier as direct or indirect contact. This was particularly emphasized to him in recalling that the rainfall during August in Philadelphia was .84 of an inch rather than the usual amount of 4½ inches. The mortality percentage also had been highest during August. In treatment lumbar puncture had been more effective than any other agent.

Some Phases of the Drug Habit Problem, Especially in Relation to the Harrison Act.—Dr. John H. W. Rhein of Philadelphia urged the enforcement of legislation in the control of the use of opium as a drug habit. The sale also of the hypodermic syringe should, in his opinion, be legally forbidden. The ill effects of the drug habit were said to be more apparent in character and psychic decline than in the physical deterioration. Treatment relative to the removal of the drug was given. A cold pack was of value for the nervous manifestations. The need of special wards in which these patients might be treated was emphasized. He believed it the duty of the State to care for drug addicts as for the insane, epileptic and feeble-minded. He believed that the distribution of habit forming drugs should be legally prohibited except legitimately by physicians.

(*To be continued.*)

A Certain Immunity of Arabs to Syphilis.—Sicard and Levy have noted the fact that wounded interned Arabs very often give positive seroreactions of syphilis, and especially the cerebrospinal-fluid reactions which point to localization in the nerve centers. The majority of those tested are by these criteria latent syphilitics. On the other hand, there is not the slightest clinical evidence of the disease. The nervous parenchyma, like the other tissues, is thus enabled to protect itself from the syphilitic virus, as are also the meninges. The only explanation of this phenomenon is racial immunity.—*Gaceta Médica Catalana.*

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twenty-Ninth Annual Meeting, Held at Indianapolis September 25, 26 and 27, 1916.

The President, Dr. Hugo O. Pantzer, Indianapolis, in the Chair.

(*Continued from page* 788.)

Prolapse of the Uterus in Nulliparous Women. — Dr. Palmer Findley of Omaha said that in several of the reported cases the procidentia occurred about the time of puberty and in these cases it was recorded that the girls were poorly nourished; some with tuberculosis of the lungs associated with persistent coughing, others who were compelled to do hard labor. A suggestion of the rarity of the lesion in the nulliparous women was found in the excellent contribution of Kepler, who collected 70 cases in the literature up to 1911. To this number he added one of his own and 80 from personal correspondence, making in all 151 cases of procidentia uteri in nulliparous women. He classified these cases as follows: (1) Cases due to congenital defects which occurred in the new born or at the time of puberty. (2) Cases not due to congenital defects, occurring later in life. In his judgment there was an element of infantilism in most if not all the cases of procidentia in nulliparous women. The fact that these women were sterile was highly suggestive. In support of the theory of infantilism as an underlying factor in the development of procidentia, he had two cases on record. The relation of mental defects to prolapsus uteri was forcibly illustrated by the observations of Kepler, who found 38 mental defectives in 80 cases of procidentia in nulliparous women. In this group were dementia precox, imbecility, idiocy, chronic mania, hysterical insanity, cretinism, and nervousness of high degree. It had long been recognized that defective mental and physical development went hand in hand and the casual relation of mental defects or prolapsus uteri was readily conceived.

Radium, a Palliative.—Dr. Douglas C. Moriarta of Saratoga Springs said that radium possessed a power to correct the disagreeable odor which accompanied the breaking down of cancerous tissue. This was a very great boon to the patient as well as to the household. Further, radium controlled hemorrhage. In six cases in which he used radium pain was relieved, the odor was markedly controlled, hemorrhage ceased, and there was a change in or a disappearance of the local pathological tissues. Two patients died in coma two months after the treatment; four were alive and hopeful. In one case the uterine hemorrhage was not of cancerous origin, but the condition was a terminal one. He was sure the patient would have died had it not been for radium. In using radium in these cases he believed it was possible to produce a toxemia which might prove fatal, and he was sure he had seen the end hastened in this way. He would suggest two precautions when applying radium locally; first, a patient with a low leucocyte count should not be given prolonged applications of radium and, second, when radium was used it should be accompanied by the liberal administration of alkalies. He wished to emphasize his conviction that no case of this type was so desperate, and no postoperative condition so hopeless that radium should not be used with an expectation of the alleviation of the distressing symptoms.

A Modified Gillian Operation and Its Ultimate Results. —Dr. Albert Goldspohn of Chicago said those who denied the pathological nature of retroversio-flexion affirmed it by their acts when they corrected it in connection with operations for its complications. The harm of retroversion was mostly brought about through embarrassment of the venous circulation by torsion of the broad ligaments and by traction in descent of the uterus. Clinical observation and experience indicated that the competency of the veins becomes impaired. Admitting this as a probable factor in the pathology, an effective and lasting as well as innocent cure was best obtained through an overcorrection, by suspending the uterus at a higher plane than it naturally or normally occupied, by a substantial implantation of round ligament loops, reinforced by their peritoneal covering, into the recti muscles and their aponeurosis, best after the Gillian technique, in addition to correction of the version. To secure the desirable degree of anteversion, and also to avoid intestinal complications, the implanta-

tion should not be more than 3 to 4 cm. from the edge of the symphysis pubis, and it should bring the distal unused segment of the ligament and its uterine origin both in contact with the abdominal wall. The efficiency of this modification of the Gillian operation was shown in the 127 examined cases, including the double test of pregnancy of 21, nearly all natural and mature births, with a return of displacement of only 1 3/5 per cent.; with both pelvic and general health "good" or "excellent" in 88 per cent.; improved in 10 1/5 per cent., and unimproved in only 1 3/5 per cent. in a total number of 164 cases observed from 2 to 7 years or over 3½ years on the average. Its harmlessness was shown by the utter absence of any deleterious effects at all traceable to it in the 21 births noted; likewise from the absence of intestinal complications and of discomfort to the patients.

Pathology of the Vulvovaginal Ducts and Glands.—Dr. JAMES E. DAVIS of Detroit gave the history of the literature of the vulvovaginal glands, with a short outline of the physiology, gross and microscopical anatomy. The special pathology as reviewed in the literature was at many points incomplete. The abundance of material for exhaustive study of these parts had been limited by clinical inattention to the details of the external genitalia examinations. A better definition of the gross pathology and frequent correlation with the microscopic changes in the ducts and glands was desired. The vulvovaginitis of school-girls, when of gonococcal origin, might exhibit remarkable chronicity. The unhealed lesions during puberty and adult life exhibited marked infectious potentialities with a much wider range of pathological changes than was commonly observed in cysts and abscesses. Primary malignancy, while not at all frequent, was significant and offered an unusual fatality when not recognized early.

The Standardization of Definite Procedures During Gynecological Operations.—Dr. E. A. WEISS of Pittsburgh said that his own deductions were that: (1) Many mistakes that were made during gynecological operations were preventable. (2) While the operator was legally responsible for every action in the operating room, the average surgeon did not take adequate measures to safeguard the patient and himself. (3) By adopting a definite routine or standardized method both for himself and his assistants, better team-work was accomplished, and consequently lessened mortality and morbidity.

The Surgical Treatment of Uterine Cancer.—Dr. J. H. JACOBSON of Toledo, Ohio, summarized as follows: The prophylaxis and especially the early diagnosis presented the greatest problem in dealing with uterine cancer. The radical abdominal operation thus far had given the highest percentage of cures in operable cases. Until radium, *x*-ray, and Percy's method shall have proved their superiority to operation, their use should be limited to the inoperable cases. There was abundant clinical evidence at hand to prove the value of radiotherapy; it therefore seemed logical to follow every palliative or radical operation with radiotherapy.

Practical Consideration of Surgery of the Stomach—Dr. GEORGE W. CRILE of Cleveland said that despite the mechanical perfection of operative technique, the first contact with the bad risk patient with gastric cancer was still menacing because of the narrow margin of safety due to starvation. In these cases the reserve alkalinity of the body had been reduced, nutrition was impaired and the reserve stores of water and of potential energy had been diminished. The purpose of his paper was to describe a plan of surgical treatment by which these dangerous factors might be obviated or diminished. As a result of these procedures in his clinic the mortality rate of operations upon the stomach, including explorations in cases of inoperable cancer, resections, and gastroenterostomies had been reduced approximately two-thirds.

The Mechanics of the Stomach After Gastroenterostomy.—Drs. J. H. JACOBSON and JOHN T. MURPHY of Toledo drew the following conclusions: "(1) That all patients examined in this series were uniformly well. (2) That gastroenterostomy openings properly made and placed do not obliterate. (3) That the gastroenterostomy openings functionate equally as well in the presence of either an open or closed pylorus. (4) That it is not necessary to artificially occlude the pylorus in gastroenterostomy. (5) That the gastroenterostomy opening to secure the maximum amount of drainage must be of ample size and placed as near the pylorus as possible, preferably in the antrum pylori. Such openings must not be made on the fundus of the stomach nor on the lesser curvature. (6) That gastroenterostomy is essentially a drainage operation. (7) That serious distention in the jejenum does not occur after gastroenterostomy; the food is seen to pass rapidly through the many loops of the small intestine before it finally stops. Even in those patients who are entirely relieved of their former symptoms food can be forced backward into the stomach from the jejenum and, although this can be done easily, such regurgitations do not seem to make any difference."

Value of Pain, Jaundice, and Tumor Mass in the Differential Diagnosis of Diseases of the Right Upper Quadrant of the Abdomen—Dr. J. D. S. DAVIS of Birmingham, Alabama, stated that the usual symptoms of peptic ulcer were pain, vomiting, and hemorrhage; the most important of which was pain. Pain was the earliest definite symptom. It was usually aggravated by large amounts of food and often relieved by small amounts. Pain might come on during ingestion of food, but more frequently came on a few hours after meals and at night. Gastric ulcers were often characterized by periods of long remission, intermittency taking place for long periods of time, during which the patient often believed himself well. The *x*-ray examination would often be helpful in determining the presence of peptic ulcer. Much valuable information might be secured by the roentgenologist, many of whom claimed to diagnose seventy-five per cent. of ulcers. In appendicitis the pain in a large number of cases occurred at the epigastrium and then was diffused over the abdomen and generally localized at or near McBurney's point. If the appendix was long enough to extend into the region of the gall-bladder and ducts its inflammation might excite symptoms of cholecystitis or choleodochitis and the pain might be at the rib border. If located behind the cecum pain might be referred to the loin or to the right rib margin. Jaundice was a valuable diagnostic sign. It appeared in appendicitis and renal disease only as a result of sepsis. Obstructive edema due to a duodenal ulcer near the ampulla of Vater sometimes resulted in a closure of the common bile duct and might cause pancreatitis and jaundice. Choledochitis and cholelithiasis was accompanied with slight or marked jaundice which might be of an intermittent or transient type. It might be so slight that an examination of the conjunctiva or a chemical examination of the urine was necessary to detect it. Appendical tumors might be located anywhere in the abdomen. It was sometimes six or more inches long and might become attached to any other abdominal organ. When inflamed it might become fixed by adhesions to some surrounding tissue. Floating kidney tumors were usually marked by smooth, sharp outlines and mobility. They were usually free from pain and tenderness unless obstruction resulted from ureteral pressure. A hydronephritic or pyonephritic kidney was usually stationary or fixed well back into the loin and did not move with the diaphragm. The hydronephritic kidney usually presented no urinary findings, while the pyonephritic kidney was usually accompanied by septic symptoms—the urine showing blood, pus, albumin, and casts. Pain was the most prominent symptom in all conditions of the right upper quadrant, and was of great value in a differential diagnosis, if the peculiarities and characteristics of pain common to each condition were kept in mind. Regardless of every aid in diagnosis, it was often difficult to differentiate and, instead of waiting months or years for the trouble to clear up, an exploratory diagnosis under nitrous oxide, gas-oxygen, or novocaine should be made.

Excessive Drainage Complicating Surgery Upon the Common Bile Duct.—Dr. J. E. SADLIER of Poughkeepsie, N. Y., said that in analyzing the histories of the two cases herewith reported, he noted certain points of similarity, namely, they both were long standing cases of common duct infection and incomplete obstruction; the latter was a result of the ducts being filled with gallstones to such a degree that they must have constituted an impediment to the normal and usual outflow of bile resulting from the obstruction, he had in each case well marked dilatation of the common duct. In only one case was there an alcoholic history and likewise in but one case was there involvement of the pancreas. Hence, these two conditions could be eliminated as complete causative factors. They could not be disregarded as partially influencing conditions in provoking the excessive drainage. He was unable to state the positive cause for this peculiar and serious complication, but he was disposed to be-

lieve that we had a condition somewhat analogous to that seen in the surgery of the hypertrophied prostate gland, where as a result of incomplete emptying of the urinary bladder, we got back pressure upon the ureters and kidneys, which, when suddenly relieved through operative intervention, resulted in an excess outflow of urine of low specific gravity, which was a well known source of danger in a person debilitated by long continuation of the pre-existing disease. Was it not quite probable that in partial obstruction to the outflow of the bile, by reason of the common duct obstruction from stone, we had a dilatation of the smaller biliary radicles in the liver? Increased back pressure, which, when suddenly relieved by operative removal of the obstruction, produced a condition of venous engorgement of the liver with resulting outflow of fluid which was more in the nature of a transudation than an actual biliary secretion, and this coupled with a back flow of pancreatic fluid through the dilated duct, would account for the excessive drainage. Yet he would not presume to definitely determine the causative factor, for the object of this paper was not to analyze the condition, but to suggest that in our operative work upon the common bile duct we must consider the possibility of excessive drainage and be prepared to combat it before the patient became dehydrated to the danger point.

Diverticulitis of the Descending and Pelvic Colon.—Dr. JOHN W. KEEFE of Providence, R. I., after reporting two cases in detail, emphasized the following points in connection with them: The symptoms found resembled those of appendicitis, but with the local manifestations on the left side. He pointed out the value of roentgenological examination, and also laid stress on the importance of differentiating diverticulitis of the colon from carcinoma, tuberculous or luetic growths. One should not attempt too much at the primary operation. The two-stage operation was often preferable. Temporary colostomy might be desirable. Conservative surgery was of the greatest value in this disease.

Appendicular Abscess, Complicated by Hemorrhage and Death.—Dr. MAGNUS A. TATE of Cincinnati spoke of this condition as rare. The patient was a young woman who had her first attack. Her abdomen was opened through the right rectus, and drainage was profuse for six days. At the end of the tenth and eleventh days her condition was good. On the twelfth day she complained of pain and nausea. On the morning of the thirteenth day there was hemorrhage from the wound, and on the fourteenth day her condition was alarming, death occurring the same evening. Autopsy revealed a gangrenous sac, the size of a dollar, which was found in the mesentery, probably the site of hemorrhage.

Inguinal Hernia Attached to the Cord, Undescended Testicle, Uterus, Tubes, and Broad Ligament.—Dr. EDMUND D. CLARK of Indianapolis reported a case which was a very good example of hermaphroditism in a man. The external conformation of the patient was that of a normal male. The hernial sac contained a uterus, broad ligament, and Fallopian tubes. Although married to an apparently normal woman for six years, no pregnancy had resulted.

Absence of Muscular Tone an Important Factor in the Etiology of Postoperative Paralytic Ileus.—Dr. R. R. HUGGINS of Pittsburgh stated that distention and stasis, varying in degree, followed most laparotomies. This was usually a temporary paralysis, a reflex action through the plexuses of Auerbach and Meissner, the result of manipulation and trauma. There were cases where infection could be excluded and patients died of paralytic ileus. The comparative frequency in vaginal hysterectomy was significant. There was little exposure and handling of intestines. Careful preoperative, operative and postoperative treatment was important in lessening postoperative paresis, but we were occasionally confronted with an aggravated form of this condition and death ensued. He believed that in certain instances, where death occurred from so-called paralytic ileus, it was primarily due to lack of muscular strength in the walls of the stomach and intestines. This depended largely upon the general muscular tone in the individual previous to operation, the amount of exhaustion incident to the operative procedure, and the effects of the anesthetic. Keith had called attention to the presence of nodal tissue, neuromuscular in character, in the bowels, which was similar to that in the heart. This was located at various points in the intestinal tract and acted as a local pacemaker. A block might occur, as in the heart, at any point where one rhythmical zone passed into another. Magnus demonstrated that the strips beat more actively when removed from a normally fed animal than from one that was not digesting. The intestinal tract had an intrinsic tone, which was regulated by extrinsic nerves. Tonic contraction and rhythmical peristalsis disappeared when there was general bodily weakness, and when the depleted central nervous system failed to deliver the necessary tonic impulses. Postoperative distention varied in direct proportion to the strength and tone of the general muscular system. Patients with poor general muscular tone required more careful preparation, and greater efforts to minimize exhaustion from anesthetic and operative effects.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 19, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THIS meeting was devoted to the Wesley M. Carpenter Lecture and an appreciation of Dr. John B. Murphy.

Dr. WALTER B. JAMES, in opening the meeting, stated that the first Wesley M. Carpenter Lecture was delivered in 1892 and one had been delivered annually ever since. The lecturers had all been men who stood in the foremost rank of physicians and surgeons in the United States. In considering who should be selected to deliver the lecture this year Dr. Murphy had been chosen. He had accepted the invitation last spring and had intimated along what lines his paper would be. Dr. James said he heard nothing more from Dr. Murphy until August 9 when he received a letter telling him how much he had looked forward to coming, but stating that he had been overtaken by the disease to which he had devoted so much study, an acute metastatic aortitis. He died suddenly on August 11. On the forenoon of the day of his death, while suffering intensely and unable to speak, he wrote that he had placques in the aorta and requested that an autopsy be done to verify his diagnosis. This diagnosis was fully verified; it was found that he had acute, ulcerating placques in the aorta. He died as he had lived trying to help the medical profession in its task.

An appreciation of Dr. John B. Murphy.—Dr. GEORGE E. BREWER made this address. He said in part that on the 11th of last August the medical profession of America had been shocked by the sudden and unexpected news of Dr. Murphy's death. This news brought to all of them a sense of deep personal grief. It was fitting before listening to his last piece of scientific work that they should pay tribute to the memory of this remarkable man. Dr. Brewer then briefly reviewed the life and work of Dr. Murphy and enumerated the many honors that had been conferred upon him. He stated that early in his career Dr. Murphy had gone abroad to study and had been greatly impressed by the work of Billroth, Albert, and von Bergmann. At that time the scientific spirit in America had not been aroused. Dr. Murphy returned fired with enthusiasm and did much to give an impetus to scientific work in medicine and surgery in this country. He possessed all the elements of the successful surgeon, knowledge, originality, imagination, admirable technique, sober judgment untiring enery, and optimistic enthusiasm. He attacked by preference the great problem in surgery. By unwearying industry he opened the path and blazed the trail from one achievement to another. Among the first of his discoveries and one of the greatest contributions to modern surgery was the Murphy button. This was followed by his work on the problems of thoracic surgery in the broader sense; he saw conditions that had not come under the observation of other surgeons. In 1898, he gave the results of his observations in this field of surgery and to-day they still stood as surgical gospel on this subject. He then became interested in neurological surgery. It might be remembered that at this time a great deal of futile neurological surgical work was being done, because the anatomy and physiology of the nervous system were not understood. Dr. Murphy devoted two years to the study of the anatomy and physiology of the nervous system. The work that he did in this field was not appreciated at that time, but it was to-day. He next attacked the problem of ankylosed joints. Up to this time, as a rule, these patients passed from one surgeon to another without receiving any benefit. When Dr. Murphy announced the results that he had obtained in apparently hopelessly ankylosed

joints and showed that these joints could be returned to normal function the profession was astounded. Following this came his familiar work in bone grafting and now, to-night, his work on septic arthritis. Those were but a few of the contributions Dr. Murphy gave to surgery which marked distinct advances. In all of these he departed far from the beaten track. He valued the advantages of animal experimentation and of laboratory investigation. Every operative procedure was first tried on animals; he never experimented on his patients, but always kept uppermost in his mind the welfare of those who entrusted their lives to his care. As a teacher he was no less great than as a surgeon. His pupils looked upon him as a great master of surgery. In teaching the profession at large he was equally as successful as in undergraduate work. He was not only a master in surgical technique, but a clear and logical thinker, and a powerful and interesting debater on medical subjects. He was quick and alert physically and even more so in his mental processes. He despised sham, hypocrisy, indolence, and all low standards of living. He lived his religion in his daily life. He was a fair man alike to friend and enemy. In closing, Dr. Brewer said it might be well to ask what lessons might be learned from the contemplation of this singularly gifted man. His life work refuted what was held by many in the profession, that was, that if one wanted to succeed in his profession in the community in which he lived and to become a great surgeon, he should not waste too much time in purely scientific or laboratory work. Dr. Murphy made his great contributions to surgery because he was willing to devote a large measure of time to laborious, painstaking work in the laboratory. Dr. Murphy was revered for his qualities of mind and heart and his devotion to duty, and also for the results of his achievements that made it possible to give relief to suffering humanity.

Wesley M. Carpenter Lecture—A Clinical and Experimental Study of the Metastatic Arthritides.—Dr. PHILIP H. KREUSCHER of Chicago delivered this lecture which was based on the study of over 800 clinical cases and was illustrated with lantern slides. He stated that on the last page of his day book Dr. Murphy had written the following quotation: "He went away as he had come, nobly careless of himself, thinking only of the things he had tried to do." Dr. Murphy's work had been splendidly conceived and it was with reluctance and a recognition of his great responsibility as well as his great privilege that the speaker brought the message committed to him.

Coming to the subject of the paper, he said that by metastatic infection was meant an infection in or about joints due to the invasion of pathogenic organisms which had been harbored and were capable of multiplying in the tissues of the host. They were classified as acute, subacute, and chronic; as uniarticular, biarticular, and multiarticular. Etiologically they were classified as those due to a known organism and those in which the origin could not be found. Pathologically they recognized acute or chronic serous, chronic suppurative, and fibrinous or plastic arthritis. They did not include those due to tuberculosis or the bone involvements of syphilis. Particular stress was laid on the following points: "(1) Every case of acute general infection is surgical and must be treated surgically. (2) Those lesions thought to be infections in the joint cavities are in reality infections about the joints, outside of the joint cavity. (3) There is a definite incubation period for every metastatis arthritis. (4) The joint fluid does not contain bacteria in a large percentage of the cases. (5) Metastases to the joints occur because of a definite logical reason." To appreciate the many problems, mechanical and pathological and the management of infection, one should recall the anatomy of the synovial membrane with its layers, pockets, and diverticula, and the blood supply of the joints. One must consider the specific, exciting, and predisposing causes as well as the atria of infection. An analysis of 849 cases showed that the source had occurred in the following sites and with the frequency designated: In the tonsils in 25.5 per cent. of the cases; the teeth, 18 per cent.; urethra, 17 per cent.; sinuses, 17 per cent.; lungs and bronchi, 5 per cent.; bladder, 4 per cent.; kidney pelvis, 4 per cent.; appendix, 2 per cent.; gall-bladder, 2 per cent.; furunculosis, typhoid fever, scarlet fever, tetanus, and dysentery, each 6 per cent. The following organisms were found: The streptococcus in 31 per cent. of the cases, gonococcus, 14 per cent.; staphylococcus, 8 per ent.; colon bacillus, 4 per cent, and a combination of two or more organisms in 38 per cent. of the cases. The infection was uniarticular in 9 per cent. of the cases; biarticular in 13 per cent., and multiarticular in 78 per cent. It was acute in 13 per cent., subacute in 21 per cent., and chronic in 66 per cent. Both extremities and the spine were involved in 73 per cent. of the cases. Seventy-five per cent. of the general infections occurred between the ages of 10 and 40 years, and 11 per cent. from 50 to 80 years. The greatest susceptibility was between the ages of 30 and 40 years. In this series approximately 60 per cent. were females. Three-fourths of the infections occurred during the late fall, winter, and early spring. There was a definite history of trauma in 90 per cent. of the cases. Ankylosis occurred in practically 4 per cent. of the cases. The total of those who were partially incapacitated was 85 per cent., and there were only 15 per cent. that could continue to do their customary work without any interference with function. There was a definite period of incubation for every infection. For the Neisserian infection it was 18 to 24 days after the primary infection; for the staphylococcus 8 to 14 days, while a streptococcus infection might occur within 48 hours. In typhoid fever the secondary infection might occur four, six, or eight weeks after the beginning of the typhoid. The diagnosis was not complete until one had determined the atrium of the infection. This was sometimes easy, as when there was a definite history of tonsilitis, but in other cases it might be very difficult to trace a connection between a metastatic infection and the original infection. One could not make a diagnosis from the fluid taken from a joint. In the last 37 consecutive cases which they had examined only one showed a positive bacterial growth on the cover; this was in a series of untreated cases and included every kind of infection; several were uniarticular and several multiarticular. Dr. Kreutscher said he could not understand why certain authors reported positive cultures from the joint fluids in from 5 to 87 per cent. of their cases. Dr. Murphy and he believed that the infection was periarticular and that only in rare instances did bacteria pass directly into the joint cavity. Three cases of hypertrophic villous synovitis all gave negative bacterial findings. The reason for the absence of bacteria from the fluid of the joints was explained by assuming that the bacteria were carried by the blood stream and lymph channels. There were important arterial anastomoses surrounding the large articulations. The diaphysis and epiphysis were supplied by the larger vessels, branches of which passed around these structures, passing inward to the ends of the bones, to the perichondrium, and the synovial membrane. The synovial membrane and fringes were supplied with a rich network of capillaries from smaller synovial branches. Dr. Murphy, in 1912, expressed the opinion that the infecting microorganisms found lodgment in the terminal loops of these synovial branches, but did not ordinarily penetrate to the synovial fluid.

The treatment of metastatic arthritis was surgical. Arthritis no more belonged to the domain of internal medicine than did acute fulminating appendicitis. Treatment by internal medication and external applications was as irrational as the same treatment applied to a perforating gastric ulcer. One must put into effect masterly, preconceived, accurately directed and timely activity. Such treatment consisted first in aspiration. Drainage tubes were to be condemned. They were the cause of ankylosis in 96 per cent. of the cases in which they were employed. Second, a Buck's extension must be applied the first day in every case of acute arthritis. The patients found this apparatus comfortable and wore it at night. It gave relief by removing the intraarticular pressure. Third, cofferdamming of the infiltration of the lymph spaces must be accomplished by injecting an antiseptic solution into the joint. Fourth, the primary focus of infection must be removed if it could be found, whether it was in the tonsils, the teeth, the nasal sinuses, or the gastrointestinal tract. Fifth, deformities should be treated by extension, the Travois splint, plaster casts, and other appliances. Sixth, autogenous vaccines were of great value if used for the lesions for which they were intended. They should be made from the bacteria grown from the patient's blood in accordance with recognized and approved methods. Seventh, in the way of prevention, it was the duty of every physician to advise his patients in regard to the danger arising from a focus of infection in the teeth, the tonsils, or elsewhere in the body.

Dr. Kreuscher said that during the course of this study many problems had come up and five of these had

been the subject of investigation. These were as follows: (1) Experiments to determine the intraarticular pressure resistance of human joints. (2) Experiments to find a suitable antiseptic for joint injections. (3) Investigations to determine the localization of pathogenic organisms following the injection of bacteria into the blood stream of rabbits, and to find out why they did not pass directly into the joint fluid. (4) An endeavor to find out why metastases occurred. (5) An investigation to find out whether the rapidity of metastasis depended upon the type of organism or upon the variety and virulence of the mixed infection. It was shown that the capsule of the adult hip would withstand a pressure of from 35 to 50 pounds per square inch; the capsular ligament of the adult knee in the cadaver would withstand 60 to 120 pounds pressure per square inch before rupturing. It was noted that when an inactive joint was subjected to severe internal pressure, the leg tended to become slightly rotated inward, and adducted and flexed, as in acute infection with effusion. A large number of experiments were made with a variety of antiseptics from which it was found that a solution of 2 per cent. formalin in glycerin, which had been made twenty-four hours before using, was most effective. From their experiments to determine the localization of pathogenic organisms following their injection into the free blood stream, they had concluded that the bacteria localized in the terminal loops of the synovial branches and did not enter the joint fluid. Among experiments made along this line, *B. pyocyaneus* from postoperative wounds were injected into rabbits, the dose being two billion bacteria. All of these rabbits died at the end of four days without joint manifestations. Cultures were taken from the heart blood of these animals and the *B. pyocyaneus* was present in pure culture. Two billion bacteria were then taken from the cultures of the heart blood of these rabbits and injected into the ear veins of a new series of rabbits and these died in eighteen hours. A third series of rabbits were injected with a smaller dose of the bacteria, and some of these were sick for several days and recovered; others showed no illness at all. They had concluded from this that the *B. pyocyaneus*, usually considered a low-grade pathogenic organism, might cause death quite as quickly as the streptococcus and occasionally might cause joint involvement. Experiments were made with hemolytic streptococci by injecting two billion bacteria in the ear veins of rabbits. Some of the rabbits died in twenty-four hours, others recovered after twenty-seven days, having shown positive joint manifestations on the fourth and fifth days. Sixty-five per cent. of the animals showed involvement of one or more joints; 4 per cent. showed suspicious joint lesions, and 30.5 per cent. showed no involvement up to date. In 4 per cent. of the animals the joint localization did not take place until the fifteenth day after the injection. At autopsy a smaller percentage of joints than was expected were found free from pus containing bacteria. In a larger percentage than was expected abscesses occurred around the joints and along the shafts of the bones in the soft tissues. They therefore concluded that a metastatic infection in a large percentage of the cases occurred outside the joint, a conclusion Dr. Murphy reached a number of years ago. There was a definite reason for the occurrence of metastases. A metastasis did not usually take place unless there was a mixed infection or a secondary infection was superimposed on a primary one. A metastasis from a strepococcic pyorrhea alveolaris did not usually take place until a foreign streptococcus was superimposed on the primary infection. Experimentally they had found that a guinea pig did not ordinarily show metastases in the distal organs even after large quantities of microorganisms had been injected directly into the heart, but if these injections were preceded or followed by an injection of organisms of another strain, metastases occurred in the liver, kidneys, endocardium and joints. Rabbits injected with streptococci and then with a quantity of staphylococci, or other pathogenic organisms, showed a rapid and multiple joint infection in 90 per cent. of the cases. The lesson to be learned from this was that if they were going to prevent metastases it would have to be done by the early removal of the focus of infection. The laity would have to be taught that if this were not done the condition might become chronic and metastases and deformity might follow. When this occurred they would have to resort to arthroplastic treatment of the kind Dr. Murphy had devised and carried out with such success. The fifth problem proposed, namely, did the rapidity of metastases depend upon the specific infectious organism, or did it depend upon the variety and virulence of the mixed infection, they were still working upon, but as yet had not reached definite conclusions.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Kentucky State Medical Board.

June 13, 14, 15, 1916.

(*Continued from page* 750.)

SURGERY.

1. (*a*) Differentiate between hydrocele, scrotal hernia, and varicocele. (*b*) What treatment would you advise in each?
2. How would you treat a compound, comminuted fracture of the olecranon process?
3. (*a*) Differentiate between fracture of the vault and base of the skull. (*b*) What treatment would you advise in each?
4. (*a*) How would you diagnose an hypertrophied prostate gland? (*b*) What treatment would you advise?
5. Differentiate between intestinal obstruction, acute appendicitis and tubercular peritonitis.

PATHOLOGY.

1. (*a*) Describe healing by granulation. (*b*) To what conditions does it lead?
2. Give the pathology of a gangrenous, perforated gall-bladder.
3. (*a*) Describe the gross appearance in pyosalpinx, and (*b*) what is the usual infecting organism?
4. Name and describe three varieties of malignant tumors.
5. (*a*) Describe bone necrosis. (*b*) What is a sequestrum. (*c*) An involucrum?

SKIN, HYGIENE, MEDICAL JURISPRUDENCE, MENTAL AND NERVOUS DISEASES.

1. Discuss and diagnose lupus vulgaris.
2. Discuss and diagnose psoriasis.
3. Name the varieties of eczema.
4. What are the conditions necessary for a model sleeping room?
5. Give special hygienic conditions required for factories in which women and children are employed.
6. What would you say as to the fitness of water for drinking purposes which contains nitrites and nitrates?
7. (*a*) Name as many nuisances dangerous to health as you can which are frequently found about cities. (*b*) About country homes.
8. What principal measure would you use to prevent the spread of the infectious diseases?
9. (*a*) What medico-legal complications might arise due to an erroneous diagnosis of pregnancy? (*b*) How would you avoid them?
10. Give the etiology of multiple neuritis.

OPHTHALMOLOGY, OTOLOGY, AND LARYNGOLOGY.

1. Give some of the conditions that would cause you to advise iridectomy.
2. (*a*) What is a staphyloma? (*b*) Give cause.
3. Give cause and symptoms of chronic dacryocystitis.
4. (*a*) Diagnose a case of empyema of frontal sinus. (*b*) How would you manage it?
5. (*a*) Define aphonia. (*b*) Give some of its causes.
6. Give etiology and symptoms of hyperemia of the labyrinth.
7. (*a*) What are the usual causes of rupture of the membrana tympani? (*b*) What symptoms would you expect to follow?
8. What symptoms would lead you to make a diagnosis of acute circumscribed otitis?
9. What are the symptoms of postnasal adenoids? (*b*) What means would you employ for relief?
10. (*a*) Under what conditions would you intubate? (*b*) Give detailed technique.

ANSWERS.

SURGERY.

1. In *hydrocele* the tumor begins in the scrotum and may ascend to the inguinal region; does not vary very

much in size, except to steadily increase; is translucent; is dull on percussion; gives no impulse on coughing.

In *hernia* the tumor begins in the inguinal region and may descend to the scrotum; is very variable in size, and may be reducible, or disappear on lying down; is not translucent; is not dull on percussion; gives an impulse on coughing as a rule.

In *varicocele* the swelling feels like a bag of worms; it may empty when the patient lies down; there is an impulse on coughing or straining, but no translucency.

Treatment of hydrocele.—The fluid may be withdrawn with trocar and cannula; this will have to be repeated.

Tapping, followed by injection of strong antiseptics, such as carbolic acid, or iodine. The sac may be excised either wholly or partially.

For *hernia*, Bassini's operation (or some modification of it) is recommended.

For *varicocele* the best treatment is to remove the varicose veins between double ligatures.

2. *In compound comminuted fracture of the olecranon process* "the wound should be irrigated with a few gallons of physiological sterile salt solution, and the edges of the wound trimmed of devitalized tissue. Internal fixation of the fragments should not be performed at the initial operation in compound cases, though it may be possible to retain the fragments in position by suturing the fascia covering the posterior surface of the process in closing the wound. A secondary operation may be done after the wound (rendering the condition compound) has healed, and the danger of infection has passed. Following a firm internal fixation of the fragments the upper extremity may be immobilized with an internal right angle splint." (Preston's *Fractures and Dislocations.*)

3. FRACTURE OF BASE OF THE SKULL. The *Signs* are those of (1) injury to the brain, (2) escape of cranial contents, (3) injury of cranial nerves. (1) *Injury to the brain* may be of the nature of concussion, compression, or laceration. (2) *Escape of cranial contents*, which may be blood, cerebrospinal fluid, or rarely brain itself. 1. *Hemorrhage* manifests itself in various situations, according to the position of the fracture. In the *anterior fossa* the bleeding may be from the nose or into the orbit, or may pass back into the pharynx, be swallowed, and subsequently vomited. The eye may be pushed forward and pulsate if the cavernous sinus be ruptured. In the *middle fossa* blood usually runs from the ears; but slight bleeding from the ear may be caused by minor injuries, such as rupture of the membrana tympani, tearing of the lining of the auditory canal, and fracture of the tympanic bone. In the *posterior fossa* a hematoma may form behind the mastoid process. 2. The escape of *cerebrospinal fluid* is a certain sign that a fracture communicates with the subdural space. It may appear in the same situations as hemorrhage, but is usually found escaping from the ear owing to fracture of the petrous bone. The fluid is limpid, specific gravity 1005, with no albumin, but containing pyrocatechin, which gives the same reaction as sugar with Fehling's solution. The amount which escapes may be small or very large, but as a rule it soon ceases. (3) *Injuries to the cranial nerves vary* according to the site of fracture. That most commonly involved is the facial, in the aqueductus Fallopii, and the paralysis may come on immediately from rupture, or after two or three weeks from the pressure of callus.

Treatment: The chief aim of treatment is to prevent sepsis. The ear must be mopped out with an antiseptic, and then kept covered with an antiseptic dressing, as if it were a wound. The patient must then be kept quiet, the bowels opened with a purge, and an icebag applied to the head. The diet should be low, and a return to active life not permitted for six weeks. If septic meningitis occurs the patient is bound to die. (From *Aids to Surgery.*)

Fissured fractures of the vault are due to direct injuries, such as blows, or to indirect injury, such as compression, which bursts the skull. If simple there are no definite signs; if compound the fissure can be seen and felt. The prevention of sepsis forms the main line of treatment. Callus may form at the site of fracture and produce traumatic epilepsy.

Depressed and punctured fractures are due to direct violence; usually affect the vault; may be simple, compound, or comminuted. The outer table may be depressed without the inner being broken, in such places as the frontal sinus. Rarely the inner table is broken and depressed without fracture of the outer. As a rule both tables are broken. The inner suffers most damage, as it is less supported; the force of the blow is more diffused by the time it reaches the inner; also the momentum of the striking body is less, and the débris of the outer table increases the size of the penetrating body.

Symptoms: If there is a wound, the fracture and depression may be seen, and blood, cerebrospinal fluid, or brain, may be escaping. If there is no wound a careful examination is necessary, as a hematoma may form and obscure the depression. In cases of doubt an incision should be made.

In a *simple depressed fracture* there is usually some concussion, which is followed by compression from hemorrhage in the neighborhood. The depressed bone also causes compression later by the *spreading edema* it sets up in the brain. Death may result quickly, or the patient may recover and then become the subject of traumatic epilepsy from irritation of the cortex. If the depression is over the motor area convulsions or paralysis are quickly induced.

In a *compound depressed fracture* the blood escapes and does not produce compression. Concussion may or may not be present. The advent of sepsis produces inflammation of the bone, membranes, and brain, which may be limited if the drainage is free; but if not death soon follows from compression by the inflammatory exudation. During the stage of compression a hernia cerebri is formed. If the depressed fragments are early removed and asepsis is maintained the patient has a good chance, unless the brain itself is severely injured

Treatment.—In all cases, except the saucer-like depressions which occur in young infants, it is necessary to elevate or remove the depressed fragments, stop all bleeding, and disinfect the wound. Symptoms should never be waited for, because, although the patient may recover without operation, the depressed bone may cause traumatic epilepsy or insanity. The skin is shaved and purified, and a large flap is turned down to expose the fractured area, or if a wound is present it is enlarged. Comminuted fragments are removed, and sharp edges which press on the dura mater are clipped away with Hoffmann's forceps. If an elevator cannot be introduced under the depressed bone a trephine hole is made through the nearest sound bone, the elevator introduced, and the bone prised up. The piece of bone removed with the trephine should be replaced. If the dura mater is torn it should be stitched up and then the scalp flap is sutured without a drain, unless oozing is still going on. If the fracture has been compound it is better to drain it for twenty-four hours. In punctured fractures the hole must be enlarged by trephining, so as to remove the depressed spicules. After operation the patient must be kept quiet in a darkened room on liquid diet for a few days.—(*Aids to Surgery.*)

4. *Prostatic hypertrophy is characterized by:* Slowness in starting urination; difficult micturition; frequency of micturition, particularly at night; the presence of residual urine, as may be demonstrated by catheterizing the patient just after he has urinated; dull, aching pain in the perineum and above the pubes; enlargement of the lateral lobes of the prostate; there may be cystitis and retention of urine. *Palliative treatment* consists in: Mild and unirritating diet, avoidance of alcohol, taking plenty of milk or water, or other diluent. Alkalies and sedatives should be taken, also urotropin or other antiseptic so as to prevent cystitis. Regular catheterization, at least once a day, preferably in the evening, and with due aseptic precautions. *Operative treatment* is excision of the prostate gland.

5. *Acute appendicitis.*—The recognition of a typical case depends upon a few cardinal symptoms—viz., the acute development of severe pain in the right iliac fossa, coming on in a person previously healthy and usually under forty years of age; appendicular tenderness, unilateral induration, fever, vomiting and constipation, or, more rarely, diarrhea.

Acute tuberculous peritonitis.—As in appendicitis, so in tuberculous peritonitis, pain, tenderness, and fever are present, but in the latter the onset is more gradual, and the signs of tumor and increased resistance in the ileocecal region are absent. Movable dulness may be present in the tuberculous affection, but not in appendicitis until the peritonitis is general. The lungs generally show lesions in tuberculous peritonitis.

Acute intestinal obstruction.—When this is due to intussusception there may be signs of a tumor, but not at McBurney's point; the tenderness over the site of the mass is less intense, while the frequent bloody discharges that are seen in this condition, accompanied by tenesmus, do not characterize appendicitis. When obstruction is caused by strangulation stercoraceous vom-

iting is apt to occur; pain, local tenderness, and signs of a tumor appear, but not at McBurney's point. (Anders' *Practice of Medicine.*)

PATHOLOGY.

1. (*a*) *Healing by granulation* occurs (1) when the edges of the wound have not been brought together, (2) when the edges have been so damaged that sloughing occurs, (3) when sepsis has prevented healing by first intention. Exudation of plasma and leucocytes occurs, followed by fibroblasts and budding from the capillaries, thus forming granulation tissue. The dead tissues or sloughs are separated, and a red area of granulation is then exposed. The deeper layer of granulation tissue is converted into fibrocicatricial tissue, which contracts, and so the wound gradually lessens in size. In the meantime epithelium spreads in from the edge over the surface, and so the scar is completed.—(*Aids to Surgery.*)

(*b*) It leads to cicatrization.

2. *Pathology of gangrenous perforated gall-bladder.*—Should the gall-bladder have been previously normal or only slightly diseased and non-adherent it may become considerably, sometimes very much, enlarged; but if previously the seat of cicatrization from chronic inflammation no enlargement may occur; in this case it is usually united to adjacent tissues and organs by adhesions. The wall of the gall-bladder is softened, swollen, edematous, congested, and usually very dark reddish, greenish, or blackish in color. The mucosa is congested and desquamated and covered with a fibrinopurulent, sometimes also hemorrhagic, exudation. In many cases there is more or less ulceration, especially toward the fundus in consequence of the relatively poorer vascular supply of the fundus and the gravitation of gallstones. The ulceration may proceed through the wall and lead to perforation. The cystic duct is usually occluded even in the absence of gallstones. The contents consist of turbid, bile-stained, fibrinopurulent, sometimes sanguinolent fluid; gallstones are present in about 80 per cent. . . . The infiltration of the gall-bladder is widespread and may lead to extensive dissection of the different coats, the separation, for instance, of the mucosa from the underlying coats or extensive sloughing. . . . When a large section of the gall-bladder becomes necrotic the term gangrenous cholecystitis is not inaptly applied. The lesions resemble those just described, with the addition of complete necrosis or gangrene of a variable portion of the gall-bladder; the gangrene usually begins at or near the fundus and spreads toward the neck; in some cases it begins about a gallstone more or less firmly embedded in the wall of the gall-bladder.—(From *Modern Medicine*, by Osler and McCrae.)

3. *Pyosalpinx.*—"The dilation of the tube into a cyst is the final stage of salpingitis. The tumor formed by a dilated tube is seldom larger than a pear, although a pyosalpinx may reach to the umbilicus. The tube is commonly contorted, winding round the upper and back part of the ovary, the outer part of the tube being the more dilated. The wall is generally thickened, but at one or more spots it may be thinned. The thinning is not due to tension, but to ulceration, and this ulceration may take place at a part where the tube is not dilated, and may perforate and cause death. The mucous membrane is overgrown, thickened, edematous, injected so as to be purple in color, and ecchymosed, or it may be slate colored; there may be calcareous plates and nodules in the mucous membrane. In some cases there has been overgrowth of gland tissue. The ovary is generally enlarged."—(Herman's *Handbook of Gynecology.*)

The usual infecting organism is the gonococcus.

4. A *sarcoma* is a malignant connective tissue tumor; the others are all innocent. A sarcoma consists of cells, between each of which a minute quantity of intercellular tissue can be demonstrated. The cells differ in size and shape in different growths. Bone and cartilage may be developed in any of them. It is always developed from mesoblastic tissue; it may be at first defined or encapsuled, but always in its later stages infiltrates the surrounding tissues. The blood supply is always abundant, even to producing a pulsating tumor. The vessels are only clefts between the cells of the growth, so that interstitial hemorrhage is frequent, and dissemination by the veins is rendered easy. It follows from this that secondary growths occur first in the lungs, unless the primary growth is in the portal area. Other organs may be affected after the lungs. Occasionally lymphatic glands are implicated, especially in melanotic sarcoma, lympho-sarcoma, sarcoma of tonsil, testis, and thyroid. Secondary changes, such as myxomatous, fatty and hemorrhagic, may occur. A sarcoma when cut appears homogeneous and varies according to its vascularity from the grayish-white of a fibrosarcoma to the deep maroon of a myeloid sarcoma. Sarcoma may be congenital or appear at any age. The species are determined according to the prevailing type of cell.

Rodent ulcer is a carcinoma beginning in sebaceous glands. It generally occurs in patients over forty and is of very slow growth. It begins as a smooth, rounded knob in the skin about the nose, eyelids, orbital angles or cheeks, slowly increasing in size. In time ulceration occurs. The ulcer has a smooth, depressed base covered with ill-formed granulations and bounded by a slightly raised, indurated, rolled over edge. There is little discharge if sepsis is prevented and little or no pain. The lymphatic vessels and glands are not affected, and dissemination does not occur. The ulcer spreads and destroys surrounding structures; even bone is not spared, so that the brain may ultimately be exposed.

Epithelioma, or squamous-celled carcinoma, may arise on any surface covered with stratified epithelium. It usually arises in the middle aged or elderly, but may also occur in the young. It often results from long continued irritation and may arise in old scars or ulcers. It may appear in one of three forms: (1) A wartlike growth with an indurated base; (2) a small circular ulcer with raised, rampartlike edges; (3) an indurated fissure. The growth extends to the deeper structures; the surface ulcerates and becomes foul from contamination with putrefactive organisms. The nearest lymphatic glands always become infected sooner or later, and a fatal termination occurs rapidly unless treatment is early and thorough. Secondary deposits, except in the glands, are rarer than in glandular carcinoma. The glands sometimes undergo cystic change, invade the skin, ulcerate, become foul, and may cause death by secondary hemorrhage from ulceration into large blood vessels.—(*Aids to Surgery.*)

5. "*Necrosis*, or gangrene of bone, is death of a portion of bone *en masse*. The dead portion (*sequestrum*) varies in size from a small superficial flake, such as follows suppurative periostitis, to a mass representing the entire shaft of the bone, such as not infrequently follows acute osteomyelitis. The causes are acute and chronic inflammations of the periosteum, bone and medulla. The *sequestrum* separates from the living bone by a line of ulceration or demarcation much the same as in gangrene of soft parts. The surrounding living bone usually undergoes a condensing ostitis and becomes much harder than normal. Small and superficial sequestra may be discharged spontaneously through a sinus, which inevitably exists in all but very small aseptic sequestra, in which complete absorption without suppuration is possible. If the necrotic mass is large or centrally located spontaneous discharge is impossible and suppurative inflammation may continue for years. The dense bone which surrounds the sequestrum in these cases is called the *involucrum*, and the sinus leading from the surface down to the cavity in which the sequestrum lies is called the *cloaca*."—(Stewart's *Surgery.*)

SKIN, HYGIENE, MEDICAL JURISPRUDENCE, MENTAL AND NERVOUS DISEASES.

1. *Lupus vulgaris* is a tuberculous cellular new growth, characterized by reddish or brownish patches consisting of papules, nodules, and flat infiltrations, usually terminating in ulceration and scarring. The affection occurs most often upon the face and is due to local infection by the tubercle bacillus. It is distinguished from syphilis and epithelioma by its occurrence before puberty, slow course, history and concomitant signs of the tuberculous diathesis, soft nodules, multiple and superficial ulcers, absence of pain, yellowish, shrunken and hard scars and slight discharge. The condition is chronic and in small patches may be entirely cured.—(*Pocket Cyclopedia.*)

2. *Psoriasis* is a common chronic inflammatory disease of the skin, characterized by variously sized lesions, having red bases, covered with white scales resembling mother of pearl. It affects by preference the extensor surface of the body. The lesions are infiltrated, elevated, clearly defined, covered with white, shining, easily detachable scales which, upon removal, reveal a red, punctate, bleeding surface. The eruption is absolutely dry, and itching is usually absent.—(*Pocket Cyclopedia.*)

The special points of value in reference to diagnosis are the lesions of variable dimensions, all being capped

with pearly white scales; borders severely outlined; tendency to convalescence, with the presentation of bleeding points upon removal of scale.

3. *Varieties of eczema.*—Eczema erythematosum, E. papulosum, E. vesiculosum, E. pustulosum, E. rubrum, E. squamosum, E. fissum, E. sclerosum, E. verrucosum, E. papillomatosum.

4. The sleeping room should be as large as possible, with the maximum of sunshine and fresh air; it should face the south, or east, or southeast, and should contain no hangings and have as few "dust catching" contrivances as possible; it should not lead into a bathroom. There should be a separate bed for each person, and, preferably, each person should have his own room. There should be provision for moderate heating of the bedroom and a warm dressing room may be necessary in cold weather.

5. "In addition to the ordinary hygiene of factories and workshops, such as proper space, air, ventilation, water supply, lighting, heating, drainage and plumbing, ordinary cleanliness and absence of dust care should be taken that women and children do not work too long at a time or at occupations involving the use of poisonous or deleterious materials; that there are ample toilet and lavatory accommodations, and that these are separate and away from those used by men; there should also be opportunity to sit, and women should not be expected to remain standing for long periods of time."—(Scott's *State Board of Physiology and Hygiene.*)

6. "*Nitrates* may be found in pure water from deep wells in the chalk, but as a rule are due to oxidation of organic matter of animal origin. Even if accompanied by only a small proportion of organic matter nitrates in water from a source open to suspicion must be regarded as oxidized filth, which may at any time be followed by unoxidized filth. A trace of nitrates not exceeding N = 0.35 per 100,000 would not suffice to condemn a water otherwise pure.

"*Nitrites* must be considered as pointing to sewage contamination, and their presence should condemn the water. They indicate more recent and therefore more dangerous contamination than nitrates."—(*Aids to Sanitary Science.*)

7. The chief *city nuisances* are: Noise, smoke, dust, waste matters, gases and fumes, odors and various offensive trades (such as the keeping of live animals, the killing of animals, the sale of animals, the manufacture of animal products, carpet beating, smelting and chemical manufactures). About *country homes* the nuisances which are the most in evidence are the improper disposal of waste or refuse material and the keeping of live animals.

8. To *prevent the spread of infectious diseases:* They should be reported to the health authorities; adequate isolation and quarantine (when necessary) should be enforced; proper prophylactic measures (as vaccination) should be ordered; children, from houses where there is such disease, should not be allowed to mingle with other children; proper disposal should be made of sputum and excreta; details bearing upon the prevention of each disease can be learned from special manuals on the subject.

9. (*a*) *Medicolegal complications which may arise from an erroneous diagnosis of pregnancy:* The character of the woman may be involved; the legal rights of the child may be involved; the paternity of the child and the mother's right to demand from the father support for the child are also involved; inheritance of titles and property are also to be considered.

(*b*) The practitioner should be very careful in making a diagnosis of pregnancy; he should remember that the *positive* signs of pregnancy are not present during the first few months; in doubtful cases he should maintain a strict silence, remembering that time will aid in making the diagnosis sure.

10. *Etiology of multiple neuritis:* The disease is said to be due to the action of poisons (in the blood) on the peripheral nerves. These poisons may be: Alcohol, lead, arsenic; diseased conditions as gout or syphilis; and bacterial toxins, such as are found in specific fevers, sepsis, etc.

OPHTHALMOLOGY, OTOLOGY, AND LARYNGOLOGY.

1. *Indications for iridectomy:* (1) Glaucoma; (2) some cases of chronic and recurrent iritis and iridocyclitis; (3) complete circular synechia; (4) partial corneal staphyloma; (5) tumors and foreign bodies in the iris; (6) recent prolapse of the iris. (From May's *Diseases of the Eye.*)

2. *Staphyloma* is a bulging of the cornea or sclera. It is due to inflammation.

3. *Chronic dacryocystitis* is *caused* by obstruction of the nasal duct. The *symptoms* are: Epiphora, fulness in the region of the lacrymal sac and the escape of a viscid fluid when pressure is made on the distended lacrymal sac.

4. "*Suppuration in the frontal sinus* is attended with frontal headache, vertigo, especially on stooping, and tenderness on pressure, particularly over the internal orbital angle, or on percussion over the frontal region. Pus escapes into the middle meatus of the nose, and if wiped away will reappear if the head is bent forward for a few minutes. After removal of the anterior end of the middle turbinated bone it may be possible to catheterize the sinus and wash out pus from its interior. The diseased sinus may present a darker shadow than the healthy one on transillumination or in an *x*-ray photograph. The *treatment* consists in exposing the anterior wall of the sinus by an incision in the line of the eyebrow, chiseling away sufficient bone to admit of free removal of all infected tissue and establishing efficient drainage through the infundibulum into the nose."—(Thomson and Miles' *Manual of Surgery.*)

5. *Aphonia* is loss of voice due to some interference with the vocal cords. *Causes:* Laryngitis, edema of the glottis, retropharyngeal abscess, excessive use of the voice, tumors of the larynx, foreign bodies in larynx, inflammation of the laryngeal nerves, paralysis of the laryngeal muscles, and hysteria.

6. "*Hyperemia of the labyrinth* may result from middle ear inflammation, exanthematous diseases, mumps, some intracranial disease, cessation of menstruation, disease of the heart, excessive use of alcoholic liquors, quinine, amyl nitrite, prolonged irritation from the use of the telephone receiver and vasomotor disturbances. *Symptoms:* There is present a sense of fullness in the ear, with ringing and roaring sensations and sometimes giddiness, nausea and vomiting. The symptoms are somewhat intensified by the horizontal position."—(Kyle's *Diseases of Ear, Nose and Throat.*)

7. *Rupture of the membrana tympani* may be caused by direct violence, such as blows or by instruments introduced into the meatus; or by indirect violence, such as the sudden condensation of air in the meatus, which may be produced by an explosion or the firing of a heavy gun in the immediate neighborhood; traction on the auricle, inflammation, irritating substances, and vegetable growths may also cause rupture of the membrane. *Symptoms:* Sudden and severe pain, impaired hearing, hearing subjective noises, vertigo, a watery discharge in the meatus, a whistling sound in the ear when the patient blows his nose.

8. *Acute circumscribed otitis.*—The symptoms are a feeling of fullness in the ear, a slight itching sensation, pain in the ear with tenderness on pressure, swelling in the auditory meatus which causes stenosis and slight deafness, tinnitus, pain on mastication, and increase of the pain and discomfort; the neighboring lymphatics may become involved, in which case there will be rise of temperature to about 100° to 101° F. There may be slight constitutional symptoms.

9. POSTNATAL ADENOIDS. *Symptoms:* Mouth breathing; snoring; open mouth; a vacant, dull expression of the face; modification of the voice (nasal twang), with inability to pronounce certain letters.

Treatment consists in early and complete removal by curette or forceps.

10. INTUBATION. *Indications.* Dyspnea from diphtheria or membranous laryngitis, stenosis, tumors, and some forms of paralysis of the larynx, and edema of the larynx.

Method: The child is wrapped in a blanket to control the arms and legs and is held upright by a nurse seated in a chair, while an assistant holds the head upon the nurse's left shoulder and prevents the mouth gag from slipping. A long piece of silk is passed through the small opening in the upper part of the tube, the tube fastened to the introducer, and the silk looped around the little finger. The left index finger is passed into the throat and lifts the epiglottis while the tube is passed along it into the glottis. The left index finger is then made to press upon the head of the tube, which is released by pulling the trigger on the introducer, which is then withdrawn. When one is assured that the tube is in the right place and that the symptoms are relieved, the silk loop may be cut and withdrawn while the finger is again made to press down on the tube.—(Stewart's *Surgery.*)

(*To be concluded.*)

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ACHYLIA GASTRICA;

A STUDY OF SIXTY-FIVE CASES

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IN medical literature of recent years there has been a decided scarcity of articles relating to achylia gastrica. This is unfortunate, because, while by no means an uncommon condition, it is probably less frequently correctly diagnosed by the average practitioner than any other stomach condition. In a critical study of between six and seven hundred cases of all kinds in the gastrointestinal clinic of the Brooklyn Hospital Dispensary, sixty-five, or about ten per cent., were found to be suffering from achylia. In private practice the percentage would undoubtedly be lower, because among the better classes we do not see the neglect and abuse of the body which play such an important role in the etiology of this condition. Nevertheless probably five per cent. of all patients with gastric disturbances would be found to have achylia gastrica if properly examined. The present paper is based upon a study of the sixty-five cases referred to above.

Strictly speaking, achylia gastrica is the name given to a condition characterized by an entire absence of gastric secretion, *i.e.* an absence of hydrochloric acid as well as of the enzymes, pepsin and rennin. By common consent, however, it is now understood that the term includes all cases in which there is an absence of free hydrochloric acid in the gastric contents, although enzymes and some combined acid may be present.

Concerning the *etiology* of achylia there has been considerable discussion and doubt. Some authors have attempted to show that a large proportion of cases is of functional origin, others, that it is always of organic origin. While it must be admitted that there may be a congenital weakness or anomaly of the gastric mucosa, accompanied by achylia, in adults it is always well to look for some organic cause for this condition, either within or without the stomach. To better understand the generally accepted theories concerning the etiology of achylia, it is well to consider briefly the three factors necessary to the production of normal gastric secretion, viz., (1) normal gastric glands, (2) the presence of HCl producers or enzyme activators in the blood, and (3) a normal central and peripheral nerve-supply to the gastric glands. Abnormal conditions affecting any of these three factors may produce achylia gastrica. Therefore, in considering the generally accepted theories regarding the etiology of achylia, we can take up abnormalities of each of these three groups separately.

I. *Abnormalities of the gastric glands,* producing achylia, may be of three kinds, viz.: (1) Functional, *i.e.* a condition in which normal glands do not produce normal secretion. I do not feel that this condition is often met with, except possibly as a developmental anomaly. (2) Inflammatory conditions of the gastric mucosa, either (*a*) catarrhal, as a result of chronic irritation from the ingestion of alcohol or nicotine to excess, or improper or insufficient masticated food, or (*b*) infective, as a result of primary foci of infection elsewhere causing a general inflammatory condition of the gastric mucosa (89 per cent. of my cases showed infections of the mouth, nose or throat). (3) Atrophy of the gastric mucosa, as a result of (*a*) chronic inflammation as above; (*b*) arteriosclerosis with attendant sclerosis of the mucosa; (*c*) new-growth pressing upon or destroying the secreting cells, such as carcinoma, sarcoma, fibroma, gumma, or extensive scar tissue from chronic ulcer; (*d*) distant wasting diseases, such as tuberculosis, intestinal parasites, chronic malaria, diabetes, plumbism, sprue, pellagra, etc.

II. *Diseases of the blood,* which might be a factor in causing achylia by impairing the bodily nutrition or by interfering with the carrying of HCl producers or enzyme activators, include: (1) Anemias and leucemias. Pernicious anemia, long recognized as an accompaniment of achylia, has been attributed by some to be the cause, by others the result, of achylia. Chronic gas poisoning may cause achylia by virtue of the destruction of blood which it causes, or by direct poisoning of the glands. (2) So-called gouty conditions and intestinal or other toxemias. (3) Syphilis, tuberculosis, or any form of septicemia. (4) Diseases of the glands of internal secretion, about the function of which, especially in regard to digestion, there is still considerable doubt, but which undoubtedly play an important part in producing or activating gastric secretion.

III. *Abnormalities of the nervous system,* which might interfere with the normal innervation of the gastric glands, producing achylia. These are exemplified in tabes, during the crises of which there is as a rule an achylia, and by the still largely theoretical states known as vagotonia and sympathetico-tonia. Under this heading might also be classed chronic infections or other abnormal conditions outside the stomach, such as pelvic disease, gallstones, appendicitis cases, especially postoperative, and extensive ptoses, which are supposed to act reflexly through the nervous system in producing achylia.

The contention that achylia gastrica is essentially a disease of those past middle life is borne out by our series, the average age of our patients being 43.9 years, and 23, or 35 per cent., being fifty years of age or older. Of 65 patients, 29, or 44.6 per cent., were males, 36, or 55.4 per cent., females, the apparent disagreement with the usual belief that

more males are affected being probably due to the fact that the total number of female patients in the clinic far exceeds that of the male. Bad teeth, that is, gross evidences of decay and infection, were found in 58, or 89 per cent., of our cases. Other conditions which might have played an important part in causing the achylia, arranged in the order of the frequency of their occurrence, are shown in Table A.

Table A.

Disease.	Number.	Per Cent.
Pelvic disease	11	17
Chronic alcoholism	10	15
Tuberculosis	10	15
Cardiovascular-renal disease	8	11
Gastric carcinoma	6	9
Gallstones	3	4.5
Appendectomy (postoperative)	3	4.5
Goitre	3	4.5
Diabetes	2	3
Chronic malaria	2	3
Chronic gas poisoning	2	3
Miscellaneous	6	9
Total	65	100

A *simple explanation* of the cause of achylia which has not before been suggested, and substantiation of which does not as yet exist, would be that, except possibly in congenital cases or in those due to tumor or disease of the glands of internal secretion, it is always due to a chronic generalized hematogenous infection of the gastric mucosa, probably by the *Streptococcus viridans*, as a result of a primary focus of infection elsewhere. The stomach would be made a locus minoris resistentiæ by abuses such as the excessive ingestion of alcohol, nicotine, insufficiently masticated food, or other irritants, or by sclerosis from arteriosclerosis. Neglect of the teeth is usually an accompaniment of chronic alcoholism, and is also common in older persons. In our series, the large percentage of infections of the mouth, nose, and throat (over 90 per cent.) would account for the primary focus of infection in these cases, as would pelvic infections, tuberculosis, syphilis, septicemia, etc. The explanation of the occurrence of achylia after operations for infections of the appendix, gall-bladder, and pelvis would be that the manipulations at operation threw into the circulation infective material which localized in the already reflexly irritated stomach wall. The finding of streptococci in the blood of the patients with achylia and pernicious anemia would also be explained. The anemia might even be explained by the presence of a coincident infection of the hematopoietic organs. This theory would also explain the periods of exacerbation and remission of symptoms in pernicious anemia, so much resembling those of chronic arthritis or appendicitis. In this connection, the frequent association of achylia with chronic joint troubles is suggestive. Even in carcinoma cases the achylia might be due to a complicating infection of the mucosa, it being usually true that carcinoma does not cause achylia until ulceration occurs, and this ulceration is probably an infective process. This infective theory is one which might well be investigated.

The *symptoms* of achylia gastrica may often be very indefinite, and there may even be no symptoms for a considerable length of time, as long as pancreatic and intestinal digestion remain normal. In our 65 cases the average duration of the symptoms before the patient applied to us for treatment was two and one-half years. Pain or distress at variable times after eating, often relieved by food or alkalies or by lying down, occurred in 57, or 87 per cent. of our cases. Sour regurgitation occurred in 29, or 44 per cent., vomiting in 23, or 35 per cent., of which two, or 3 per cent., had hematemesis. The bowels were regular in only nine, or 15 per cent., of the cases, constipation occurred in 36, or 55 per cent., and chronic diarrheas in 20, or 30 per cent. In the diarrheal cases the average duration of symptoms had been three and one-half years, as against two and one-half years for the whole series, suggesting the idea that the diarrhea is due to the long continuance of the achylia. Anorexia, muscular weakness, insomnia, and nervous irritability were usually complained of. Loss of weight usually occurred, but was not excessive.

The explanation of these symptoms lies in a study of the physiological effect of gastric juice containing the normal amount of hydrochloric acid. These effects are as follows:

1. Proteins are peptonized.
2. Connective tissue is changed so as to be digestible by the digestive ferments in the intestine.
3. The pylorus is closed through irritation.
4. The secretions of the pancreas and intestinal glands are stimulated.
5. The stomach and intestines are disinfected.

Insufficient disinfection allows free growth of bacteria, with acid fermentation, and the resultant organic fatty acids cause pain and distress, belching, and sour regurgitation. The fermenting, insufficiently prepared food is hastened into the duodenum through the relaxed pylorus, and the insufficiently stimulated pancreatic and intestinal secretions, sadly overtaxed, eventually fail properly to complete digestion. This results in irritation of the intestinal mucosa, causing a hurrying along of the intestinal contents, with resultant diarrhea, and, eventually, a catarrhal enterocolitis. The diarrheal movements, often enormous in size, usually occur after eating, the peristalsis and sphincteric relaxation excited in the stomach by the food extending rapidly along the entire intestinal tract.

The *diagnosis* of achylia gastrica depends upon gastric analysis. The only suggestive symptom is the diarrhea, although the history of chronic alcoholism, tuberculosis, and various other of the more common causes of achylia, associated with gastric symptoms, should make one suspicious of this condition.

The *gastric contents*, removed with the ordinary stomach tube one hour after an Ewald test meal, show an absence of chymification and an increased motility, the mass extracted being thick, moist, and sausage-like. There is also an absence of free hydrochloric acid, a total acidity usually under twenty, absence or great reduction in proteolytic and milk-curdling enzymes, and the presence of more or less mucus. Increased peristalsis is shown by the small amount of residue obtainable. In our forty-six cases examined in this manner, the total acidity averaged eleven. In the diarrheal cases, twenty in number, the total acidity averaged thirteen, so that the degree of acidity would not seem to be a determining factor in causing the diarrhea. The stools usually contain mucus and connective-tissue fibers, and, occasionally, occult blood.

For the past ten months we have been using the Rehfuss fractional method of test-meal examination in our clinic. By this method a fine tube with a fenestrated metal tip is left in the stomach throughout gastric digestion, and 6 or 8 c.c. of the contents after an Ewald test meal are removed at fifteen-

minute intervals until the stomach is empty. We have been able to confirm Rehfuss's contention that many cases called achylia because of the findings at the one-hour point after the ingestion of the test meal were really cases of delayed digestion, the acidity, as shown by the Rehfuss method, reaching normal, or even becoming higher than normal, after one and one-half or two hours. A true achylia must show absence of free hydrochloric acid in all specimens removed. Out of 190 cases of all kinds examined by the Rehfuss method, 19, or 10 per cent., showed a true achylia, the percentage agreeing, strange to say, almost exactly with the percentage of achylia cases previously found. In these cases the average highest total acidity was fourteen. Emptying of the stomach was very rapid in the simple cases, all residue being gone by the end of from one and one-quarter to two hours after the test meal was given. In pyloric carcinoma cases, and in a case of chronic ulcer at the pylorus, stasis was shown by a greatly delayed emptying and the presence of lactic acid and lactic acid bacilli. In the simple cases, bile regurgitated early, often by the end of one-half hour, due to the relaxed pylorus. Mucus was usually present to excess, and microscopically large numbers of bacteria, leucocytes, blood, and epithelial cells were found. An interesting finding was the invariable presence of blood in the contents. Visible blood was always found at some time during the procedure, but frequently occult blood would be found in the beginning and visible later. This finding is, of course, explained by the congested or atrophic and friable condition of the mucosa, and seems to obviate the necessity of describing as an entity an achlorhydria gastrica hemorrhagica, as has been suggested. In 16 of our 19 cases, or 84 per cent., occult blood was found in the stool after three days' meat-free diet. The finding of blood was not, however, constant, only occurring at irregular intervals.

Differential diagnosis, after an examination of the gastric contents has established the presence of an achylia, is practically confined to the determination whether or not carcinoma of the stomach is the cause of this achylia. The occasional occurrence of gumma, of other neoplasms than carcinoma, or of indurated gastric ulcer with achylia, should be borne in mind, although their differentiation from carcinoma, except possibly in the case of gumma, is not usually made before microscopical examination of sections of the tumor establishes the diagnosis. Aside from the finding of a gastric tumor, associated with symptoms of achylia, the following findings are suggestive of carcinoma as a cause of the achylia:

1. The constant finding of occult blood in the stools.

2. The presence of lactic acid, lactic acid bacilli, and infusoria in the gastric contents removed from a fasting stomach.

3. The finding of a considerable amount of albumin in the stomach washings—an index of 200 to 400 by the Wolff-Junghans method.

4. A Wolff-Junghans curve, in the fractional cases, rising rapidly and out of all proportion to the curve of acidity.

5. Excessive loss of weight and strength, even when the diet is sufficient, under normal circumstances, to cause a gain in weight.

The finding of fragments of carcinomatous tissue or of carcinoma cells in the gastric contents is, of course, diagnostic, but, like the finding of a palpable tumor, is too late to be of value to the patient. The most valuable aid in differentiating carcinoma in doubtful cases is undoubtedly the Roentgen ray. By means of serial Roentgenography, even the presence of early carcinoma of the body of the stomach, which it is practically impossible to recognize by any other means, can often be ascertained with a considerable degree of accuracy. The Abderhalden test for carcinoma, even if reliable as indicating the presence of a carcinoma, would not, in the absence of confirmatory evidence, be of any help in locating the carcinoma in the stomach, as simple achylia may occur as a result of carcinoma in a distant part of the body.

The *prognosis* in achylia gastrica depends upon its cause. In carcinoma the prognosis is bad, as carcinoma cases which are sufficiently advanced to show a total absence of free hydrochloric acid in the gastric contents are usually beyond hope of cure by operative procedures. In the presence of pernicious anemia, the outlook is decidedly unfavorable, although these cases will frequently have periods of entire absence of all symptoms, followed by acute exacerbations, as mentioned above. In other cases the prognosis as to life depends upon the prognosis of the coexistent disease. In the so-called cases of simple achylia, the prognosis as to life is good, the disease itself, under proper treatment, not being fatal, and not tending to the development of carcinoma or other serious complications. The chances of complete recovery of normal gastric function are not favorable, although we have seen many cases in which, after a course of treatment such as described in this article, the test meal showed normal findings in a few months.

Treatment.—The indications for treatment in achylia gastrica group themselves under the following general heads:

1. The removal of any infective foci, which, in addition to being a probable etiologic factor in the disease, tend to weaken the patient's reconstructive powers, so necessary to effect a cure. Operative treatment of such infective foci in the mouth, nose and throat and accessory sinuses, abdomen, pelvis or any other part of the body, should be preceded, if possible, by a course of dietetic and tonic treatment, and the use of autogenous vaccines of the streptococcus viridans, obtained from these foci of infection. This procedure would tend to prevent complications when operation would throw into the circulation large amounts of infective material. If the infective theory is correct, the use of the vaccines might also be of some theoretical value in hastening improvement in the condition of the gastric glands. In the few cases in which we have tried this method, improvement in the patient's condition seemed more rapid and more complete than in those where it was not used.

2. The treatment of any constiutional abnormality complicating or possibly acting as a causative factor in the achylia. This would include treatment of the anemias, leucemias, malaria, syphilis, tuberculosis, cardiovascular-renal diseases, rheumatic conditions, alcoholism, etc. In addition to treatment specific for any of these conditions, tonics would be indicated. I have been in the habit of combining ferric chloride and calcium chloride with the hydrochloric acid usually given in this disease. The use of the so-called bitter tonics before meals may in some people have some effect

in stimulating the appetite, but no effect on the gastric secretion may be expected, as shown by the recent researches of Carlson and others. The best tonic after all is a proper diet, and this will be discussed in detail later on. Exercise, especially in the fresh air, gymnastics, baths and change of scene are of value. Abdominal massage and electricity may be used.

3. The treatment of the diseased stomach must have as its keynote the conservation of its motor function. With the secretory function impaired, the motor function is of the utmost importance, and any measures such as over-feeding, or over-distention by careless lavage, should be avoided. Lavage was formerly a very popular procedure, but has more recently been practically abandoned. The amount of mucus removed by this method is probably more than compensated for by the subsequent increased secretion of mucus by the irritated stomach. A tumblerful of hot water given one-half hour before meals has a cleansing effect, besides being a valuable addition to the diet. Mineral waters are not necessary, but where given should be those which contain sodium chloride as a principal constituent. Mineral oil, given in tablespoonful doses, morning and evening, is soothing to the irritated gastrointestinal mucosa, and, besides being of value in relieving constipation, is not contraindicated in diarrhea.

4. Dietetic Treatment: The diet should be concentrated, and should consist of small amounts of food frequently repeated, preferably every two and one-half or three hours. The food should be in such form as to cause the least possible irritation to the diseased mucosa, and to require little or no alteration to make it digestible by the intestinal secretions. To prevent putrefaction it is best at first not to allow any kind of *meat*. For the same reason *eggs* should not be allowed unless soft-boiled, and then only in moderation, not more than one or two a day. It is better to derive the necessary protein of the diet from vegetables, or from nuts in moderation. *Gelatin* is also valuable as a protein sparer. *Milk* should be an important part of the diet, and it is well borne except in some diarrheal cases, where it seems to cause more irritation of the bowel. Frequently, however, this tendency to irritation can be overcome by having the milk peptonized, or acidulated with dilute hydrochloric acid, one dram to a glass of milk, added just before the milk is taken. It has been our experience that buttermilk and artificially soured milk are not well borne.

Carbohydrates form a valuable part of the diet in these cases. *Starches* are best given in such a form that the protein envelope, which requires digestion by the gastric juice, shall have been broken. For this reason strained vegetable soups, or purees, of potatoes, peas, beans, lentils, spinach, or carrots, are valuable. Thoroughly cooked cereals and puddings, served with cream or with stewed fruits or fruit juices, are tasty and easily digested. Flaked or shredded cereals are also good, as are bread, toast, and simple crackers. The so-called "vegetable meat" preparations, made of vegetables and nuts, provide an agreeable variation to the diet. *Sugars* are of value, but must be taken in moderation to avoid acid fermentation in the bowel, as evidenced by sour stools. The less fermentable sugars, such as lactose or maltose, may be added to the diet to increase its fuel value.

Fats and oils, in the form of butter, cream, olive oil or yolk of egg, are good to add to the caloric value of the diet, and also tend to soothe the irritated gastric mucosa. Taken to excess they are bad, especially in the presence of diarrhea.

Beverages, besides milk, which may be allowed, include cocoa, weak tea or coffee, or, better, cereal coffee substitutes, and fruit juices. The use of alcohol in any form should be interdicted, as should be the use of tobacco.

In a general way, the diet should consist of between two and three thousand calories, a little more than the amount required in the average normal person. The best index of a proper diet is the patient's weight. In a debilitated, undernourished patient, an increase in weight is necessary; in no patient is loss of weight during treatment admissible. A good sample diet for a single day, consisting of 2,515 calories, is shown in Table B. By varying the nature and quantity of the different constituents, such a diet can be made acceptable, or even agreeable, to the patient.

TABLE B.

Food.	Quantity.	Calories.	
BREAKFAST.			
Apple sauce	4 ounces	75	
Milk	6 ounces	125	
With cocoa or lactose	½ ounce	40+	
Cereal	4 ounces	75	
With sugar	1 dram	25	
With cream	1 ounce	50	
Egg, poached, on toast	1 egg, 1 slice	150	
Bread and butter	1 slice	65	605
10.30 A.M.			
Milk	6 ounces	125	
With lactose	½ ounce	40	
Graham crackers	2 small	10	175
LUNCH.			
Cream vegetable soup or puree	5 ounces	125	
Milk and lactose, as above	6 ounces	165	
Bread and butter	1 slice	65	
Bread or chocolate pudding	4 ounces	200	555
4 P.M.			
Milk, lactose and graham crackers	As above	175	175
SUPPER.			
Potato or tomato bisque soup	4 ounces	75	
Fresh asparagus	1 ounce	25	
Raw cabbage salad	2 ounces	50	
Bread and butter	1 slice	65	
Milk and cocoa or lactose	As above	165	
Gelatin with cream	4 ounces	50	430
ON RETIRING.			
Milk, lactose and crackers	As above	175	175
AFTER EACH MEAL.			
Olive oil	½ ounce	134	400
Total number of calories: 2,515			

5. The use of hydrochloric acid and enzymes is a subject about which there is still considerable controversy. Probably the most valuable aid in relieving the symptoms of achylia gastrica is the use of hydrochloric acid. While this acid cannot of necessity be given in such quantities as to insure a concentration in the gastric contents even approaching the normal, its effect, even in small doses, is remarkable. The distress and sour regurgitation after eating are quickly relieved. Vomiting usually ceases at once, and diarrhea, in my experience, has been always controlled within a few days, being often followed by obstinate constipation. The beneficial effects following the use of hydrochloric acid can be ascribed to the fact that its ingestion produces effects similar to those produced by the normal acid in the stomach, viz., a stimulation of gastric, intestinal, and pancreatic secretion, a

changing of pro-enzymes into active enzymes, an improvement of amylorrhexis by aiding in the digestion of the starch envelopes, and an antiseptic action. The dose of the acid should vary from fifteen drops to one teaspoonful or more of the dilute hydrochloric acid, preferably beginning with larger doses and reducing their size as symptoms are ameliorated. It should be given one-half hour after eating, well diluted with water, and swallowed through a tube to avoid burning the teeth. By dissolving one teaspoonful of cane sugar in the wineglassful of water, etching of the oral mucosa can be further avoided. A substitute for the acid, supposed to be less disagreeable to the patient, is acidol, a hydrochloride of betain, which is said to form nascent hydrochloric acid on reaching the stomach. The dose is from 10 to 30 gr., each grain representing one minim of hydrochloric acid. It is expensive, and not much better liked by patients than the very cheap acid, given as above described.

The use of enzymes and activators, at one time very fashionable, has now largely fallen into disuse. Pepsin is usually being excreted by the gastric mucosa long after the hydrochloric acid has disappeared, and needs only the acid to activate it. Another fact to be borne in mind is that enough dilute hydrochloric acid could not be given by mouth to produce the hydrochloric acid concentration necessary for pepsin action. The use of preparations of pancreatic glandular extracts, such as pancreon, pancreatin, and other similar preparations, is not of much value, especially where hydrochloric acid is given, as this destroys their activity. The use of secretins has not proved clinically to be of any value.

Conclusions 1. The usually indefinite symptoms of achylia gastrica warrant careful search for this condition in all cases of gastric disorder.

2. Its diagnosis depends upon gastric analysis, and the Rehfuss fractional method of test meal examination is the most satisfactory to use.

3. Knowledge of its etiology is still uncertain, but the infective theory should be investigated.

4. If an infection, the term gastritis, or better, endogastritis, would not be a misnomer for this disease.

5. Acceptance of the infective theory demands the removal of infective foci as a part of the treatment, and points the way to efficient prophylaxis.

6. Diet and the use of dilute hydrochloric acid are the other important items in the treatment.

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Arthritism. — Bazin and Bouchard described under the names "arthritism" and "slackening of nutrition" a group of conditions, including gout, asthma, rheumatism, gravel, gall stones, obesity and diabetes, which are frequently met with in the same individual or the same family, and which are transmissible by heredity and are interchangeable: a gouty subject who has or has not diabetes may have a child who develops diabetes, asthma, or gravel, etc.—Cornwall in the *Medical Times*.

THE HORMONE EQUATION OF THE PSYCHOSES.

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IN the recent work of Harrower, entitled "Practical Hormone Therapy," Bayle is quoted as saying, with reference to his extensive use of the spleen, that it is "perfectly innocuous." The writer has used the spleen therapeutically quite extensively in many conditions, notably in malarial infections; and while in the main, owing to the marvelous power of the endocrine organs to adapt themselves to circumstances, the observation of Bayle is correct, experience has shown that in a certain number of cases this power of adaption fails, and symptoms of a grave and alarming character supervene.

If this happens only once in a thousand times, and there is little doubt that it happens much oftener, its character of being "perfectly innocuous" is no longer sustained. Indeed, we are at once placed under the imperative obligation to study the conditions under which this happens, and if possible to find the remedy. For hormone remedies are being used more and more widely all the time, and are destined to take a commanding place in the field of medicine.

For this reason it is considered of the highest importance right at this point to make a somewhat sweeping statement, of far-reaching significance, which the present paper will endeavor to substantiate.

That statement is this: In the treatment of any disease by the administration of the spleen, it is not safe to give it alone; and it should never be done.

The mere fact that it has been given for long periods of time, in large numbers of cases, apparently without bad effects, simply renders those effects, when they do appear, more difficult to understand. It is more than probable that they have occurred frequently without a suspicion of the real cause. After many years of observation, the conviction has been formed in the mind of the writer, that the spleen is a remedy of remarkable power in the treatment of many diseases, especially those of an infectious character.

It is more than a remedy. The evidence is continually growing that it forms the center of a group of organs, which constitutes what is now known as the "defensive mechanism of the body." It is the functioning of this group of organs, modified by numerous accessory glands to meet the special requirements of different infections, that has been known in past years as the *vis medicatrix naturæ*, the healing power of nature, the natural resistance of the body, and by many other like terms.

It is upon this force that physicians in all ages have relied for their curative effects. No physician worthy of the name expects to accomplish anything for his patient without it. The most modern physicians with the most modern methods rely upon it the most. Whether they use antitoxins, bacterins or what not, nobody claims that they have any direct curative power. It is freely admitted that they depend for their action upon calling forth an expression from the defensive mechanism of the body.

But no force of great power can exist in nature without the possibility of doing harm. It must be controlled, and its power limited to doing good and not evil. So it is with the spleen. Nature does not contemplate its acting to the detriment of the in-

dividual. And so this strange and powerful organ is hedged about in its functions, and controlled in the exercise of its power by the other glands and organs with which it is associated, so that it may not become a Frankenstein in the physiological and pathological world of its operations.

But, as has been said, there are times when these endocrine restraints fail; and when they do, results follow that are sometimes of the direst character. It is earnestly hoped that the sidelight thrown by this little study upon a long darkened subject, may result in giving to the world an adequate knowledge of the true cause of mental alienation, and a rational treatment for the condition.

When the spleen was first used in the treatment of malarial infections, its effects were so marvelous that it was thought the fundamental basis of all natural immunity had been discovered. When an effort was made, however, to use the same remedy in other infections, no such brilliant effects were produced; and in most cases it failed utterly. Even in the treatment of malarial infections it was found that notwithstanding its brilliant effects in the large majority of cases, there were also cases in which it failed to a greater or lesser degree; and some in which it failed entirely. It was found that these patients were uniformly anemic, from blood lysis. Naturally, a hematinic was given; and when this was done the effect was quite as satisfactory as in other cases.

It just happened, however, that the hematinic used was one which contained a considerable content of pepsin; and it was found that when other preparations of iron or manganese were used, the effects were not so good. But still deeming the raising of the hemoglobin the necessary point, the red bone marrow was used, as being theoretically the ideal hematinic to use in this connection. This also failed completely, notwithstanding it had been used with great confidence. By the process of exclusion, then, the conclusion was inevitable that the pepsin content had more than the significance of a digestive substance. Its effect was too spectacular to be due merely to the improvement of digestion, which, in many cases, needed no special improvement.

Evidently the combination of the pepsin with the spleen supplied some need on the part of the spleen, which enabled its hormone to activate the exhausted phagocytes, and give them power to cope with the invading army of plasmodia.

With apologies to Sir Almroth Wright, if a phagocyte is quiescent in the presence of a disease germ, it is not wholly because it feels the lack of a condiment to tickle its appetite, but because it lacks the power of aggressive action. And it lacks the power because the spleen and its complementary organs have been so weakened by the infection that they fail to supply to the circulation the necessary hormones either in quantity or quality.

About ten or twelve years ago a colleague who had been interested in the use of the spleen by papers on the subject, presented by the writer in the local society, announced that he was "Done with using the spleen!" Upon being asked why he expressed himself in such an emphatic manner, he said, "Because it made by patient crazy!" The writer being at that time quite as certain as Dr. Bayle that the spleen was "perfectly innocuous," assured him that such a thing was quite impossible. And the intimation was dropped that his patient was probably crazy before he took the spleen.

"No, sir," said the doctor emphatically, "I knew my patient very well, and he was never crazy till he took that spleen. He is a raving maniac now."

The termination of this case is unknown, but, needless to say, it was at this time like an explosive bomb thrown into the camp. A great fear came into the writer's heart when he recalled the free and almost unlimited use that had been made of this remedy. Unlimited, that is, so far as was at that time known. But the overruling power which guides children and those who invade the dark secrets of nature without the lamp of knowledge, had guided better than he knew. Upon reflecting that the free use of the remedy had been uniformly without bad effects, however, the conclusion was reached that the case related had been a *post hoc* and not a *propter hoc;* and the work was continued.

Case I.—A year or so after this, however, a case of estivoautumnal fever came under treatment. This form of infection is much harder to control with spleen, as well as with quinine, than the tertian form. Indeed, the limitations of the spleen in the treatment of malarial infections, as has been remarked before,* parallel very closely the limitations of quinine. So much so that the question is very naturally suggested: Are not the effects of quinine in the treatment of malarial infections largely due to a stimulation of the spleen, causing it to throw off into the circulation the hormone, which undoubtedly produces the curative effect when it is given internally in those infections?

In the case cited, therefore, the remedy was being pushed; and as the patient did not show marked anemia the pepsin hematinic had not been given, when the patient began to show aberrations of the mind. Delirium, however, is not uncommon in such cases; and the family said of this patient that he always became delirious when he had fever, so nothing was thought of it. He did not improve, however, but grew steadily worse. Quinine was substituted for the spleen, but although the temperature came down the patient was no better. It was noticeable that when his temperature came down his mind did not clear. He grew steadily weaker, failing to respond to any means of stimulation, and died without recovering his mind at all.

Whether this patient would have died anyhow it is, of course, impossible to say, but in the light of subsequent studies, it is now believed that the mental symptoms were produced by the spleen. Whether it contributed to his death is to be doubted, but certainly it did nothing to prevent it.

One other case was necessary in order to educate the writer to the point where it was recognized that beyond a doubt the spleen under certain conditions was capable of producing grave mental symptoms, if not indeed contributing at least to a fatal issue. The effect of the spleen in the treatment of cancer had been under observation for some time. Several cases had been treated by local application with gratifying results, and it was thought that better results might be produced by using it subcutaneously.

Case II.—A case soon presented itself in a lady whose husband said she was dying of a cancer of the neck. He had heard of the experiments cited, and was willing to try anything that offered the slightest hope of benefit. The patient was about 40 years of age, fairly well nourished, and not especially cachectic in appearance. The growth was a lobulated carcinoma of the right side of the neck, fulminating in the rapidity of its growth. She was rapidly losing strength, and believed she was going to die. She was very calm and collected about the matter, however, even cheerful, and was much interested in the philosophy of the glandular treatment so far as it was explained to her. She was an unusually intelligent patient, and cooperated in carrying out the details of her treatment as far as possible.

After some days' treatment, ten minims of the solu-

*Medical Record, 1906, LXX, 165.

tion being injected subcutaneously every third day, the fulminating growth seemed to be somewhat checked, and there seemed to be room for encouragement. But just as it was beginning to appear that there might be some diminution in the size of the tumor, the husband telephoned one day that the treatment might as well be discontinued as his wife had lost her mind and was sinking rapidly. She died shortly afterwards without regaining her mind.

At first, grief and disappointment at the apparent failure of the treatment to give the relief it had seemed to promise, obscured a critical judgment of the circumstances of this case. But more and more as the facts were dwelt upon the question obtruded itself: did the administration of the spleen here produce the unbalancing of a mind that had seemed to be more than usually well balanced? The more they were dwelt upon, the more unavoidable seemed the conclusion that the breaking down of the mind had not been a merely natural step in the process of dissolution. And finally the conviction was reached that the spleen had been the direct cause of the mental alienation.

But if the spleen was capable of producing mental alienation in one case, why not in all cases? Evidently because the tendency to do so was held in check by some other organ or organs. What then were the conditions under which mental symptoms were possible? The memory of the other two cases recurred, and a careful scrutiny of the conditions was made. It was a long time before any comprehension of the circumstances came. But finally the fact was noticed that a least one condition was common to all three cases.

They all, for one reason or another, were deficient in sexual power. Not, of course, that they were sexually impotent; but the last case, for instance, was approaching the climacteric. The other two, though younger, presented conditions which suggested unmistakably a reduction in the power of hormone production by the sex glands.

What if the sexual hormone was deficient? What would it mean?

Clearly if a diminution of the sexual hormone caused the administration of the spleen to produce mental alienation, two very important deductions must be made. First, there is a possibility that all mental alienation, at least of a functional character, may be due to a coincident hypersecretion of the spleen and a hyposecretion of the sex glands. Second, if this deduction be correct, the administration of the sex glands in functional cases ought to restore the hormone balance, and hence restore normal mentality. Combined also with the spleen whenever it is administered, the sex gland should also prevent the production of mental symptoms in any case.

But what of the vast number of so-called cases of organic mental alienation? Would the administration of the sex glands alone correct them also? This seemed improbable. The intimate connection of diseased kidneys with many forms of insanity is well known, and it would seem that these organs must have an important influence on the spleen also.

Again, long previous experience with the administration of the spleen combined with digestive substances suggested that many more cases of mental symptoms might have been seen had not this precaution been taken, and that the digestive hormones must have also some restraining power over the spleen. This indeed was found to be the case, not only with the peptic hormone, but the pancreas and parotid.

The mammary glands also, except during pregnancy and lactation, stimulate the production of the sexual hormone, and hence assist in the restraining influence on the spleen.

Gradually by some such course of reasoning the elements of the following equation were brought together, with the determination that whenever an opportunity presented it would be tried out:

$2G + P + Pr + R + M = HB.$

Where G is the sex gland, P the pancreas, Pr the parotid, R the renal gland, M the mammary gland, and HB the hormone balance.

This presupposes that careful distinction is made between the sexes, which requires two different equations, one male and the other female. It is not best to combine the testes and ovary in one equation, as experiment has shown that the administration of such a combination may produce intense eye strain with painful ocular symptoms. This, by the way, is an important lead for further investigation.

A long time elapsed before an opportunity finally presented to make use of this theory. The case which first called for the administration of hormone equation No. 45, as it has been called, occurred at a time when the full hormone equation was not available. But as it was a purely functional case of puerperal mania, it was just as well, as it enabled the working out of the main point of the theory.

Case III.—The patient was a young woman 22 years of age, primipara. Labor was normal in every way except that as soon as chloroform was given she began to show aberrations of the mind whenever the anesthetic wore off. The aberrations took the form of violent abuse of the attending physician. The family was assured that she would be all right in the morning when the anesthetic had worn off completely. But the next morning she was as bad as ever, and it was quite evident that a genuine case of puerperal mania was in hand. Instantly the determination was reached to put to the test the theory that had so long been in mind. Some small powders of ovary were prescribed containing about two grains each, with instructions to give one every two hours. Before the second powder was given the mind cleared perfectly. The rest of the powders were given but *only* to make assurance doubly sure. There has been no recurrence of the symptoms since.

Case IV.—The next case was that of a woman about 46 years of age, who had a cancer of the thyroid which was pressing on the laryngeal nerves so that it had threatened asphyxia from spasm of the glottis and tracheotomy had been performed. She had been under treatment for some time with the subcutaneous use of spleen and lymph glands. The ovarian solution had been combined with them with the idea of preventing any mental symptoms, and although considerable doses had been given no trouble had been experienced. As the tumor reduced rather slowly, however, it was thought to hasten matters by increasing the dose. Having, however, by this time a somewhat unwarranted confidence in the controlling power of the sex gland the dose of ovary was not increased. Not long afterwards the nurse rushed into the office with the information that the patient was out of her mind. That she would not speak, but just stared straight before her without giving any sign.

On going to the patient she was found in a state of profound typical dementia. The jaw dropped, the mouth open, the eyes leaden and staring, the face ashen and expressionless. A more perfect picture of complete dementia could not be imagined. Although a totally uneducated woman she had an unusually quick and keen mentality; so that the change in her appearance and manner was the more extreme, not to say appalling. But even in the excitement of the moment it was impossible not to note the radical difference between this type of psychosis and that of the former case, and to note also the probable cause of that difference. Instantly the ovarian solution was produced, but with fear and trembling; for who could tell

whether it would have the same happy effect in this new type of psychosis. A full dose was given subcutaneously, however, and the result awaited in painful suspense. In a few moments expression began to come back into the blank face. The still eyes began to move about from face to face, and in not more than thirty minutes the mind was entirely restored.

This patient finally died from a spasm of the glottis, before the tracheotomy tube could be reintroduced; but the importance of the lesson it teaches in the study of the influence of hormone secretions in the production of the two great types of mental disease, can hardly be overestimated.

It has been found in a study of the previous cases that a hypersecretion, or experimentally, an overdoes of the spleen alone, with a coincident hyposecretion or diminution of the sexual hormone, precipitates mental symptoms of a maniacal type.

In this case, however, we had mental symptoms of the second great type of psychoses, dementia, produced by an overdose of the spleen plus an overdose of the lymph glands, with also a coincident diminution of the sexual hormone. The woman was 46 years old.

So far as known, the lymph glands alone have never produced mental symptoms of any character; but, as will be shown by the next case, when combined with spleen they readily produce mental symptoms of a demential type, provided the sexual hormone is diminished.

Case V was that of an old gentleman 78 years old, with pyelitis and cystitis, in which there was profound constitutional sepsis. Wishing to diminish constitutional sepsis, the lymph glands and the spleen were used. Hexamethylenamin and other measures were used, of course, but they are of no importance in this connection, while surgical interference was positively refused. As long as the lymph glands alone were used no trouble was experienced, but wishing to intensify the effect, the spleen also was added to the treatment, guarding it with a small amount of testicle and the other elements of equation 45.

But evidently this patient, probably on account of his advanced age and his depressed condition, was particularly sensitive to the effects of the spleen and lymph glands, and the preventive measures proved to be insufficient. The next morning, on entering the sick room, the same picture described in the last case was presented. The dropped jaw, the open mouth, the ashen face and dead staring eyes of complete dementia. This patient was a man of unusual character, and a mentality above the average. As in the last case, the change was little short of appalling. But fortunately having the benefit of previous experience the emergency was met with greater confidence. The proportion of the sex gland was adequately increased, and before the writer left the house the symptoms had disappeared.

At least twice before the close of this case by his demise—his case had been hopeless from the start in the absence of surgical measures—he again exhibited these mental symptoms, when the preventive measures were inadvertently relaxed. Each time the symptoms were promptly removed by increasing to the proper point the proportion of preventive hormones.

This case, therefore, shows beyond a doubt that it is perfectly possible in susceptible individuals to produce the symptoms of dementia at will, and remove them with the same facility.

Case VI was different from the three preceding cases in that it was precipitated by what might be called natural causes. Mrs. McC. was a lady about 48 years of age, mother of a large family, several sons and daughters being grown. The family had suffered many reverses of such a severe nature that it was the subject of remark by all who knew them. Mrs. McC.'s general health, however, was good, and she was physically strong. She bore up admirably through all these trials until her eldest son, perhaps 25 years old, died suddenly one night in a terrific hemorrhage, under most distressing circumstances, after being bedridden for a year or more with tuberculosis.

The day after the funeral Mrs. McC. lost her mind, and was found wandering in a vacant lot, muttering incoherently, and aimlessly picking wild flowers and weeds. When she was found by friends, and they tried to take her home, she suddenly collapsed, and they had to carry her in.

When the writer reached her she was still in bed, muttering and talking incoherently. She was in just the state mentally that one would expect to lead to an ordinary case of melancholia. Indeed, if her condition were to be characterized by a name it would be most correctly described as melancholia, which is classified by some alienists as demential in type.

Is it not perfectly logical then to believe that in this case we had a hypersecretion of the spleen caused by grief and the accompanying powerful emotions plus a hypersecretion of the lymph glands, with a coincident hyposecretion of the sex glands?

And is it not logical to suppose that the difference between the symptoms of this case and those of the other two cases of typical complete dementia was caused by some difference in the relative secretions of the other glands which are known to exercise a restraining influence over the spleen?

Just what these differences are will have to remain for future investigation. But the significant thing about the case was that the hormone equation No. 45-F restored the mind quickly and perfectly. The next day the lady got up and went about her usual duties. A few days later she transacted most of the business necessary to collect the life insurance on her son, and has had not a sign of aberration since.

It is not too much to say that if this patient had been treated by the usual methods she would have found a place in the state insane asylum; and probably would have died miserably, or lived a living death.

This is a short case record, as the writer not being an alienist has taken the cases just as they have come to him in a general practice. But so illuminating is their character that it seems difficult to escape from the following conclusions:

1. The administration of the spleen is capable of producing insanity of either an active or a maniacal type.

2. Hence, insanity of this character is probably caused by a hypersecretion of the splenic hormone, either actual or relative.

3. In functional cases the hormone of the sex glands absolutely controls this condition, and prevents or removes mental symptoms.

4. The administration of the spleen and lymph glands may produce insanity of a demential type, and hence insanity of that type probably is produced by a hypersecretion of both the spleen and lymph glands, actual or relative.

5. The essential condition for the production of any of these effects is a diminution below the normal of the sexual hormone in the circulation.

6. The male hormone will not protect the female, nor will the female hormone protect the male, from mental symptoms.

7. The hormones of the kidneys, the digestive organs, and the mammary glands are important in their restraining effects upon the spleen and lymph glands, so far as their influence upon mental functions is concerned.

8. It is possible by combining these restraining hormones to develop a practical specific therapy for mental alienation.

9. By applying such a treatment early in the disease the old chronic incurable cases of organic insanity would be prevented, as the longer the condition exists the more extensive become the structural changes in the brain.

10. The division of psychoses into at least two main types, mania and dementia, is based upon etiology and is therefore scientific.

INFANT MALNUTRITION.

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PROFESSOR EMERITUS IN PATHOLOGY AND GENERAL MEDICINE IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, ETC.

THE study of metabolism and its disturbances is the one great and unsolved problem in medicine. It begins with conception, so far as the individual is concerned, and ends only in death. In so far as the coming generations are concerned, it should begin in a careful selection of life partners and be continued throughout life. For unless the fathers and mothers are anatomically and physiologically at their best during the child-bearing period, they cannot acquire the best possible progeny, and without the best, succeeding generations must retrograde. The nearer these ideals are approached, the more nearly will we come to practical eugenics. The following interesting case illustrates some of these points:

A healthy young woman was married at twenty to a healthy, robust man a few years her senior, Owing to the fact that her mother's kidneys were seriously involved during pregnancy, and she died of nephritis shortly after the young lady was born, it naturally made her somewhat fearful as to the outcome in her own case. She placed herself under my care shortly after she became pregnant. The diet and hygienic conditions were carefully and scientifically regulated, and the bowels were kept moving freely during the whole course of the pregnancy. The result was that the kidneys performed their function perfectly both during and following the pregnant state. The patient had a perfectly normal confinement and a strong and vigorous baby, one that has continued to grow strong and healthy in every respect, even though it was bottle fed. Some two or more years later she again became pregnant. In the meantime, however, she moved to another city and passed from under my direct care. For some reason or other during the second pregnancy, the diet and hygienic conditions were not as carefully regulated as in the former pregnancy. While the second confinement was perfectly normal and without any kidney complications, the baby was not nearly so strong and robust as the preceding one. The second baby had icterus neonatorum quite badly and it was with considerable difficulty that it was made to thrive at all. It also was a bottle fed baby. After several months, however, the baby apparently was doing pretty well, but never advanced in the regular and vigorous manner that a baby should. At about the end of six months, while the child looked fairly well, it was not gaining. It seemed to have little strength for its age, was but little inclined to do the things common to its age, and would lie upon its back by the hour, making no effort to roll over or sit up in a changed position. The baby was hardly able to sit up in the mother's lap unless the back was well supported. Doubt was expressed by some as to the power of vision, and to some it seemed mentally defective. There was no sign of any teeth. In the next four months the baby made no progress in weight or any other respect. Toward the end of this period the baby began to show signs of absolute retrogression, but without any positive signs of disease. There appeared to be nothing wrong other than faulty assimilation, and an arrest of nutritive activity. At the end of ten months there was no sign of any teeth, the baby could hardly sit up, and made no effort to creep or get upon its feet. There was no evidence, apparently, of any suffering of any kind on the part of the baby. Several experiments were made in the changing of food, but all to no avail. At this point the case was referred back to me for an opinion and advice as to what might be done for the child.

Just about this time a carbonated aqueous solution attracted my attention, one of high alkaline bases, and in which there was a high percentage of calcium carbonate with the CO_2. It was claimed that in consequence of these facts its use would speedily overcome the so-called "superacid conditions" of the animal economy. As a matter of fact these so-called "superacid" conditions are only diminished alkaline ones, for nature never allows the system as a whole to become acid. Some of the secretions may be rendered unduly acid, but nature always prevents absolute acidity, a state which is incompatible with the maintenance of animal life, and which is overcome by the withdrawal of the more fixed alkaline bases from the various structures of the body. This withdrawal naturally disturbs the alkaline balance of the animal economy which is absolutely essential for perfect metabolism, and various grades of disturbed metabolism ensue. Therefore, from a practical standpoint it becomes just as essential to overcome lowered alkalinity as it would be were it within the range of possibility to have an absolutely acid state of the system. On the other hand great care must be exercised not to overalkalinize the animal economy, for both extremes tend to disturb metabolism, the former, however, more than the latter. This solution has the following composition per hundred parts of water: Sodium carbonate (Na_2CO_3), 00.404; sodium phosphate (Na_2HPO_4), 00.023; sodium chloride (NaCl), 00.080; calcium carbonate ($CaCO_3$), 00.057; magnesium carbonate ($MgCO_3$), 00.004; potassium chloride (KCl), 00.004.

The one ingredient in this solution which appealed most of all to me was the sodium phosphate (Na_2HPO_4) a salt which is usually formed from the trisodic phosphate (Na_3PO_4) in the process of digestion when the hydrochloric acid is formed into sodium chloride ($Na_3PO_4 + HCl = NaCl + Na_2HPO_4$). This latter salt, the disodic phosphate, is quite abundant, relatively speaking, in the blood. It is also very essential for perfect metabolism, the maintenance of the normal acidity of the urine, and for the transformation of uric acid into sodium urate. In view of the above it occurred to me that this was a case in which to try the use of these alkaline salts. Hence, my suggestion to the mother was to make no change in the composition of the baby's food, but in its preparation I recommended the substitution of water containing the salts in the above proportions, for the water she had been using in preparing the milk, allowing time for most of the carbonic acid gas to escape before preparing the milk. Also to give a little of this water, decarbonated, between feedings. Very shortly after this change was made (about two weeks) there was marked evidence of improvement in the child's condition. At the end of four months the baby had regained all of the natural activities of a child of its age. During these four months the baby gained nearly four pounds, cut six teeth, and was able to stand on its own feet unassisted. A month later it gained more in weight, cut more teeth, and became very bright and lively in all respects.

While fully realizing that this is but one case, and covers only a short period of time, it seems worthy of reporting, especially in view of the fact that no further change was made in the diet and no medicine was given. Also, because the case appeared to be one of true and simple malassimilation, due to the lack of some essential element to maintain perfect metabolism. The results certainly point very strongly toward the elements given as the factors necessary for the reëstablishment of normal metabolism within the system of this unfortunate child, though one would, of course, have to see a large number of cases before it would be possible to affirm with absolute certainty that the good results obtained were directly due to the action of the salts.

One of the chief purposes of this paper is to bring to light another etiological factor in disturbed metabolism, to wit: the lack of alkaline balance, a very common cause and one not often recognized, and one which if neglected in the management of these cases prevents recovery in many instances. It has long been known that in many forms of malnutritive diseases of infants and young children, it often is not so much a lack of the mineral salts as it is a failure properly to utilize and assimilate them. On the other hand, if the proper physiological balance can be established in relation to these saline bases, they will normally stimulate sluggish and inactive protoplasm into more normal activity and finally bring about normal metabolism. It is a known fact that most of our modern methods of cooking usually deprive our vegetable food products of their natural salts so essential to perfect metabolism. Hence the brilliant results obtained by some physicians who prescribe for their patients the eating of uncooked or raw vegetables. Attention is again drawn to the fact that most of our disturbances of metabolism are due in part to a loss of this alkaline balance, which in its most pronounced form is at the present moment attracting much attention under the name of "acidosis," a condition in which there is a lack of these salts, or an inability to utilize them perfectly, with a vain effort on the part of the animal economy to draw these fixed alkalies from the structures of the body, with consequent increased acidity of many of the secretions, until we pass from a simple disturbed chemical function to one that brings about true pathological changes.

46 West Eighty-third Street.

A CASE OF AURICULAR FIBRILLATION.

By J. WHEELER SMITH, JR., M.D.,

BROOKLYN, NEW YORK.

W. W. came to me on February 16. He is a native of Ireland, is forty-seven years old and is unmarried. His occupation is that of grocery clerk. He complained of "a heavy cold" and presented cough, fever, and dyspnea. He stated that he awoke early on the morning of the ninth with a chill. He took quinine during the day. That evening he began to cough. He appreciated at this time that he was feverish. He continued to be up and about for an entire week, treating himself with drug-store "cough mixtures" and being attended by a "doctor" who worked in the drug store. Finally he was told that he should see a physician. He came to me on the eighth day of his illness. A relevant point in his previous personal history is that the patient had pneumonia seven years ago.

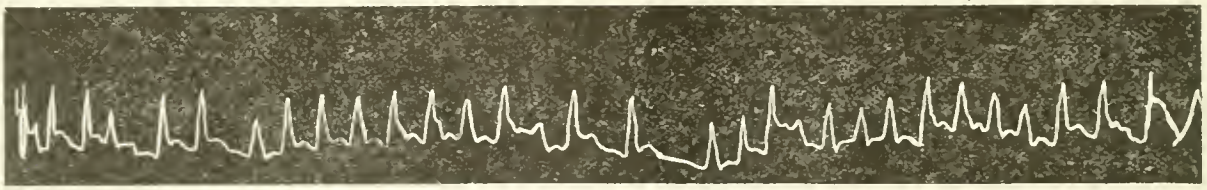

FIG. 1.—Sphygmogram made with Dudgeon's sphygmograph, Feb. 20, 1914, at 1.30 p. m. Right radial artery.

His temperature was 103°. I instructed him to go to his bed at once. At 8 P.M. of the same day I made the following observations of his physical condition: Patient in the dorsal recumbent position, apparently comfortable; quite lucid and cheerful. His skin was white, dry and hot. The conjunctivæ were congested; the scleræ injected. The pupils were of moderate size, equal and regular, and reacted well to light and accommodation. There was marked movement of the alæ nasi in inspiration and the lips were thin, pale and slightly cyanotic. No herpes labialis was seen. The tongue was soft, pale, indented by the teeth, and coated all over with a light white fur. The throat was uniformly reddened. The neck was symmetrical. There were marked arterial and slight venous pulsations. The thorax was of moderate size, fairly well nourished and symmetrical. The respiratory movements of the thorax were distinctly diminished all over the left side, over which side, also, tactile fremitus was increased. Both apices were dull. The right front, however, was resonant; but the left front was dull, merging below into a flatness which extended over the left axilla and base. Auscultation elicited harsh bronchial breathing over the entire left side, with many small moist râles and a few large ones. The cardiac apex was felt faintly and irregularly in the fifth space in the midclavicular line. The area of cardiac dullness was somewhat increased both to the right and to the left. The heart sounds were very weak and muffled and were markedly irregular both as to time and intensity. The rate was very rapid. Some of the sounds heard at the apex apparently represented contractions on insufficient blood to send a wave to the radial, hence the radial rate was considerably slower than the apex rate. The abdomen was slightly tympanitic. The extremities presented nothing worthy of note. I made a diagnosis of lobar pneumonia, involving both lobes of the left lung and of cardiac irregularity.

On the following day, the ninth day of his illness, dating from his chill, the patient was markedly cyanotic but quiet. The apex rate was 172 and the rhythm was still very irregular. The type of the irregularity was not yet determined, but it was quite definitely not a respiratory irregularity. Physical signs showed the entire left lung to be consolidated; there were numerous large moist râles over the upper lobe anteriorly. The back was not examined. Great difficulty attended the determination of the blood pressure because of the

marked irregularity of that factor. At times no pulse wave came through to the radial under pressure of 70 mm. Hg.; at times a pressure of 110 mm. Hg. was necessary to keep all back; sometimes even more. At 6.45 P.M. on the seventeenth the apex rate was 176. At 7 P.M. phlebotomy was done and sixteen ounces of blood drawn off. At 7.15 P.M. 1-200th grain of strophanthin was given intravenously in 10 c.c. of physiological salt solution. The apex rate was not appreciably affected, but the patient felt very much more comfortable. Leucocyte count at this time showed 30,000 white blood cells per cu. mm.

At 11.45 A.M. of the next day, the eighteenth, the patient was comfortable. The entire left side showed small and medium-sized crackling râles on inspiration, and harsh tubular breathing in front. The cardiac rate was 142 and the rhythm was still very irregular. The irregularity was certainly not a respiratory irregularity and did not sound like extra systole. There was no evidence of pericardial involvement. At 4 P.M. the apex rate was 156, the radial rate 98. The patient was breathing quietly and sweating profusely. At 8.30 P.M. the patient was still very comfortable. The apex rate was 160; the radial, 135. The breath sounds low in the axilla were more quiet, and were accompanied by large numbers of moist râles, both inspiratory and expiratory. Over the upper part of the left

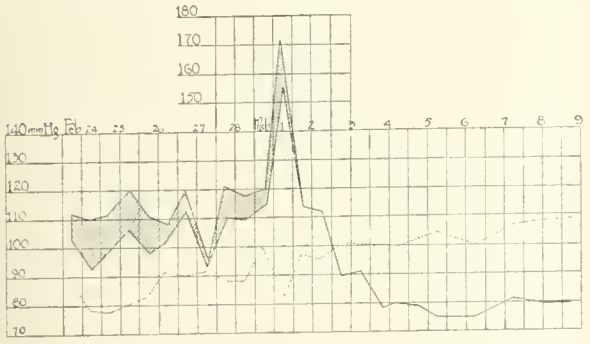

FIG. 2.—Tracing showing improvement under treatment.

front the sounds were very rasping and there were large numbers of inspiratory râles. There was no involvement of the right side.

On February 19, the eleventh day of the illness, the patient's temperature dropped rapidly from 103° to 98.4°. Resolution took place very slowly. Marked impairment of resonance, increased tactile fremitus and voice sounds and roughened breath sounds, with râles, persisted for ten days after the crisis.

Fig. 1 is a pulse tracing made on the twentieth, the day after the crisis. On the twenty-third the cardiac condition was diagnosed auricular fibrillation, the diagnosis resting upon the very marked irregular irregularity in the ventricular contractions, as appreciated both by auscultation at the apex and by palpable demonstration of irregularity in rhythm, force and volume of the pulse at the wrist. A second diagnostic point was the marked and constant pulse deficit. It was determined to put the patient upon digitalis. Digipuratum was employed in tablet form. Fig. 2 is a graphic record of the patient's improvement. It is drawn according to the plan of James and Hart (*Amer. Jour. Med. Sci.*, CLXVII, 1, Jan. 1914.) The cardiac rate, as auscultated at the apex, is represented by the upper line; the radial rate, as palpated, is represented by the lower line; the pulse deficit is represented by the shaded area between the two lines; the average systolic blood pressure is represented by the dotted line. Determinations were made daily at 9.30 A.M. and at 7 P.M. Observations were begun on February 24 at 4 P.M. No medication was given on the twenty-fourth, twenty-fifth and twenty-sixth, but was begun on the twenty-seventh; on that day and thereafter one tablet of digipuratum was given at 9 A.M. and another at 4 P.M. Each tablet is equivalent to 1½ grains of the leaves of digitalis. It will be seen that on March 1 the cardiac rate rose to 172 and the radial rate to 156. This rise in rate was concomitant with an elevation of temperature to 103.3°. At the same time the patient complained of great soreness in his right arm. Examination revealed large, inflamed, indurated areas in the subcutaneous tissue, which were acutely tender. It developed that the nurse, being unfamiliar with the method of administration of the tablets, had dissolved the tablet each time and injected the solution hypodermatically. In consequence, great irritation of the tissues was induced and a general response effected. Thereafter the tablets were given as intended, by mouth, and great improvement was had almost instantly.

Observations were discontinued on March 9. The medication, however, was continued. The patient was out of bed on the twelfth and paid me his last visit on the sixteenth, feeling, at that time, so he said, better than he had felt for a great many years.

1249 ST JOHN'S PLACE.

PERSONAL EXPERIENCES IN CONTRACT PRACTICE.

BY LUCIUS F. HERZ, PH.B., M.D.,
NEW YORK.
ASSISTANT SURGEON NEW YORK POST-GRADUATE HOSPITAL DISPENSARY.

TOWARD the end of my House-Surgeonship at the Post-Graduate, I was shown an advertisement in one of the prominent medical journals, which called for a surgeon for a large corporation in a town of 65,000. I wrote to the number given in lieu of definite address, and inquired for full particulars in regard to the position offered, and received the following letter in reply. For obvious reasons, names have been suppressed or changed.

BLANKVILLE, March 15, 1916.

Lucius Herz, M.D., New York City.

DEAR DOCTOR:—I am in receipt of your letter of date March 12, concerning position at the plant of the Blankville Steel Company.

The Blankville Steel Company is a subsidiary of the United States Steel Corporation and have just established a plant in this city that has cost $20,000,000. The future of the steel business is very bright in this locality and I have no doubt that this plant eventually will be among the largest in this country, and for the right man there will be a chance to grow with the industry. We now are just finishing a new surgical hospital at the plant, which will be modern in every way. We have a hospital right at the works where all minor work is done, also first aid.

I now have two men at this place, but have one who is unsatisfactory and will discharge him soon. The salary of $100 per month does not include board, but it does include room at the hospital. There is a good opportunity to build up a private practice that will eventually amount to many times this salary.

I am also looking for an assistant at my office, as my laboratory man and pathologist is going to leave me next month. There may be a chance for you to take his place, if you should prove the right man. I may give you a chance in my office and hospital work.

I demand the best credentials as to your moral character as well as your professional character.

This place is not filled yet as I am considering several applications, being anxious to get the very best man possible and one who is willing to work and grow up with the business.

Let me hear from you soon, as I am anxious to fill this place as soon as possible.

Very truly yours,

As I cared more for clinical than for laboratory work, I made a formal application for the position at the steel plant, and after some more correspondence, and investigating the references that I gave, I was accepted. Judging from the small salary named, and the statement regarding outside practice, I assumed that the position was a half-time position, similar to the New York City positions, requiring routine work for a few hours per day, and then being on call for serious emergencies only. The reader will shortly see, that in contract work, it is unwise to assume anything, and the only proper way to engage in it, if there is any proper way, is to have a signed statement specifying what one's exact duties consist of.

After a journey of 1,600 miles, I found myself in Blankville, and proceeded at once to the office of the writer of the letter. There I met Dr. ———, a shrewd and prosperous looking man of about sixty. After exchanging a few commonplaces, we "got down to business," and then, and not until then, I was given a true inkling as to what my duties would consist of. He broached the matter delicately by inquiring whether I had much night work at the Post-Graduate, to which I replied that I did early in my service, but toward the end, most of the night work was done by my juniors. He then announced that my work would consist chiefly of night work. I was, of course disappointed, but decided to face the proposition bravely, and if the chances for outside work were so wonderfully good, would gladly sacrifice an occasional hour's sleep. I did not even then surmise what my duties would be, as I assumed that only serious night cases would require my attention. Dr. ——— then took me out to the plant, introduced me to the superintendent, and showed me the new hospital, and then we returned to town. The plant was twelve miles from the center, and was reached by trains which were few and far between, but this additional disappointment did not fease me either. Then, Dr. ——— did the one act in all our dealings that I can feel grateful for; namely, he took me to the best hotel in town, registered me as his guest, engaged a parlor and bedroom for me, and told me to stay there over night, take my meals there, and charge it to him, remaining until the following morning. I thus had a refreshing night's sleep, the last for some time to come.

Dr. ——— informed me that I was to treat the employees for actual injuries under the Workingmen's Compensation Act, and that medical and other cases not resulting from injuries ranked as private practice, and that I would be permitted to charge for them. My hours were to be arranged by the senior surgeon at the plant, Dr. X.

The next morning, bright and early, I arrived at the plant, and met Dr. X, a man of about thirty-five, of the classical stage doctor type, goatee, very professional manner, etc. He informed me that I was to assist on the day dressings, from 9 to 12 A. M., could have the afternoons off, then come back at 7 P. M., do the routine night dressings until 9 P. M., and then sleep at the infirmary, and remain on call all night. The laborers were to knock at my door to arouse me. I was soon to learn that they were not at all reticent about disturbing my sleep.

My first night, I was aroused by feeling somebody rudely pulling at my foot. I awoke with a start, and found an ignorant, grimy, laborer at the foot of my bed. I thought an unusually serious accident made him dispense with formality, and asked what the trouble was, and was told "head cut." I made him wait outside, donned my bathrobe, and stitched up a slight scalp wound. Thus it went, several times each night, sometimes eight to ten times. Some few had courtesy enough to knock at my door, but the majority walked in and sat down, but were promptly informed that this was my bedroom, and that they were not permitted in there except at my invitation. I soon found out how people abused the privilege of free medical attention. Infinitesimally small scratches, tiny abrasions, "barked knuckles," slight bruises, cinders in the eye, slivers under the nail, etc. A long array of tedious, uninteresting cases, not nearly so interesting as the average dispensary clinic, because the motto of "Safety First" adopted by the Steel Trust, made the foreman send the laborers to me for ridiculous trifles. I soon realized that I had been tricked. I first vented my indignation upon X, and told him that if I had to work so hard nights, it was unreasonable to make me work days, and I refused to work longer at that schedule even for twice my salary. (Inquiry had revealed to me the fact that my predecessors worked nights only, and that X. was imposing upon me so that he could attend to his private practice.) X. agreed that it was pretty strenuous but thought that I should stand it. I was firm in my resolve, however, so he gave in, and said that I should work nights only. I found also that I was expected to work seven nights per week, and that it was utterly impossible to obtain a night off, as X. would not take my place evenings. I surely expected one night per week off, but was merely told, "You can't have everything you want." On the other hand, he never hesitated to ask me to take his place mornings or afternoons, when he was busy with a private case, and I was foolish enough invariably to consent.

Finally, loss of sleep began to tell upon me. The cases were rarely of any interest, and half the time could have been handled by a nurse or orderly. I became more and more tired. Five hours sleep out of the twenty-four was doing exceedingly well for me. I could fall asleep the first time I retired readily enough; the second time, perhaps after an hour's wait, and the third time not at all. Toward the last of my work there, however, I could not sleep at all, as I was completely worn out, and finally obtained forced sleep by taking trional. All this for what? For nothing! For a concern that worked constantly, day and night, day after day, an iron monster without heart or soul. My strenuous and conscientious work was paid for at the rate of $10 per month more than the lowest paid common labor! A fine recompense for seven years in college and two and a half in hospitals. The strenuousness of the work was unbelievable. Sometimes for two successive night I was aroused eight times. On every case, no matter how absurdly simple, in addition to treatment, I had to make out a detailed report in triplicate, giving the man's name, age, department, number, address nationality, cause of accident, party blamed, probable length of disability, description of injury,

treatment given, etc., etc. This generally required more work than the treatment of the case, and was absolutely useless, for the clerical part was duplicated by the casualty clerk.

To add to the joys of this position, I was bothered night after night by the telephone ringing, and asking for the wrong department. Also, it would frequently ring, and announce the fact that a man was coming over, and three-quarters of an hour later a man would leisurely arrive, with a sprained ankle. I would treat him, make out my report, and retire, when an hour or two later the phone would ring again, and the foreman would ask me what the nature of the injury was; I would answer, and then after an hour or so finally obtain sleep again. Over two hours of sleep lost for a sprained ankle! These unnecessary and false alarm calls became so frequent that I had to resort to the device of plugging the instrument. I understand that I was reported for this, and that the powers that be did not approve of it; however, my health was worth more to me than their opinion, and if a trifle like this should outweigh my hard and faithful work in their estimation it made little difference to me. My conscience is clear.

Of all the cases that I treated there was only one of unusual interest. This was a man who was caught in a crane, causing a simple fracture of the femur, and a punctured wound involving the popliteal artery, which was pumping away like the much-quoted fire hose. In spite of the fact that every department was provided with a tourniquet, there was nobody with sense enough to apply it, and the man was brought to me pretty well exsanguinated, and the stretcher that he was lying on was literally saturated with blood. I immediately applied a tourniquet, stimulated him with a hypodermic of strychnine, gr. 1/15, also gave morphine, gr. 1/6, combined with atropine, gr. 1/150, and clamped and ligated the artery through the original wound, assisted only by the laborers, who manipulated the leg, and compressed the artery at my direction. The man was then transferred to the hospital, 12 miles away, by ambulance, where he was infused. He was too exsanguinated, however, to establish a collateral circulation. Gangrene arose, requiring amputation of the extremity, and death occurred from his original shock two days later.

In regard to outside practice, there was some, of course, among the 5,000 people living in the tiny villages near the steel plant. There were three villages, the most modern being made up of new concrete houses with all modern conveniences. In this village X had his office. The other two villages were a town of about 1500, mostly made up of the older families of American people, and a town of about 2500, made up chiefly of the foreign element. Both towns were quite primitive. The people had electricity, but not gas, in the more modern of the houses. The foreigners burned oil or candles in their one-story or even two-story shacks. Pigs, cows, and geese shared the paths known as sidewalks with the humans in the foreign town. The one paved street in this town stood out in marked contrast to the cross streets, where the mud often came half-way to one's knees. As to practice, one had to build it up gradually here, as elsewhere. There was little competition, but much self-doctoring. However, I had no difficulty in obtaining a case per day during my first month of practice. For one who could live under primitive conditions, a fairly good opportunity was present here, not so good, however, as Dr. ——'s alluring letter would imply. After much looking around for an office, I finally selected the least of the evils offered, and took one in which I could at least have room enough. It was in an old building of barn-like splendor, but much needed improvements were promised by the owner in the way of running water, painting, varnishing, etc. Some of these promises were kept, such as the painting, but were considerably delayed, and the running water was not even begun two weeks after its promised completion. However, I made the best of things, and moved in just as soon as the place was at all habitable. After occupying the place for four days, I was about to enter my office, on a day when the wind was blowing a stiff gale, when the entire tin roof was blown off, landing within a few feet of me. This was too much for me, so I promptly moved out and took an office in Blankville itself.

The night work was becoming more and more strenuous as they increased the night shifts and opened new departments. Besides being aroused numerous times per night for new injuries, frequently an old routine dressing case would appear at 2 or even 5 A. M. and expect to be dressed. Of course, I refused to be imposed upon, these patients having been repeatedly told that dressing hours were from 7 to 9, but they continued to show up at these unearthly hours, and often became quite nasty when I refused to treat them. It was told to me that certain men had reported me for refusing to treat them when injured. In other words, when I refused to treat an old routine case it was reported in such a way as to appear like a new injury, and I was reported for neglect of duty. Nothing was said to me directly, but indirectly this was carried back to me. Evidently one false accusation carries more weight with people of narrow caliber than dozens of exasperatingly trying cases faithfully treated. Finally, when the strenuousness of the company work and the loss of sleep began to tell upon my health more than I cared to have it, I gave Dr. —— a month's notice, and the only comment that he made was, "Well, you are not much of a sticker!" Much of a sticker indeed! I wish that he would try it for just one week. I had made the statement to friends that no human mind ever made such a position possible. It must have been the devil himself who devised it. I also found that I had remained longer than any of my predecessors, one of whom left after about three nights of it.

I would bear Dr. —— no resentment if he had made it plain to me in his letter that the position was a night job. Of course, I would never have considered it then. Peruse his letter once more. It reads like a description of wonderful opportunities of the Golden West as found in popular novels. There are no sins of commission present, but certainly one glaring one of omission. Talk about medical ethics when one doctor thus deliberately tricks another! I wonder if Dr. ——'s conscience is clear.

In regard to charging patients who were not injured while at work, for instance, men coming in with furuncles, stomach trouble, etc. According to Dr. ——'s instructions, we were permitted to charge them. However, if the complaint was very trivial, like a headache, etc., we dispensed a few migraine tablets and did not charge. If a thorough physical examination were required, or prescriptions indicated, we would charge $1, which was fair enough,

one will agree. However, both X. and I were reported for charging for treatment, and he received a letter mentioning an instance in which I had asked for a fee and was refused, the foreman reporting me for this! We were informed that all cases must hereafter be treated free of charge. I had found that cases were too apt to be treated by the pill doctor style, tablets for every ailment known, and dispensed without either a careful history or any physical examination. For instance, abdominal pain would be treated by chlorodyne tablets, which contain morphine, gr. 1/6, and canabis indica, gr. ½. Is this up-to-date medicine? I refused to practice this sort of medicine, and studied each case carefully. However, this is a rather thankless job, when one is paid about $0.25 per case.

Before I finally left the company, X. suddenly left without notice. The details never were made clear, but as his successor was hired upon a full-time basis, it is quite evident that the superintendent objected to his spending so much time with his lucrative private practice and so little for the company, and attempted to compel him to remain at the plant all day, which he refused to do. Heretofore he had come and gone as he pleased, and left the janitor in charge, the latter being quite a skillful dresser. As X.'s private practice amounted to about double his salary, at a conservative estimate, and as his salary was only slightly larger than mine, I cannot blame him for leaving.

Lastly, a word in regard to contract practice. It might be all right when the physician is hired directly by the company, but where one man is chief surgeon and hires his own assistants out of his contract it is usually unsatisfactory. Does it seem fair that a concern as wealthy as the United States Steel Co. should pay its surgeons less than half what the United States government pays hers? Does it seem fair that a subsidiary of the Steel Trust should pay a man with two college degrees, obtained from one of the leading universities of this country, but 30 cents a day more than its lowest paid common laborers, most of whom can neither read nor write English? Perhaps other concerns are more generous, but my advice would be, do not accept contract practice unless you can conduct it from your own private office, or unless it pays sufficiently well to consider it as a full-time proposition. The lowest pay that any concern should offer its surgeons on full time should be $200 per month, as the work is very strenuous, monotonous, and uninstructive, and the social opportunities are usually nil.

154 East Seventy-ninth Street.

THE MILITARY QUARANTINE STATIONS OF HUNGARY.

By B. F. Morowitz, M.D.,

New York.

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On my return from the European battlefields in May of this year, after being away from the United States for more than eighteen months, I was not only surprised but agreeably concerned by the many preparations being made for national defense, and as a physician the medical aspect of these appears to me as one of the most important issues. I wish, therefore, to describe as briefly as possible the system of the military observation or quarantine stations employed in Hungary along its threatened borders, for the prevention of the spread of infectious and contagious diseases into the interior of the country, trusting the idea will come under the attention of our military hygienists along the Mexican border.

Several months after the outbreak of war in Europe, the Minister of the Interior, in connection with the Ministers of War and Home Defense, ordered the construction of fourteen observation or quarantine stations in as many Hungarian towns near the Carpathian Mountains, as listed in the accompanying table.

Station	Sq. Yds. Area	Number Barracks	Number Beds	Number Physicians	Number Nurses
Munkács	96,000	26	2930	30	140
Szatmár	144,000	25	2975	20	120
Debreczen	135,000	69	5285	47	235
Miskolcz	72,000	46	4300	24	135
Besster	84,000	26	2720	14	128
Zsolna	192,000	63	4500	26	75
Rozsahegy	75,000	17	1880	15	116
Ungvár	150,000	28	3050	20	241
Satoral	93,000	47	3100	21	173
Nyiregyh	75,000	42	3200	22	210
Losone	54,000	17	1882	10	75
Nyitra	84,000	26	3000	19	130
Kassa	144,000	31	3900	22	214
Trencsén	30,000	23	1741	16	75

These towns are situated along the railroads running from various points on the battlefronts, and are connected with one another and with Budapest, the capital. They are of a fair size so that food material and other necessities can be obtained at any time.

The hospital itself is situated on the outskirts of the town, just alongside of the railroad track, and where possible adjacent to a river or stream below the town. From the main track is switched off another track to carry the Red Cross train immediately in front of the receiving barrack.

The hospital consists of a group of from twenty-five to forty-seven barracks each approximately 50 feet by 225 feet in size, or even larger, placed conveniently apart to allow for proper roadways, drainage trenches, or small tracks running between the barracks for carrying materials on small cars or hand cars. They are built of wood with cement foundations, and covered externally with rain-proof, whitewashed asbestos. In addition to the barracks holding the sick and wounded, there are barracks set aside for receiving patients, bath, kitchen,

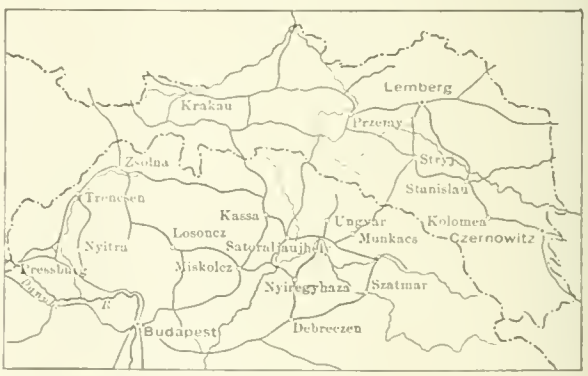

Fig. 1.—Map of Hungary showing the locations of the military quarantine stations.

power house, laundry, doctors', nurses', and employees' dormitories, general administration offices, storage, carpenter, morgue, laboratories, etc.

Each ordinary barrack, or barrack containing wounded or non-infectious sick, contains from 50

to 120 beds, one bandage room, one dining room, two diet kitchens, four toilets, two bath rooms, and two bedrooms for nurses (see diagram).

All soldiers, civilians, correspondents, etc., leaving the front for the interior must pass through

Fig. 2.—Munkacs barracks on October 2, 1915.

the required quarantine period at one of these observation stations. The object of this is the separation of all those afflicted with contagious, infectious, and even venereal diseases, with a resultant isolation strictly carried out. An exception is necessarily made in the case of troops being transported from one front to another.

The routine employed by most of the quarantine stations is as follows:

Fig. 3.—Munkacs barracks on November 20, 1915.

1. The trains are brought up to the receiving barrack and immediately emptied and disinfected.

2. The patient goes or is carried from the waiting room to the receiving room, where he gives up his military equipment such as rifle, bayonet, sword, or revolver, knapsack, uniform, boots, etc. These are placed in a bundle to which is attached the number of the admission card given to the patient. This admission card is attached around the patient's neck and later to his assigned bed.

Fig. 4.—A ward in the Munkacs barracks.

3. Then small valuables are given up, such as money, watch, medals, pocket knife, etc., which are placed in a small bag, numbered, and immediately disinfected by passing through steam, and returned to the patient when he gets through with the bath.

4. The patient is then stripped, the undercloth-ing turned in, and is taken to the barber's room, where the hair of his head, arm pits, and pubes is clipped away with electric shears.

5. Next comes the bath, a thorough scrubbing with soap, hot water, and brush, and in some stations with lysoform. After this, fresh underwear is given, with a hospital coat and cap.

6. The "inspection" doctor then examines the soldier, who is classified according to what the condition may be, and assigns him to the proper barrack.

The patients are classified in the following way: (1) Those having contagious or infectious diseases; (2) those suspected of having a communicable disease; (3) disease carriers; (4) those suffering from non-infectious diseases; (5) the wounded.

This results in the quarantine stations being divided into two great divisions, a regular hospital and an epidemic diseases hospital. The latter is separated from the former by space, and a high fence at the gate of which is placed an armed guard. The barracks of the epidemic division differ from the others, in that each one is divided into forty or fifty rooms, so that better isolation of each individual case can be carried out, no matter what the infection may be, and they are so arranged that the doctors, nurses, and orderlies coming from a patient must pass through special private bathroom

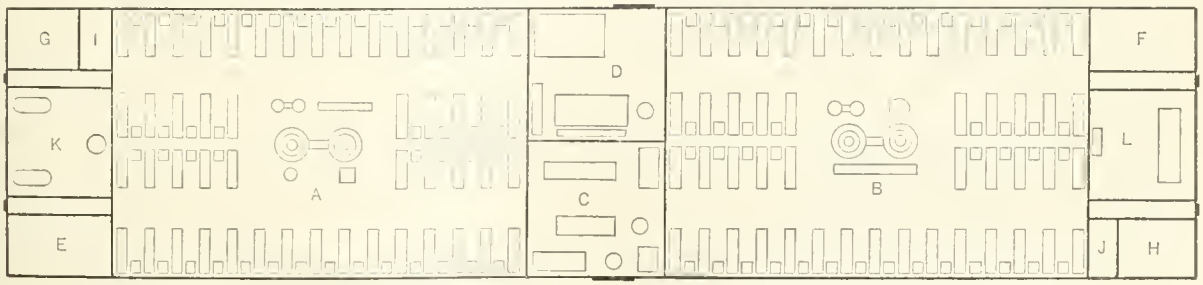

Fig. 5.—Diagram of two wards (A and B) for non-infectious cases. C, bandaging room; D, kitchen or diet room; E, F, nurses' sleeping rooms; G, H, patients' toilets; I, J, nurses' toilets; K, bathroom; L, kitchen and dining room for orderlies and servants.

before they can reach their own individual quarters. The patients in these barracks stay until cured. Iincluded in this group are the barracks containing the suspected cases. If after a period of fourteen consecutive days there occurs no development of any contagious or infectious disease, the barrack is cleared, fumigated and scrubbed with a solution of mercuric bichloride, the patients being transported to the hospital division as convalescent.

The suspected and known disease carriers are given a thorough treatment with antiseptics and diet, and after five days are allowed to leave for the interior with proper instructions as to cleanliness and personal habits.

In all other barracks, or what I have classified as the hospital division, patients who are free from fever after five days quarantine from the time of their admission, are transported toward the interior and distributed in the various base hospitals for further treatment.

In this way Hungary fights the more important enemy, Disease. It is indeed rare to find a case of typhus or cholera in Budapest, while in Vienna many of the hospitals were ofttimes full of contagious and infectious diseases, owing to the fact that Austria proper had no such system of quarantine.

By no means is the Carpathian front the only border protected with these observation stations, as there are very many of them along the southern frontier, while many are being built now along the Roumanian side. How much safer would we not be, here in New York, if our soldiers, instead of being quarantined for ten days in this city, would spend their observation period, say, at Dallas, Tex.?

ECONOMICAL, EFFICIENT, AND SPEEDY METHOD OF ADMINISTERING SALVARSAN AND SIMILAR PREPARATIONS.

By GEORGE NOBLE KREIDER, A.M., M.D., F.A.C.S.,
SPRINGFIELD, ILLINOIS.

VERY few there are who now will deny the great value of Salvarsan or its substitutes in the treatment of specific disease. This, of course, when administered intravenously in proper doses and in conjunction with the deep injection of a mercury salt in the buttocks.

Taking this for granted, it is proposed to show how the preparation may be given most effectively, safely, and economically in appropriate cases.

Preliminary Precautions Quite Necessary.—No treatment should be given without a thorough examination, and before each treatment the urine should be tested for albumin. Each patient should bring a specimen of urine in a clean bottle, which is examined in the laboratory before the treatment. Especial attention should be devoted to the examination of the heart and aorta, as lesions of these parts are frequently found in syphilitics.

Attention to Details Insures Safety.—The treatments are given once a week to a number of patients rendezvoused at the hospital. The patient is directed to come at a certain hour. An effort is made to keep the patients separated so that they may not meet each other and discuss the treatment. The hospital offers the advantage of having rooms where patients may be quickly treated should complications arise. Adjoining rooms are available, where the patient rests before leaving for home. The hospital pathologist, Dr. W. G. Bain, prepares the solution for all the cases at one time, and fills the syringe with the dose which has been decided on by me. Each dose is poured out of the entire solution into a small sterile beaker, thus avoiding any danger of commingling the doses. Practical experience proves this necessary. He sterilizes the needle after each injection. The arm, at a right angle to the body, is extended on a small sterile dressing table placed by the side of the operating table. The operator sits on a chair, with one foot resting on a footstool, and thus works easily and comfortably. The attending nurse (sister) introduces the patient to the operating room and reports on the urine test. She prepares the table for each patient, sterilizes the arm, and applies the sterile towels. She tightens the tourniquet and releases it gently when the vein is safely punctured. She takes charge of the patient after the treatment and provides a room and bed should it be found desirable. She bandages the arm after the treatment if necessary. A solution of adrenalin is kept prepared for hypodermic use in case of emergency.

Directions for Patients Taking Special Treatments.—The patients are given the following typewritten directions when they arrange to take the treatments. They serve to impress on the patient's mind the importance of the transaction and the necessity of carrying out the details:

Mr..... Date.....1916.

The treatments are given at the laboratory at St. John's Hospital each Tuesday morning between 9 a.m. and noon.

The number of treatments at the hospital will be at least six. The dates of your treatment will be.....

The day before(that is, Monday) you should take a glass of water every two hours and a teaspoonful of Epson salts at bedtime. You should eat a very light breakfast before the treatment, and lunch and dinner after treatment. A clean bottle containing urine wrapped in paper, bearing your name, should be brought to the hospital each Tuesday and given to the sister.

Soon after your treatment you should go home and rest the remainder of the day; at least sit down. Let me know of any particular bad feeling. An effort is made so to regulate the treatment that there will be no bad feeling. Sometimes it is necessary for the patient to stay in the hospital Tuesday afternoon and night.

Some member of the family should usually come with you, at least the first time.

The treatments at the office number twelve and are given Thursday, Friday or Saturday afternoon, as per arrangement. The dates of your treatments will be.....

You should take a short rest after this treatment. No need to fast before or after office treatment.

A hot bath is to be taken each day. Be careful to keep teeth and mouth clean. Let the doctor know if there is any tenderness or bleeding of gums. The cost of the hospital treatment varies with the amount of medicine given. This fee covers the amount of medicine given, the use of room, the assistance of Dr. Bain, and my services. This should be paid each Tuesday.

The Gentile Instrument Used Shortens Time of Treatment.—I believe I introduced to America the syringe made by Gentile of Paris. This I obtained in August, 1914. It revolutionized the treatment in my hands. A fairly good imitation of the Gentile syringe is made by the Becton Dickinson Company. It is made entirely of glass. The nozzle of

the syringe is placed at the lower pole, and therefore the force is applied to the piston in a direct line instead of at an angle. The needle is finished with a thumb hold and its insertion thus made much easier. I am using this syringe and with it the time of treatment is much shortened.

Economy in Numbers.—By administering the preparation to a number in one day we may use one or more of the large ampoules containing two or three grams of the drug at a saving of at least 40 per cent. in the cost of the single dose. This, of course, is a desideratum to the patient, and the surgeon, especially if he is called on to treat some charity cases.

A Schedule of Treatments Prevents Confusion.—A schedule is prepared the day before. A sample schedule for one day is given below and explains itself. It will be noticed that the initial dose is 0.2. Usually no dose of more than 0.3 is given. The exception in this table was No. 9, a husky negro, and No. 11, who received the first dose of the second series.

INTRAVENOUS INJECTIONS OF DIARSENOL (Canadian)
March 21, 1916—Service of Dr. G. N. Kreider

Name	Address	No.	Amt.	Urine	Payment	Symptoms
1—A. B.	City	3	.3	N.	Cash	Slight symptoms
2—J. O.	City	3	.3	N.	Cash	No symptoms
3—M. F.	New Berlin	1	.2	N.	Later	Pain in arm
4—W. D.	City	5	.3	N.	Later	No symptoms
5—R. D.	City	5	.3	N.	In full	No symptoms
6—L. A.*	City	5	.3	alb.	In full	No symptoms
7—M. L.	Waverly	3	.3	N.	Pd.	Some nausea
8—R. L.	City	3	.3	N.		
9—C. M.	City	1	.3	N.	Guarnt.	No symptoms
10—M. H.	Mechanicsburg	2	.3	N.	Pd.	No symptoms
11—W. B.†	City	1B	.3	N.	Pd.	No symptoms
12—C. N.	Edinburg	3	.3	N.	Pd.	No symptoms
13—M. H.	City	2	.3	N	Pd.	High fever
14—M. W.	City	1	.3	N.	Pd.	No symptoms
15—M. P.	Chicago	5	.3	N.	Pd.	No symptoms
16—A. C.	Hillsboro	4	.3	N.	Pd.	No symptoms
			4.6			

* This patient was given 12 intravenous injections notwithstanding the presence of albumen in the urine. There were no disagreeable symptoms.
†This second series of treatments is indicated by the letter B.

Time Required.—We estimate that the time required for each treatment averages fifteen minutes. Of course, the actual time required for injecting the 60 to 90 c.c. in the vein after it is safely punctured is very short, but there is always some time required for getting the patient into the room, arranging the table, preparing the arm, and caring for the patient after the treatment.

Concentrated Solution Always Used.—The preparation has been given by me for two years in concentrated solution. In all this time, embracing more than 600 injections, there has been no symptom that could be attributed to this method. This plan, therefore, is safe for the patient and enables the surgeon to treat cases much more rapidly than when 300 c.c. of solution is used according to the old method advocated when the remedy was first introduced. I used the old plan for three years, but would not return to it.

Modern Methods Eliminate Disagreeable Symptoms.—When the intravenous injection of salvarsan was first introduced, nausea, vomiting, diarrhea, and more or less fever was the rule, but with such a plan as is above outlined it is the exception. Since using the Gentile syringe and needle the difficulty of puncturing the vein and injection of the solution has been nearly abolished. I have had but two bad arms in two years.

522 CAPITOL AVENUE.

A STUDY OF THE NEWER PHYSICAL SIGNS IN THE DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS.

BY MAX GROSSMAN, M.D.,
BROOKLYN, NEW YORK.

WHILE different observers[1,2,3,4] have been busy in research work in the laboratory studying pulmonary tuberculosis from every possible angle in the endeavor to facilitate early diagnosis and thus render possible early treatment, clinicians have not been idle, and have faithfully done their share in the studying of physical signs and phenomena, enlarging our scientific knowledge and proving of service to humanity.

As shown by previous articles of the writer,[5,6,7] one of the earliest effects of the tubercle bacillus is its effect on the heart. No sooner does the tuberculous process become active than the heart dilates, manifesting itself in a rapid pulse of weakened quality.

At the same time a phenomenon takes place in the heart which cannot be overestimated as to the value of its recognition; the writer refers to pulmonary accentuation.[11]

Pulmonary accentuation means that the pulmonic second sound is louder at the second left pulmonic interspace than at the second right aortic interspace. This is abnormal in adults and when obtained is of value in connection with other signs. An interesting point about this and one which the writer has not seen emphasized before is the fact that pulmonary accentuation may persist for a long time even after the tuberculous process has healed or become arrested, and may be the only physical sign remaining of a previous tuberculous pulmonary infection.

It is well to remember, and this is a fact not mentioned by the writer in his previous articles on the subject, every once in a while dilatation of the heart may persist even after the case has become arrested. The value of these points cannot be overestimated. It has been shown, time and again, that what appears to be an early pulmonary tuberculosis is really an old process showing an exacerbation and simply, as it were, breaking out again. If this last statement be borne in mind, it can be readily appreciated that any sign or group of signs which is helpful and assists us in coming to a conclusion regarding the existence of a previous tuberculous infection is of great aid in guiding us as to the possibility of present infection.

Now, let us go to the pulmonary apices, the headquarters as it were, and see what information new in character has been learned in the study of diagnosing early pulmonary tuberculosis.

First in its great clinical importance let us take up the sign popularized by Dr. Robert Abrahams[8] and now known to clinicians generally as "Abrahams' Acromion Auscultation." This exceedingly valuable sign, which was later additionally studied by Nathan Magida,[9] Frank A. Bryant,[10] and others, is of the greatest help in detecting the earliest manifestations of tuberculosis in the apices. Acromion auscultation may persist for some time, even after the process is no longer active, and in such cases it would tend to show the existence of a previous infection. In this connection the writer has noticed the following, which he has not heard mentioned before and which he believes is of great value in many cases in distinguishing a recent infection from a previous one: When râles are heard on auscultating the acromion process this would most

likely show recent infection, certainly an active condition. When râles are not heard, simply a prolonged expiration or abnormal whispered sound, this would most likely indicate a chronic condition —that is an old tuberculous process.

Surface temperature mentioned years ago in von Ziemssen's "Cyclopedia of Medicine" in relation to scrofulosis was adopted and elaborated by Abrahams[11] in the detection of incipient pulmonary lesions. The writer has noticed the following interesting phenomenon in connection with the same: While a higher temperature than normal at an apex is followed by acromion auscultation, the opposite proposition does not hold good; that is to say an apex showing abnormal acromial breathing may not show any abnormal surface temperature. It is well to remember, moreover, that both abnormal acromial breathing and surface temperature are rarely present in advanced pulmonary tuberculosis. The reason for this being no doubt the ulcerative changes taking place, when the destruction of lung tissue gives the acromion process no opportunity to transmit the atypical respiratory sounds, and probably results in there being little or no hyperemia present at the apex in this unfortunate stage.

In conclusion the writer would state that since the finding of the tubercle bacilli in the sputum no longer shows an early lesion it behooves the conscientious diagnostician to master the other methods of diagnosis so that he may be able with reasonable certainty to tell when an incipient lesion is present. Aside from the scientific interest attached to the study of new phenomena which are now gradually becoming better understood, the writer believes time spent on the comparatively newer signs enumerated in this article will repay the careful student and open up a field which offers many possibilities in its scope and further elaboration.

In this connection much credit is due Dr. Robert Abrahams, who by his teachings and writings has helped to place the subject of diagnosis of incipient pulmonary lesions on a basis which affords opportunity for earlier recognition and hence greater benefit to the afflicted patients.

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124 LEE AVENUE.

Simulation of Albuminuria. — One of the ingenious methods employed by malingerers in the present war is the simulation of albuminuria by the injection of white of egg into the bladder. The detection of this is difficult, although it is asserted that a mixture of acetic acid and formol will precipitate the egg albumin; the urine is then filtered and tested for pathological albumin.—*Lyon Médical.*

Medicolegal Notes.

Prescriptions for Intoxicating Liquors.—The Missouri statute, Revised Statutes, 1909, Section 5784, declares that any physician who shall make any prescription to any person other than for medicinal purposes shall be deemed guilty of a misdemeanor. Section 5781 provides the character of prescription which will protect a druggist in making sales of intoxicants in quantities of less than four gallons. A physician who unlawfully issued a prescription for intoxicating liquor wrote it in such a manner that the druggist who filled it was not protected; it was not dated, and it did not state that the intoxicating liquor was prescribed as a necessary remedy, though it stated it was "prescribed for medical purpose only." The Springfield Court of Appeals, State vs. Nicolay, 184 S. W. 1183, held that the "physician was nevertheless guilty of a violation of Section 5784; the word "prescription" as used in the statute meaning a direction of remedy or remedies for a disease and the manner of using them, and not necessarily a valid prescription which would protect the druggest who filled it.

Evidence in Poisoning Case.—On the trial of a man for the murder of his wife by poison with morphine or laudanum it was held proper to admit evidence (1) of a physician who made the postmortem examination that the condition of the brain and blood led him to suspect poison; (2) of a chemist, that a jar handed him contained a liquid "said to be the stomach contents" of one whose death was attributed to poison, where the liquid was proved by witnesses from whom the chemist received his information to be what it was said to be; (3) of a chemist who had examined the contents of the deceased's stomach, as to the quantity of morphine or laudanum that was likely in the system of the deceased or in the stomach prior to death; (4) to show the defendant's relations with another woman and his effort to resume sexual relations with her after his wife's death; (5) that there was a lack of any appearance of grief on his part at his wife's death; (6) of an expert witness as to what portion of 4 grains of morphine or opium would likely be absorbed through the system.—State vs. Crivelli, New Jersey Court of Errors and Appeals, 98 Atl. 250.

Concealment of Nature of Malady.—The fact that a physician concealed from a parent that a child had diphtheria which resulted in death does not tend to show lack of skill or reasonable care in treatment.—Hoover vs. Buckman, 194 Ill. App. 308.

False Answer in Insurance Medical Examination.—The false answer in an application for life insurance as to having consulted a physician within a specified time before the date of the medical examination, the applicant having warranted that his answers were true and having agreed that if the answers were untrue all rights to himself or to his beneficiary should be forfeited, is a bar to recovery on the benefit certificate issued.—French vs. Modern Woodmen of America, 194 Ill. App. 438.

Medical Evidence of Misbranding.—In a proceeding to forfeit drugs as being misbranded under the Food and Drugs Act there was evidence that the drugs were stated to benefit locomotor ataxia. In support of its case the Government called several witnesses, physicians of proven ability, knowledge, and experience, who testified that the pill would not, and why it could not, have any beneficial effects in locomotor ataxia and the other diseases named, partial paralysis, sciatica, etc. They also testified that medical opinion was unanimous in so saying. It was also shown, and all of this without contradiction, that the pill was practically the well-known Blaud pill, used generally in medical practice. It was complained, however, that the testimony of these witnesses was not competent, being a mere expression of their personal opinions or views. But the Circuit Court of Appeals, Third Circuit, held that the case was wholly different from one where witnesses were testifying to their personal views upon a controverted question of opinion. The testimony here was of fact, namely, that there was general, uncontroverted consensus of opinion. For example, referring to the effect of the pills, the proofs were that they were utterly useless for locomotor ataxia; that, so far as the witness knew, there was no difference in medical opinion on that point, nor on the point that there is no combination of drugs known to medicine, which can be compressed into one pill, that could possibly exert a beneficial effect on all the various troubles named.—Eleven Gross Packages, Etc., vs. United States, 233 Fed. 71.

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ANTIDOTES IN MERCURIC CHLORIDE POISONING.

THE popularity of mercuric chloride as a means of suicide has led to the proposal of a large number of substances as antidotes to its poisonous action. Many of them have been tried from time to time but generally without much effective result. The desirability of determining the relative value of these substances led Fantus to undertake an experimental study of their effectiveness on animals which had received a fatal dose of the drug. His report (*Jour. Lab. and Clin. Med.*, 1916, i. 879), makes very interesting reading. He first established the fatal dose of the drug for rabbits and determined the average length of life of the animals after they had been poisoned. He then determined the influence of the various antidotal measures when applied at the time the poison was administered or subsequently. He was able to show that dilution had no effect aside from a mitigation of the local lesions and that albumin, the standard antidote, was unable to prolong the life of the poisoned animal except when given at the same time as the bichloride. Sodium bicarbonate, sodium acetate, and stannous chloride each had a certain amount of antidotal effect and might be expected to be of some use, though not very reliable. He was able to obtain much more favorable results with the use of Carter's antidote which consists of three parts of sodium phosphite and two of sodium acetate. This was efficacious in greatly prolonging the life of the poisoned animals even when it was given after the administration of the sublimate. A substitution of sodium hypophosphite for the phosphite gave results that were quite similar though perhaps more uniform. His best results were obtained with an antidote composed of one part of sodium hypophosphite and five parts of hydrogen peroxide. This combination of a reducing and an oxidizing agent has no chemical justification but his results were uniform and he suggests the explanation that the peroxide acts as a catalyzer.

Fantus is careful to say that the eliminative treatment which has met with such success at the hands of Lambert and Patterson should not be neglected merely because an apparently efficient antidote has been found. The excellent results were obtained by those investigators without any such antidote but it is reasonable to believe that such chemical treatment might at least hasten the time of recovery. The author advises that if the amount of poison taken is known, the amount of hypophosphite used shall be ten times the amount of bichloride taken. As this dose might itself be poisonous it would be wise to wash the stomach thoroughly, after giving it, with a very dilute solution of the antidote and a safe dose could be left in the stomach. It is very gratifying that such information is now at our command and the mortality from sublimate poisoning should be much lower in the future than it has been in the past.

THE GASOLENE TROUBLES OF ENGLISH PHYSICIANS.

WE who grumble at the soaring price of gasolene little realize what real trouble is. Across the sea our English cousins are not only obliged to pay a greatly increased price for gasolene, or petrol as it is usually called there, but they have difficulty in getting enough for the legitimate needs of their practice and its sale is hedged about with so many restrictions that a British doctor never knows when he will break the law. Several factors, all due to the war, are responsible for the dearth of gasolene in England. One is the fact that a large quantity is required for the troops,—for their motor ambulances, motorcycles, aeroplanes, etc. Another is the actual decrease in the importation of petroleum due of course to the diversion of oil shipped to safer waters. A third factor is the shortage of metal containers, metal being in great demand for military purposes.

In view of these facts the English authorities have placed the supply of gasolene under their control and have definitely restricted the amount which may be issued, these restrictions being most stringent on cars used merely for pleasure and growing less so as the use of these cars is more and more necessary, the most deserving car user being justly considered the physiciain. A committee was accordingly appointed by the President of the Board of Trade early in the spring to control the supply and distribution of gasolene and to consider what measures are necessary to the national interest "(1) to ensure that adequate supplies of gasolene shall be available for the purpose of war and for other essential needs, and (2) with the above object to regulate the use of gasolene for other purposes in the United Kingdom during the period of war; and subject to the direction of the Board of Trade, to give executive effect to the measures decided on." This committee divided gasolene users roughly into three classes: The first class included doctors and government officials engaged in business such as that of police, the second class embraced all other consumers including those who maintained cars or motorcycles for pleasure.

It was not thought at first that it would be necessary to restrict any reasonable demands of the first two classes, but this view had to be modified later. The amount of gasolene used by the troops in the field at first equaled and later exceeded the amount used by the entire United Kingdom before the war. Upon representation of the British Medical Asso-

ciation the committee made arrangements so that the wants of physicians should be supplied in priority to nearly all other users. The moderate restrictions at first placed upon the use of gasolene were soon found inadequate, and on August 1 it was made impossible to purchase gasolene without a permit from the Petrol Committee of the Board of Trade. Permits were issued for not more than six months' supply, the duty (six cents a gallon) had to be paid at the time of issuance of the permit. In some cases medical men for some unknown reason were not allowed as much for the six months to come as it was shown they had actually used in their practice for the six months just passed. This was taken of course with bad grace by the doctors and the British Medical Association was stirred to action. The Petrol Committee finally decided to grant them the amount requested up to the maximum of fifty gallons per month; as this is only one and two-thirds gallons per day, or an amount sufficient to run a car from fifteen to thirty-five miles, it can readily be seen that it must fall short in many cases of heavy practice, especially in view of the shortage of physicians and the extra work imposed on the remaining ones.

The English medical periodicals have accordingly been full of letters from subscribers protesting about this situation and grumbling in true British style. It appears, however, in cases which the British Medical Association has investigated, that failure of a medical man to be supplied with sufficient gasolene has nearly always been due to some neglect on his part,—delay in presenting his demand, or failure to notify his local garage in time of the amount that he required. As the Board of Trade has adopted the policy of giving the medical profession the gas over all other users it would seem that with reasonable care it should not suffer greatly unless indeed the entire supply of the country is cut off.

MULTIPLE TYPHOID.

That a number of different bacteria may give rise to the same symptom has long been recognized, and typhoid fever is known as a plurispecific disease of this character. It is much less understood that several infections may coexist, and that one kind may succeed another, thus simulating a relapse or reinfection. Many striking facts have recently been made public showing that a simultaneous infection with two or more specific germs is very seldom succeeded by a relapse or new infection. Typhoid fever from a single germ naturally exhibits a typical course and temperature curve, and gives positive agglutinative and blood-culture tests. Multiple typhoid is not more severe than single typhoid. Atypical typhoid must often be due to double or multiple infection. When true relapse follows a pure typhoid it means that the original infection has been arrested temporarily, only to break out anew. But in many cases the relapse means that a patient convalescing from simple typhoid has become infected by a second form of the disease; that is, the condition of the intestine after simple typhoid makes it fall a ready prey to one of the paratyphoids.

Double or multiple typhoids show an atypical and intricate course, but agglutination and blood-culture tests supply the positive evidence. When a subject develops typhoid some months or years after a first attack, it may mean that the immunity is lost, or that the patient falls a victim to a second form of the disease. Especially significant are all of these facts for the efficacy of protective vaccination. In theory at least, the serum used should be polyvalent to the extent of comprising the products of all three of the causes of typhoid. This was first proposed by Castellani, and the plan has been tested widely in several countries, notably by Chantemesse of France, who began its systematic use in 1915 among soldiers and marines.

Very recently, Grimberg has published (under the auspices of Chantemesse) a study of 160 cases of typhoid in various Paris hospitals, in a pamphlet entitled "Les Typhoïdes Intriquées." The work is extremely technical, devoted almost wholly to agglutination and other serum tests and blood-culture finds in the various single and multiple infections and the pseudorelapses and pseudoreinfections, in both vaccinated and non-vaccinated subjects. The chief point upheld throughout is that mixed or polyvalent vaccine is a completely scientific as well as practicable idea. The author believes that progressive infection is more common than unique infection, because one attack, even if it furnish immunity to a second infection of the same sort, almost necessarily furnishes the occasion for infection by one of the other diseases. This preponderance of mixed or progressive infection makes necessary the routine use of a triple vaccine.

COLLECTION AND DISPOSAL OF DOMESTIC WASTES.

There is little doubt, in fact, it is not even a matter for argument that the proper disposal of sewage of every description bears a very definite relationship to disease and mortality. Unsanitary conditions and ill health and high death rates are synonymous terms. Where sewage is got rid of in such a way that the germs of disease are not spread broadcast, there good health prevails and obviously the reverse is the case. No more conspicuous examples of the influence upon health of good sanitary conditions have ever been afforded than the result of effective sanitation in the European war. It has now been going on for longer than two years under conditions seemingly most prone to spread disease yet there has been no widespread epidemic on any front, with the exception of typhus fever in Serbia. But there is no need to elaborate the argument that thorough sanitation is essential to good health and the point which it is desired to emphasize is that domestic sanitation is often very defective and is a fertile means of disseminating infection. The proper disposal of domestic wastes is a problem which has not yet been solved, or rather it might be said that it is very frequently neglected. In the *Canadian Practitioner and Review* September, 1916, F. A. Dallyn writes on the subject and draws attention in particular to the menace of the privies and especially of the unscreened privies. He shows that in the better educated parts of

Canada statistics prove that the infant death rate is very considerably less than in some of the other centers and that where there are a good water supply and sewerage system both the infantile mortality and the death rate from typhoid fever are low.

It is not only in the country districts that the menace of the unscreened outside closet exists; in the suburban parts of many American cities it is present and even the environs of New York are not free from the opprobrium of allowing such a survival of the dark ages to continue. Where there is a privy it should, at least, be screened so that flies cannot gain access to it and carry the germs of disease far and wide. It is a scandal of the first degree that outside closets should be permitted in the neighborhood of large modern cities. Up to date sewerage plants should be established wherever possible and in any event, as Dallyn points out, proper means should be instituted for the collection of domestic wastes. By so doing the interests of public health and particularly of infants' health will be best served. Ignorance as to the means of preventing many diseases can no longer be pleaded.

Psychoanalysis.

Although Freud has not a few followers among the English-speaking members of the medical profession, speaking generally his theories have excited a considerable amount of repulsion in Great Britain. Granted that many of his conclusions are based on a sound foundation and that the sexual element does enter largely into the question of neurosis, yet the manner in which Freud and his disciples introduce sexuality into all the acts and pleasures of life and claim that analysis will bring forth the fact that repressed sexual desire is responsible for the neurotic tendencies exhibited by so many civilized persons has aroused repugnance and some disgust. Dr. Agnes Savill, in the *Medical Press*, May 17, 1916, voices the opinion of a large proportion of the medical profession when she says, "So unanimous a repugnance has in all probability a healthy cause, and points to a deep-rooted confidence in the innate righteousness of human nature which seems assailed by this recent school of psychologists. The common sense of the common man rises against the conclusions of Freud, which strip humanity of dignity and beauty." Savill draws attention to the fact that there is another school of practitioners of the new psychology whose home is in Zurich and whose high priest is Dr. C. G. Jung. This school is not so well known as that of Freud, owing partly to the fact that its publications have not been translated so freely, and partly, no doubt, because the very boldness and novelty of Freud's view have brought worldwide publicity. Jung is not blind to the sexual origin of many neuroses, but the place he attributes to it is very different from that of the Viennese school. According to Savill the Viennese school seeks the meaning of man in his primitive sexual roots; the Zurich school looks at the flowering branches of man's social activities and aspirations. Savill ends a strong article with a warning to employ the greatest care in the choice of an operator employing psychoanalysis, saying that "no protest that influence is not consciously used will convince us that the choice of the analyst is not more important than the choice of a surgeon. The clumsy knife may maim or slay the body; injury to the soul is of infinitely greater moment."

Gunshot Wounds of the Rectum.

As a rule, the injuries received during the present war have been wounds of the upper extremities, and especially of the head. These results have been due, of course, to the trench warfare, the head and upper parts of the body being less well protected than the lower parts. However, injuries of the lower extremities are by no means infrequent, and in a paper read recently before the Royal Society of Medicine of London, P. Lockhart Mummery discussed gunshot injuries of the rectum. In the first instance, it is the experience of surgeons at the front that in wounds of the rectum there is a considerable amount of suppuration, and that it always is difficult to control sepsis in these cases. In fact, such wounds are generally of a serious nature. Mummery, who is at a hospital in London, does not treat these cases until it is no longer a question of saving life or controlling sepsis but of dealing with the deformity produced by the healing or part healing of the wounds. It is pointed out that no attempt should be made to close wounds of the rectum while there is sepsis. One should wait until healing has occurred before doing any operation to close the opening. Mummery believes that all such openings into the rectum can be closed successfully if sufficient care be taken, always providing that enough of the anal musculature has been left to secure a functional result. A very striking fact in connection with these wounds is that the results are in many cases extremely crippling. The size of the wounds, particularly where some portion of the bony pelvis has been struck, coupled with the fact that almost without exception the wounds have suppurated violently, results in fearful cicatrization which causes serious stricture and contraction of the parts, more particularly if the anus is involved. As a rule, bullet wounds of the rectum cause serious injury to the bladder or other structures in the pelvis, and sepsis in the surrounding tissues with frequent abscesses gives trouble for months after the rectal wound has healed.

News of the Week.

Report on Poliomyelitis Epidemic.—An interesting summary of the recent poliomyelitis epidemic in New York has just been issued by the Department of Health. The total number of cases placed under quarantine by the department up to and including October 11 was 9,177; of these, however, 250 cases were found, after careful clinical study, not to be poliomyelitis, so that the total of true cases was 8,927. The total number of deaths recorded by the department was 2,343, giving a case fatality of 26.24 per cent. The department divides these cases into three classes, the first consisting of those treated in the hospitals of the department, the total number of these being 4,474, with 653 deaths, a case fatality of 14.59. The second group consists of 2,663 cases admitted to twenty-seven other hospitals in the city; among these there occurred 387 deaths, a case fatality of 14.53. The third group includes those cases treated in the home, because (a) home conditions were adequate for isolation

or (b) the patients were too ill to be removed, or (c) because the cases were not reported to the department until the death certificate was presented. This group numbered 2,040 cases and the deaths totaled 1,303, giving a case fatality of 63.87. The high percentage of fatality in this group is largely due to the fact that the major portion of the cases comprised in it were of the severest type. The department reports that up to September 30 a total of 16,267 cases of supposed poliomyelitis were reported by physicians, nurses, and members of various households, and that of these only 8,630 proved to be true cases. From August 21 to October 13 there were discharged from the hospitals of the Department of Health, 2,053 cases; of these 66 per cent. showed paralysis of some degree; in 18 per cent. the paralysis had wholly disappeared, and 15 per cent. had not shown any paralysis at any time during the course of the disease. The after-care work in the homes has shown that of 2,715 cases, 1,865 show a severe paralysis of one or both legs, so that the children are unable to walk; 530 more were partially paralyzed in the legs, but were still able to walk, and 273 had one or both arms totally paralyzed. The department estimates that between 75 and 80 per cent. of the cases with persistent paralysis will fall in the class of persons usually obtaining medical services free through dispensaries or hospitals.

Report on Poliomyelitis.—The Committee of the American Public Health Association, appointed to report upon the subject of poliomyelitis, has submitted its findings, of which the following is an abstract: The specific cause of poliomyelitis is a microorganism, a so-called virus, which can be positively identified at present only by its production of poliomyelitis in monkeys experimentally inoculated. This virus is present in the nerve tissues and certain other organs of persons dying from the disease, and in the nose, mouth, and bowel discharges of patients suffering from the disease. It has also been shown that healthy associates of poliomyelitis patients may carry the virus in their noses and throats. These findings, together with the fact that monkeys have been infected by direct application of the virus to the mucous membrane of the nose and by feeding of the virus, and strong evidence that infection may be directly spread from person to person. The fact that contact between recognized cases can seldom be traced may be explained by the lack of means for detecting mild, non-paralytic cases and by the belief that healthy carriers of the virus and undetected cases are considerably more numerous than the frankly paralyzed cases. Many facts, such as the seasonal incidence and rural prevalence of the disease, have seemed to indicate that some insect or animal host, as yet unrecognized, may be a necessary factor, but specific evidence is lacking, and the weight of present opinion inclines to the view that poliomyelitis is exclusively a human disease and is spread by personal contact, whatever other causes may be found to be contributory. Personal contact includes the possibility of infection by the transference of body discharges from one person to another and of infection through contaminated food. The incubation period, though not definitely established, is believed to be less than two weeks and probably in the great majority of cases from three to eight days. For the control of the disease, the employment of the following administrative procedures is demanded. (1) The requirement that all recognized and suspected cases be promptly reported. (2) The isolation of patients in screened premises. The duration of infectivity being unknown, the period of isolation must necessarily be arbitrary, and six weeks has been recommended and generally accepted. (3) Disinfection of all body discharges. (4) Restriction of the movements of intimate associates of the patient as far as possible, including at least exclusion of the children of the family from school and other gatherings. (5) Protection of children as far as possible from contact with other children or with the general public during epidemics. (6) Observation of contacts for two weeks after the last exposure. There is no specific treatment of established value in poliomyelitis, but during the persistence of the acute symptoms, rest in bed, symptomatic relief, and passive support for the prevention of deformities are necessary. Active measures during this stage may cause serious and often permanent injury. Hospitalization of patients where possible is to be encouraged. The best chances of recovery from residual paralysis demand skillful after-care, often long continued, and always under the direction of a physician familiar with neurological and orthopedic principles of treatment.

Caring for Paralysis Victims.—The Post-Graduate Hospital, New York, has recently opened a department for the care of children on the lower East Side who have recovered from infantile paralysis. The latest appliances used in the after-treatment of the disease are being installed, and four masseurs and two nurses have been assigned to the work. The New York Committee on After-Care of Infantile Paralysis Cases is forming plans for the centralization of all this after-care work into one organization to look after all the children discharged from hospitals, and to provide for the training of nurses especially for this work and the laying out of the city in districts in order that the work may be carried on systematically. Dr. Holt, it is reported, has estimated that there are between 4,000 and 5,000 children in the city who because of paralysis will have to be cared for this winter and through the next year; in many cases provision will have to be made for the child's future, as very few of those seriously crippled recover permanently. The New York Association for Improving the Condition of the Poor has formed a special committee on after-care of infantile paralysis in New York State, outside of New York City. The association will cooperate in this work with the State Department of Health. Under the auspices of the latter a series of clinics is being held in various places throughout the State.

Health Supervision of School Children.—In support of the 1917 budget estimate of the Bureau of Child Hygiene of the New York City Department of Health, the Bureau of Welfare of School Children has issued a memorandum in regard to the proposed expenditures. The appropriation asked for is $17,240 in excess of that received last year, and it is explained that the additional money is needed for the enlargement of the staff of medical inspectors and nurses and the employment in addition of six dental hygienists. If the money is available it is proposed to employ 125 medical inspectors instead of 100 as at present, and 252 school nurses instead of 200. The reports on medical inspection during 1915 show that out of 925,000 pupils enrolled in the public and parochial schools, only 305,665 or 33 per cent. were examined for physical

defects, and that of those so examined 222,072 or 72.6 per cent. had physical defects requiring treatment. It may be assumed that an equally large percentage of the children not examined were suffering from various defects which were a handicap in their school work. Under the Education Law of the State of New York the employment of physicians to examine each public school child each year is made mandatory outside of New York City; in the city, under the present system, each child is examined but once in three years, and this is due to the fact that with the existing staff of physicians 9,200 pupils are assigned to each, while each nurse is supposed to care for 4,800 pupils. As a result not only is the medical inspection inadequate, but the follow-up work of those cases found to need attention in the homes is ineffective. For the first time an appropriation has been asked to provide for the employment in the schools of dental hygienists, the value of whose services has already been demonstrated in several cities outside of New York. The large percentage (63.9) of children with defective teeth in the public schools, and the fact that more than half of these children are probably too poor to patronize private dentists, offer the most convincing proofs of the need for such prophylactic treatment as the dental hygienists are fitted to give.

Proposed Abolition of Heroine.—A meeting of the Committee on Drug Addiction of the National Committee on Prisons was held at the Hotel Vanderbilt, at which, besides the chairman, Dr. Simon Baruch, were present Drs. Samuel W. Lambert, Frederick Peterson, Frederick Tilney, ex-Surgeon-General Charles F. Stokes, Mrs. Helen Hartley Jenkins, chairman of the Committee on Social Hygiene, and Mr. Joseph D. Sears, secretary, ex officio. Discussion revealed a consensus of opinion that heroine is, among drug addicts, most prevalent among boys and in the early decades of adult life, and therefore the chief promoter of vice and crime. In view of this fact resolutions were adopted stating that since heroine is not so indispensable a drug that its place cannot be easily taken by other drugs and measures that do not menace public welfare, the committee recommended federal legislation to prevent the importation, manufacture, and sale of heroine.

Montefiore Home.—The new private pavilion of the Montefiore Home was opened for inspection on November 6, at which time the annual meeting of contributors was held. The funds for the pavilion were obtained entirely by private subscription and no expense has been spared to make the hospital one of the most complete of its kind in the world.

Street Accidents.—The National Highways Protective Society reports that during the month of October, 54 persons were killed by vehicles in the streets of New York City; for the same period the Police Commissioner reports a total of 59 deaths from the same cause. In the State outside of New York City, 38 persons were killed by vehicles during the month, while in New Jersey 27 met death in the same way.

New Public Health Association.—The committee appointed at a recent conference of the health officers of Connecticut to consider the plan of forming a public health organization in the State, has reported favorably, and the preparation of a constitution is now under way. Dr. C. J. Bartlett of New Haven, has been put in charge of the arrangements for organization, and the first meeting will be held in that city on December 6. The society will be called the Connecticut Public Health Association, and will work along the general lines of the American Public Health Association.

Personals.—Dr. William Sharpe, professor of neurologic surgery in the New York Polyclinic Medical School, spoke on "Recent Advances in Brain Surgery," before the College of Physicians of Pittsburgh, Pa., at a dinner at the University Club on October 27. The talk was illustrated by moving pictures.

Gifts to Charities.—The White Plains Hospital Association is the residuary legatee under the will of the late Mrs. A. C. Foulds of White Plains, who died recently.

Mr. William Bell Wait of New York, widely known as an educator of the blind, who died recently, left an important valuable bequest to the public. Mr. Wait's will provides for the free use of his several inventions, thirteen in number, made for the purpose of reducing the cost, increasing the durability, and enlarging the amount and scope of literature for the blind in the New York point system. The decedent gave all his books relating to the blind to the New York Institute for the Education of the Blind, of which he was principal for many years.

Discussion on Poliomyelitis.—At a meeting of the New York Neurological Society to be held at the Academy of Medicine, Tuesday, November 14, at 8.30 P. M., the subject for discussion will be "Poliomyelitis: Its Diagnosis and Treatment, and the Management of the Recent Epidemic." Papers will be read by Drs. W. M. Leszynsky, Frederick Tilney, B. Sachs, and C. L. Dana.

Gifts for Dental School.—Columbia University, New York, has announced the receipt of two gifts, amounting to $125,000, from anonymous donors, to be used toward the establishment and endowment of the new dental school. Officially the dental school has opened at the University, but the actual dental courses will not begin for two years. Students entering upon the study of dentistry at the University must first spend two years at the College of Physicians and Surgeons, specializing in dentistry for the next two. The dental school is thus really a graduate school, the only one of its kind in the country.

Ambulances for Paralysis Victims.—Three ambulances, one each to be used in Manhattan, Brooklyn, and Boston, in transporting children recovering from infantile paralysis between their homes and surgical clinics, were assembled in City Hall Park, New York, on October 31, to be dedicated and to receive the good wishes of the Mayor. The ambulances were purchased and will be maintained by the Militia of Mercy.

New Medical Library.—The New York Medical College and Hospital for Women, New York, has received a gift from Mr. M. W. Dominick of a medical library, which will be endowed by Mr. Dominick as a memorial to his son, Dr. George Carleton Dominick, who died recently.

Obituary Notes.—Dr. EMORY G. DRAKE of Brooklyn, N. Y., a graduate of Long Island College Hospital, Brooklyn, in 1874, died at his home on October 29, aged 64 years.

Dr. THOMAS J. MORTON of Philadelphia, a graduate of the Jefferson Medical College, Philadelphia, in 1885, for twenty-five years physician to the coroner's office, and for many years a member of the Common and Select Council, died at his home on October 12, aged 52 years.

Dr. Daniel Newton Mason of Suison City, Cal., a graduate of the National University of Arts and Sciences, Medical Department, St. Louis, in 1879, died at his home on October 4, aged 73 years.

Dr. Hawley Nathan Barney of Richmond, Cal., a graduate of the University and Bellevue Hospital Medical College, New York, in 1900, and a member of the American Medical Association, the Medical Society of the State of California, and the Contra Costa County Medical Society, died at the Napa State Hospital, Napa, Cal., on October 7, aged 39 years.

Dr. Harry C. Weber of Louisville, Ky., a graduate of the Kentucky School of Medicine, in 1898, and a member of the Kentucky State Medical Association, the Jefferson County Medical Society, and the American Urological Association, died at his home, from uremic poisoning, on October 6, aged 46 years.

Dr. Stockbridge P. Graves of Saco, Me., a graduate of the New York Homeopathic Medical College and Flower Hospital, New York, in 1861, died at his home on October 12, aged 90 years.

Dr. William S. Allee of Olean, Mo., a graduate of the Missouri Medical College, St. Louis, in 1875, and a member of the American Medical Association, the Missouri State Medical Association, and the Miller County Medical Society, died at the Wesley Hospital, Kansas City, on October 9, aged 64 years.

Dr. L. Dann of New York, a graduate of the New York University Medical College, New York, in 1885, died suddenly at his home on October 20.

Dr. William G. Dubois died of uremia at Camden, N. J., on October 28 at the age of 59 years. He was graduated from Hahnemann Medican College and Hospital in the class of 1880.

Dr. Peter J. McCahey died at Philadelphia on October 22 at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1885.

Dr. George Lesser of New York and Brooklyn, a graduate of New York University Medical College in 1897, died at his home on October 22, aged 46 years.

Dr. William J. Coppernoll of Newark, N. Y., a graduate of the University of Michigan Medical School, Ann Arbor, in 1887, and a member of the Medical Society of the State of New York and the Wayne County Medical Society, died in Laconia, N. Y., on October 14, after a long illness.

Dr. Clarence A. Rogers of Cordova, Tenn., a graduate of the Memphis Hospital Medical College, Memphis, in 1903, of the Medical Department of the University of the South, Sewanee, in 1906, and of the Vanderbilt University, Medical Department, Nashville, in 1907, died suddenly at his home on October 10, aged 38 years.

Dr. Hayden Austin West of Sewanee, Tenn., a graduate of the University of Tennessee, College of Medicine, Memphis, in 1899, and a member of the Tennessee State Medical Association and the Franklin County Medical Society, died on October 8, aged 38 years.

Dr. Joseph H. Brewer of Salem, Ore., a graduate of the Northwestern Medical College, St. Joseph, in 1881, died recently at his home, after a year's illness, aged 69 years.

Dr. Benjamin F. O'Daniel of Denver, Colo., a graduate of the University of Louisville, Medical Department, in 1874, died at his home, from Bright's disease, on October 16, aged 66 years. Dr. O'Daniel had served as chief surgeon of the Missouri Pacific Railroad for seventeen years.

Dr. Percy Guy Davis of Deerfield, Mass., a graduate of Baltimore Medical College in 1896, died suddenly at his home on October 20, aged 49 years.

Obituary.

LIEUTENANT-COLONEL EDGAR ALEXANDER MEARNS,

United States Army.

Dr. Edgar Alexander Mearns, Lieutenant-Colonel, United States Army, retired, died at the Walter Reed General Hospital, Washington, D. C., on November 3, aged 59 years. Dr. Mearns was born in Highland Falls, N. Y., and in 1881 was graduated from the College of Physicians and Surgeons, New York. Two years later he was appointed assistant surgeon in the medical corps of the United States Army, and rose steadily in the service until on January 1, 1909, he was retired for physical disability with the rank of lieutenant-colonel. During all this time he devoted himself to the study of natural history, and wrote largely on the subject, his published works numbering, it is said, one hundred and twenty-two. Of the whole collection of birds in the Smithsonian Institution, one-tenth are credited to his efforts, and the Institution is also the richer as the result of his two trips to Africa, the first in 1909-10 as the Smithsonian representative on the Roosevelt trip, and the second a year later with the Childs-Frick expedition. His last work was the report of these two expeditions.

Correspondence.

SAMUEL COOPER'S TEACHING ON PUS.

To the Editor of the Medical Record:

Sir:—Dr. John W. Wainwright found an old book in a garret in Cherry Valley and kindly sent it to me. This volume proves to be "First Lines on the Practice of Surgery," by Samuel Cooper, first edition, London, April 30, 1807. The time corresponds with Napoleon's invasion of Spain, and Cooper was surgeon "To the Forces" (British). In view of a recent editorial article in the Medical Record about "Laudable Pus," possibly this abstract from a work more than a century old may prove of some interest:

"The sympathetic fever attendant on inflammation has been considered an essential step to suppuration; but with little foundation. Is there not a regular secretion of pus from the most indolent ulcers? Is there not the same process on every blistered surface? In such cases is there not oftentimes a total absence of fever?

"That dead animal matter cannot be converted into pus is proved by sloughs of the cellular membrane, tendons, fasciæ, etc., remaining unchanged in abscesses a considerable time and by dead bone lying unaltered in pus for many months. Whatever diminution of these substances may, under such circumstances, happen, occurs only on that side which is next to the living solids and can be satisfactorily accounted for on the principle of absorption.

"Pus always partakes of the nature of the sore which produces it. To the surface secreting it pus is quite unirritating though it may greatly irritate any other. Hence, it is useless to wipe matter so

completely from the surface of granulations as some are wont to do; but it is highly proper to keep the surrounding skin free from it.

"Stimulating antiseptics such as spir, vini camph., olterebinth, etc., may diminish fetid effluvia; but they are apt to create a renewal of sloughing when they extend their action to living parts."

It may not be amiss to say that Cooper treated contused wounds with solutions of alum and of "acetite of lead." Probably every surgical clinic in our city if not in our country is using, to-day, R. Alum ʒss., Plumbi acet. ʒi., Aq. ʒiv. It is termed "alum acetate solution."

DOUGLAS H. STEWART, M.D.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WOMEN'S WORK AT THE FRONT—DR. ELSIE INGLIS IN SERBIA—ROYAUMONT—VISITED BY PRESIDENT—FRENCH SOLDIERS AT ROYAUMONT—THE LATE T. J. WALKER—SOCIETY OF CHEMICAL INDUSTRY—BRITISH DYES.

LONDON, October 14, 1916.

WOMEN'S work at the front appears to be a great success and owes much to Dr. Elsie Inglis, whose devoted service with the Scottish women's hospital units in Serbia has elicited admiration in all directions. Since the first efforts in this direction the work has grown steadily and the example of the pioneers has been followed by English, Irish, and Welsh women, though the organization still retains the name of Scottish Women's Hospitals and its headquarters are in Edinburgh, and the wounded of our French, Belgian, and Serbian allies have reaped the benefit of services which were at first offered to but declined by the British government. Dr. E. Inglis is now at the head of seventy-five British women, forming the staff of two field hospitals, a large motor transport section—serving with the Serbian army in the Dobrudja. The units are literally women's units, for not only are the medical officers all women, but the transport, the sanitary work, the motor repairs, and all work in connection with the hospitals is done by women. The French and Serbian authorities have often given expression to their gratitude for the splendid achievements of the Scottish Women's Hospitals. One of the places giving most fruitful results is Royaumont, where our ancient abbey has been transformed into a well-equipped institution for the treatment of French wounded. This was begun with one hundred beds, but these have now been increased to four hundred. At a meeting in London lately Miss Cicely Hamilton, who has devoted much time and work for the past two years to this hospital, gave an account of its doings and spoke with enthusiasm of the reputation which British nurses and hospitals have acquired in France and of the abounding gratitude of the French people. Between 3,000 and 4,000 French soldiers have already been treated at the Royaumont Hospital, which was recently visited by President Poincaré, who expressed admiration of all he saw there. An appeal on behalf of the London Committee was made by Miss Mary Lowndes and supported by Lady Emmott.

You will probably remember the name of Dr. Thomas James Walker, a foremost physician in the provinces, local secretary to the Archæological Congress in 1862, and author of the "History of the French Prisoners at Norman Cross" (1913). Last year the honorary freedom of the city of Peterborough was conferred on him on his eightieth birthday. He was an original member of the Northamptonshire Volunteer Corps and held the rank of Lieutenant-Colonel. Of his family of thirteen children, six sons are now serving in the navy or army.

The recent meeting of the Society of Chemical Industry took into consideration the position and prospects of the dye and fine chemical industries, which seem to have suffered from lack of cooperation. From their proceedings it seems that if we are to recapture the color and fine chemical trade we must give more scientific attention to the tar industry and we need a central research laboratory. Protection for British dyes was brought up, but the idea obtained very little support. It was stated that Germany would flood the market with fine chemicals at a loss, if allowed, rather than not hold monopolies. It was said that we are now self-supporting as to the salicyls, and it was hoped we should not let them again become a German monopoly. It was argued that some degree of protection for the next ten years was needed by the manufacturers of organic synthetic drugs, as without it what had been achieved would be lost by Germany's state aided and organized opposition.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 26, 1916.

1. Anterior Poliomyelitis. A. J. McLaughlin.
2. The Occurrence and Diagnosis of Pericarditis. Edwin A. Locke.
3. A Second Note on the Frequency of Epilepsy in the Offspring of Epileptics. D. A. Thom.
4. Artificial Heliotherapy: The Mercury Vapor-Quartz Light a Valuable Therapeutic Agent. John Bryant.
5. The Treatment of Obesity by a Rational Diet. Edward E. Cornwall.
6. The *Streptococcus Mucosus Capsulatus* as a Cause of Mastoid Disease. Gorham Bacon.
7. A Case of Double Empyema Successfully Operated Upon, with Remarks Upon Localization. F. B. Lund and H. Morrison.
8. A Case of Bloody Tears. M. J. Konikow.

1. Anterior Poliomyelitis.—A. J. McLaughlin, who has made observations with reference to poliomyelitis in Massachusetts during the recent epidemic, agrees with other writers as to the source of infection of this disease and reviews some of its epidemiological peculiarities. He states that most diseases spread in a regular progression along the lines of travel. This applies even to those diseases which are spread by insects, but is not true of poliomyelitis, which frequently skips an intervening city between two badly infected cities. He finds that it frequently attacks less than one person per thousand population. Two explanations of this have been advanced, either that the amount of susceptible material is limited by some immunizing influence or that its transmission is devious and selective, involving possibly an animal reservoir and an insect transmitter. The prevalence of the disease seems to be greater in rural and suburban districts than in cities. The most consistent epidemiological character of poliomyelitis is its age incidence. The writer has made an effort to determine whether the age limit of those attacked was the same in rural and urban outbreaks. The prevalence of the disease in 15 towns, ranging in population from 427 to 2,213, was compared with that in the worst stricken of the smaller cities, North Adams. The total population of the rural groups was 23,361; that of North Adams 22,939. The attack rate was nearly the same in the two. In the rural group there were 37 under five years of age, 26 between the ages of five and ten, and seven over ten years; in the North Adams group there were 76 under five years of age, 24 between five and ten years of age,

and none over ten. This is suggestive that the age limit of susceptible age groups may be higher in rural and suburban life. The writer thinks it not improbable that an active immunizing influence is going on constantly, constituting an endemic prevalence of this disease, with relatively few paralyzed cases. This hypothesis would best explain the age incidence of the disease, for with a widespread infection opportunity is afforded for obtaining immunity in the first years of life. Theoretically, such a process of immunization would be most active where opportunities for contact were greater, that is, in the city. If this reasoning is sound we should not only have a lesser number of immune persons in the country but the susceptible groups would have a higher age limit.

2. **The Occurrence and Diagnosis of Pericarditis.**—Edwin A. Locke comments on the relative infrequency with which pericarditis is seen clinically in comparison with its relative frequency at the autopsy table. He has made a careful study of the autopsy reports of the Boston City Hospital for the past nineteen years together with the clinical records of the same cases. The total number of post-mortem sections was 3683. In this series acute lesions of the pericardium were described in 150, and chronic lesions in 209 instances. Exclusive of these 359 cases of true pericarditis, 88 showed milk patches in the pericardium. These figures show that acute pericarditis was found in 4 per cent. of all autopsies. In this series of autopsies acute endocarditis was described in 5 per cent. and chronic endocarditis in 12.6 per cent. In only 27 instances among the 150 cases of acute pericarditis was there any clear evidence in the clinical notes of the presence of disease of the pericardium. A detailed study of the various types of pericarditis found reveals an even greater deficiency in the clinical work. The most glaring errors are in the cases of pericarditis with effusion of various forms. The writer believes that in at least 50 per cent. of these cases it should be possible to diagnose this condition with reasonable certainty. Rheumatism is the commonest cause, and in adults pneumonia and pleurisy probably comes next. A less common cause is tuberculosis of the thoracic organs or acute miliary tuberculosis. The clinical picture is difficult to give. In not a few instances the onset is more or less well marked. The patient becomes restless, breathes with a shallow, rapid respiration, looks distressed and anxious, the face has a dusky pallor, and the patient complains of pain or oppression in the region of the precordia. Later symptoms depend largely on the degree of cardiac embarrassment and pressure from the distended pericardial sac. In the early stage the first and most important sign is the friction fremitus. As a rule this is double, though fairly commonly it occurs as a single sound, or rarely triple. The pericardial sounds never begin or end with a shock and are characterized by the same intensity throughout. The commonest areas where they are heard are at the base and over the middle portion of the heart. It seems not improbable that in a not insignificant percentage of the cases the rub is heard over a relatively wide area of the thorax and in the lower left back also. The physical signs of adherent pericardium are described together with the characteristics of adherent pericardium in roentgenograms, and the opinion is expressed that, considering the relative frequency of pericarditis and its favorable course with spontaneous recovery in many instances, paracentesis is rarely necessary.

3. **A Second Note on the Frequency of Epilepsy in the Offspring of Epileptics.**—D. A. Thom has made an intensive study of cases already reviewed in a previous article to determine to what extent epilepsy is transmitted directly from parent to offspring. Thirty-three matings are considered which resulted in 133 offspring. Of these 86 are living and 47 dead. Of the total 133 offspring there is a history of convulsions in 10, five having died in infancy, during seizures, two becoming arrested cases, and three confirmed epileptics. The group of living offspring contains 46 cases still under 20 years of age. The writer thinks it is not probable that 50 per cent. of these will develop epilepsy, while in the cases over 20 years of age heredity will play a much less important part. The results of his earlier work have been to a large degree substantiated and his conclusion that epilepsy is less often transmitted directly from parent to offspring than we have heretofore been led to believe seems to be justified.

6. **The Streptococcus Mucosus Capsulatus as a Cause of Mastoid Disease.**—Gorham Bacon states that according to his experience the *Streptococcus mucosus capsulatus* is the most destructive germ with which the otologist had to contend, and the question of an operation when the mastoid cells are involved is a most important one. He cites a number of cases which serve to emphasize the following points: 1. The patient may have very severe pain, or the pain may be slight, and the temperature is seldom much above normal. 2. Tenderness on pressure over the mastoid process may be well marked, or there may be none, especially where the outer cortex is thick. 3. The discharge in some cases is very profuse, while in others it is slight, and there may or may not be sagging of the posterior and upper canal wall. 4. The *x*-ray is a most valuable aid, as the cells on the affected side will be cloudy, and in some instances it is possible to detect an epidural or perisinous abscess. 5. We should err on the safe side and operate when in doubt, for we often find a great destruction of bone, even in cases that present few symptoms. It is only in a few cases, which yield readily to treatment, that an operation can be avoided.

New York Medical Journal.

October 28, 1916.

1. Anesthesia Reviewed. James T. Gwathmey.
2. The Sources of Error in Diagnosis. Edward C. Hill.
3. An Accessory Ovary. Allen J. Smith and Alfred C. Wood.
4. The Therapeutics of Cerium. Reynolds Webb Wilcox.
5. The Treatment of Bladder Tumors. J. T. Geraghty.
6. Tumors of the Bladder. Leo Buerger.
7. Intestinal Stasis. Eliza M. Mosher.
8. Rectal Anesthesia. William M. Johnson.
9. Anesthesia. P. J. Flagg.
10. Rabies. Miley B. Wesson.
11. The Clinical Thermometer as a Carrier of Infection. L. Martocci-Pisculli.
12. Some Notes and a Prophecy. G. Arbour Stephens.

2. **Sources of Error in Diagnosis.**—Edward C. Hill discusses the principal causes of diagnostic error under some dozen different headings, such as mistaking symptoms for diseases, effects for causes, overlooking the focus of infection, disregarding diet and habits, neglecting the mechanical factor, slighting the reflexes, ignoring the psychic factor, diagnosis by proxy, diagnosis by predilection, the pathognomonic delusion, the using of names without sense, and sheer ignorance. He has differentiated some one hundred and seventy-five causes of headache, scarcely any two of which should be treated just alike. A cough may arise all the way from wax in the ear to an incompetent heart, as well as from any affection of the respiratory tract. Albuminuria accompanies a hundred different conditions besides organic affections of the kidneys. Iron and arsenic may be of great service in treating anemia, but the cure must be sought further back than in the blood. Pleurisy is practically always a complication of pneumonia, tuberculosis, or some other general infection. Most cases of so-called ptomaine poisoning are either acute indigestion from excess of food or an incom-

patible combination of foods, or else some more or less obscure surgical condition, such as perforating duodenal ulcer or mesenteric thrombosis. In discussing the mistakes made by slighting the reflexes, the writer considers the reflexes in angina pectoris, and points out that he has met cases in which pain was referred to the left arm, and a case of pneumonia of the right lower lobe, with marked diaphragmatic pleurisy, involving the phrenic nerve, which was apparently responsible for pain in the right side of the neck as the chief subjective symptom. Mackenzie calls attention to cases of gallstone disease that have been treated for years for neuritis. A considerable number of physicians have mistaken a basal pneumonia of the right side for acute appendicitis. Of all origins of referred and reflex sensory symptoms probably the prostate gland is the most prolific source of diagnostic error. No more frequent error is made than to base a diagnosis upon a single symptom or sign. If a patient shows loss of knee jerks he is liable to be set down at once as syphilitic, whereas there are at least thirty conditions in which knee jerks are absent and of these hysteria and multiple neuritis are probably the most important. The practical utility of a study of the cytology of the stomach washings in demonstrating the presence of cancer cells is emphasized, and also that slight degrees of excess of deficiency of the ductless glands are especially liable to escape detection in the present state of general ignorance of this province, although such changes may easily account for otherwise obscure symptoms. It may be possible that the control of cell anarchy called cancer lies in the study of these glands.

5. **Treatment of Bladder Tumors.**—J. T. Geraghty relates his experience with 180 cases of bladder tumors from which he concludes that benign and malignant papillomata should be treated by fulguration; excision or resection should not be practised except in cases in which intravesical treatment is impossible or very difficult. Radium he has found a great aid in the treatment, particularly of the malignant papillomata, and the best results were obtained when the radium was placed directly against the tumor. When the tumor is a papillary carcinoma, resection should be practised by a technique which will reduce to a minimum the dangers of implantation or recurrence. Radium as yet has not given results in this type of tumor sufficiently encouraging to warrant its employment in preference to resection in cases which are considered operable. Following resection, cystoscopy should be performed at an early date, and at frequent intervals, especially for the first year, and if recurrences are noted, they can occasionally be successfully treated by a combination of fulguration and radium. Unfortunately a large percentage of cases are first seen when the disease is so extensive that nothing more than palliative measures can be adopted. In 69 of the 180 cases in this series the tumors were so extensive and so hopelessly inoperable that nothing more than palliative measures were adopted.

6. **Tumors of the Bladder.**—Leo Buerger writes that from a study of 113 tumors of the bladder, among which were 55 papillomata, 45 papillary carcinomata, five squamous carcinomata, two metastatic carcinomata, and six sarcomata, he concludes that a differential diagnosis between papillomata and carcinomata can be made in almost all cases on a pathological basi. Certain morphological criteria were accepted as indicating the existence or the acquisition of malignant traits in any given tumor. These criteria were found to be present in parts of the tumor that were accessible, so far as they could be reached by cystoscopic instruments, and so far as adequate portions could be removed for histological examination. The changes indicative of malignancy occur, not as heretofore assumed, in the "depth" where they may escape our diagnostic methods, but first, in the epithelium, not far from the surface, either with or without areas of infiltration. A test of the morphological criteria proved conclusively that they were trustworthy and, if adopted, led to correct diagnosis. Many of the other loosely accepted notions regarding the malignancy of papilloma *per se* were found to be fallacious. Only in one tumor out of 113 was a papilloma found to infiltrate and still retain "normal" cellular characteristics. A trustworthy pathological diagnosis and the possibility of differentiating between carcinoma and papilloma depend upon our opportunities of obtaining material and upon our ability to recognize the criteria laid down as indicative of malignancy; that the latter are present this series of tumors has definitely shown.

11. **The Clinical Thermometer as a Carrier of Infection.**—L. Martocci-Pisculli calls attention to the danger of conveying infection from one patient to another by means of the clinical thermometer. Many physicians content themselves with rinsing their thermometers in cold water and then using them on one patient after another. A number of thermometers were taken from various physicians in order to determine whether germs were actually carried in this way and whether they could be recovered and grown in culture media. Several dozen thermometers were examined by competent bacteriologists in the research laboratory of the New York City Department of Health. It was found that all thermometers taken from patients carry live pathogenic germs and are therefore disease carriers. Washing them in water and wiping them dry in no way destroys the germs or even reduces the danger of carrying infection. Cool water hardens and so fixes the mucus with the containing bacteria on the thermometers. It is absolutely imperative to disinfect the thermometer after using it on a patient. Physicians must either devise some method of disinfecting the thermometer while carrying it in its case, or spend a few minutes in each patient's house to disinfect it.

Journal of the American Medical Association.

October 28, 1916.

1. The Infectious Diseases as a Field of Investigation in Pathology. Frederick P. Gay.
2. Grip in Children. Lawrence T. Royster.
3. The Ultimate Results in the Treatment by Artificial Pneumothorax. A. G. Shortle.
4. Duodenal Ulcer: Report of a Case in Which Operation Was Followed by Improvement. H. M. McClanahan.
5. Death Rate in Acute Infections: A Study of the Mortality in Philadelphia During 1911-1915 from Measles, Pertussis, Diphtheria, Scarlet Fever, and Typhoid Fever. Edwin E. Graham.
6. Fractional Determination of Gastric Secretions. Ernest C. Fishbaugh.
7. Radical Operation for the Cure of Cancer of the Second Half of the Large Intestine, Not Including the Rectum. William J. Mayo.
8. The Corpus Luteum: Its Life Cycle and Its Rôle in Menstrual Disorders. Emil Novak.
9. Lepra Mutilans. Melvin S. Rosenthal.
10. An Unusual Fracture of Both Bones of the Leg. Charles Ryttenberg.
11. Traumatic Rupture of the Stomach, with Recovery. Alanson Weeks.
12. Stricture of the Esophagus: Report of a Case. Walter M. Brunet.
13. Report of a Case of Acquired Hemolytic Jaundice with Splenectomy. G. A. Friedman and Elihu Katz.
14. Tests by Bárány Methods, Demonstrating Neuraxial Differentiation of the Fibers from the Horizontal and the Fibers from the Vertical Semicircular Canals. Charles K Mills and Isaac H Jones
15. Thrombosis of Brachial Artery Relieved by Incision and Massage of the Artery. John A. Caldwell.
16. The Comparative Resistance of Bacteria and Human Tissues to Certain Germicidal Substances. Robert A. Lambert.

2. **Grip in Children.**—Lawrence T. Royster. (See MEDICAL RECORD, June 17 1916, page 1117.)

3. **The Ultimate Results in the Treatment by Artificial Pneumothorax.**—A. G. Shortle says that during the

past four years there have been published in America numerous reports on the treatment of lung tuberculosis by artificial pneumothorax, and these have proved beyond doubt the value of this procedure so far as the early symptomatic results are concerned, provided properly selected patients are operated on. After briefly summarizing the little that is to be found in the literature, he deals with only 104 cases, twenty-five of which are to be eliminated as they proved inoperable, and were of interest only in showing that almost one case out of four had such extensive adhesion that operation was impossible. This left seventy-nine cases that allowed of sufficient collapse to produce therapeutic results. Of the seventy-nine patients, thirty-five are dead, two were apparently made worse, eighteen were improved, and twenty-one were discharged and treatment stopped [leaving those cases unaccounted for]. Out of seventy-nine patients receiving lung collapse, nineteen are today working and in good shape physically; a number of these are symptom free. Three others discharged as improved are working but show marked involvement of the lung. A good proof of the class of patients operated on is afforded by the fact that of the twenty-five patients who proved to be inoperable on account of adhesions, sixteen are dead, and seven are living, but in bad shape physically. Of the inoperable patients only two, or 8 per cent., are working, and only one, or 4 per cent., is improved; while of the patients operated on, twenty-two, or about 28 per cent., are working, and nineteen, or 25 per cent., are in good shape physically. Their results appear to be much better than those of other operators. He ascribes this only to the following factors: (1) Most of their patients have been treated in their sanatorium, where the complete rest so essential to good results can be enforced. He often felt with Saugman that the procedure should not be undertaken outside an institution. (2) Their patients have been largely of the more intelligent middle class, with sufficient funds to afford proper living conditions and with sufficient brains to lend intelligent cooperation. (3) They were all treated in a very favorable year-round climate. (4) This he considered important: They received small insufflation of gas, never exceeding 500 c.c., and as a rule 250 to 350 c.c. The habit of introducing 800 to 1000 c.c. at one operation is always sufficient explanation to me why a given operator has not had success with artificial pneumothorax.

4. **Duodenal Ulcer.**—H. M. McClanahan. (See MEDICAL RECORD, June 24, page 1158.)

5. **Death Rate in Acute Infections.**—Edwin E. Graham. (See MEDICAL RECORD, June 24, page 1160.)

6. **Fractional Determination of Gastric Secretions.**—Ernest C. Fishbaugh reviews this subject, aiming to avoid a consideration of the diagnostic, prognostic, and therapeutic possibilities suggested by the various curves presented, and simply points out the value of interval examination of gastric secretions, and emphasizes the valuelessness of the ordinary one hour examination. The association of the various types of curves with symptomatology and therapeutic management have been purposely reserved until more extensive data are at hand. It seems from an analysis of the fractional study of gastric secretions in this group of cases, that the following conclusions are justifiable: (1) One hour stomach examinations afford insufficient and often misleading information concerning the acidity and enzyme secretion. It gives no evidence of the secretory curve. (2) The fractional method of stomach examination follows the entire cycle of digestion, and supplies reliable information concerning the type of secretory curve, the degree of acidity, the ferment content, and an accurate estimation of the emptying time. (3) By fraction study, stomach secretions fall into three groups: (a) stomach secretions whose curves fall toward the end of gastric digestion; (b) stomach secretions whose curves rise to the end of gastric digestion, and (c) stomach secretions delayed or absent.

7. **Radical Operation for the Cure of Cancer of the Second Half of the Large Intestine, Not Including the Rectum.**—William J. Mayo. (See MEDICAL RECORD, July 8, 1916, page 82.)

8. **The Corpus Luteum.**—Emil Novak. (See MEDICAL RECORD, June 17, 1916, page 1113.)

9. **Lepra Mutilans.**—Melvin S. Rosenthal reports a case presenting the syndrome of the clawlike contraction of the fingers, followed by painless and gradual loss of the digits, complete anesthesia, mutilation and thickening of the face, ulceration around the mouth and nose, and leucodermic spots on the hands and feet; this should identify the case as one of leprosy without the refinement of differential diagnosis. The patient was a well nourished black negro, apparently about 40 years of age, and had been able to follow his occupation as a bootblack continuously until the diagnosis was made. By means of leather bands into which his hands were fitted he was able to hold his brushes and shine shoes. His patrons were largely medical students, and it was through the curiosity of one of these that he was induced to visit the hospital, where the diagnosis was made. The horror with which the public views leprosy makes the disposition of these cases a difficult problem. While direct evidence is lacking as to the communicability of the disease in this climate, it is assuredly hazardous and undesirable to allow absolute freedom to a poverty-stricken individual lacking all the facilities for ordinary cleanliness, living in filth and squalor, and incapacitated by his deformity from caring for himself. The man roams at freedom, using the street cars and telephones, handling money as he sees fit, and living in the same sordid, unhealthy surroundings in which he was originally found. This case well illustrates the urgent need of a national leprosarium where these unfortunates can find a permanent refuge and the community be spared the presence of an unsightly, mutilated and incurable human being awaiting the final call.

16. **The Comparative Resistance of Bacteria and Human Tissues to Certain Germicidal Substances.**—Robert A. Lambert says that it is recognized that an ideal germicide for use on infected tissues of the body is one that will kill the pathogenic microorganism present without at the same time injuring the tissues. From experiments made it has been concluded that the method of tissue cultures affords a simple, direct, and easily controlled method of determining, under conditions analogous to those in the body, the relative resistance of tissues and bacteria to various chemical agents, including the common germicides. Of the germicides tested, iodine is the only one which will kill staphylococci in strengths which do not seriously injure tissue cells. It is possible, however, that on account of the fibrin-dissolving property of iodine, causing conceivably inhibition of wound healing, some other substance may be found approaching more closely the ideal tissue disinfectant.

The Lancet.

October 7, 1916.

1. The Future of the Crippled Sailor and Soldier. C. W. Hutt.
2. The Relation of the Enterococcus to "Trench Fever" and Allied Conditions. Thomas Houston and John M. McCloy.
3. The Diagnosis of Tuberculosis by Tuberculin. A Study in Technique. H. A. Ellis.
4. A Note on the Use of Celluloid in Plastic Surgery. Charles Higgins.
5. A Case of Chorion-Epithelioma. H. Neville Taylor.
6. Spinal Anesthesia with Special Reference to the Acute Abdomen. Percival P. Cole.

2. **The Relation of the Enterococcus to "Trench Fever" and Allied Conditions.**—Thomas Houston and John M. McCloy present the results of investigations carried out in the St. John's Ambulance Brigade Hospital which have revealed the presence of the enterococcus in numerous diseased conditions. In the course of routine work evidence has accumulated which indicates that this coccus is an infective agent in many of the cases admitted to the medical and surgical wards. The cases in which infection with the enterococcus was found do not conform to a disease of special type, having characteristic clinical features. Most of the cases, however, have certain symptoms in common, notably sudden onset with fever, headache, often orbital, loss of appetite, furred tongue, and pains in the back and lower limbs, especially the shins. For purposes of description these cases are classified in the following groups: (1) Septicemic, (2) "trench fever," and (3) myalgic. The latter group contains the largest number of cases of enterococcal infection which have been investigated. The bacteriological methods employed in isolating the organism from various sources are described. They have found the blood culture a very valuable method of diagnosis when positive results are obtained, but disappointing in that in many cases of apparent septicemia no organism is found. In the enteric group of diseases the infecting bacillus is rarely found in the blood after the first week of illness. A bacteriological examination of the wounds in 110 instances revealed the presence of the enterococcus in 41 per cent. of the cases. An examination was made of 543 urines, which showed the presence of the enterococcus in 18 per cent. of the cases. It seems that when this organism is found in the urine it is frequently an infecting agent. It may be, however, that its presence in the urine is not always of pathological significance. In the examination of twenty-eight sputa from cases of several different diseases, the organism was found in eight, and in these cases there was other evidence of infection with this coccus. In a number of cases opsonic index determinations were made, and evidence of infection with the enterococcus found. In many of these cases the vaccine treatment appeared to be of decided value.

3. **The Diagnosis of Tuberculosis by Tuberculin.—A Study in Technique.**—H. A. Ellis reviews the Calmette, Moro, and von Pirquet tests, and points out the objections to their general use. The failure of these methods to give entire satisfaction has led him to the adoption of a method which he describes and calls the papillary cutaneous method and the multi-papillary cutaneous method. This is done to distinguish it from von Pirquet's, or the mucous cutaneous method. The test is based on the fact that the papillary layer of the skin is the one influenced by tuberculin, and that it reacts to graduated doses, in definite proportions to the doses employed, with mathematical accuracy consistent with the character of the case. Usually six scarifications are made to which are applied graduated doses of tuberculin; there is also a control scarification. It has been found that the results are definitely proportional to the dose and the final reaction. There is a distinct connection between the multi-papillary cutaneous reaction and the class in which the case is, and this relation is sufficiently definite to be of great aid in diagnosis and prognosis. When the reactions do not agree, further investigation usually demonstrates the cause, for instance the lowering of the reaction by a previous course of tuberculin treatment. The results also indicate that the highest multi-papillary cutaneous reaction occurs comparatively early in the case; a greater subsequent extension of the disease gives a lower reaction. The writer believes he has sufficient evidence to justify the statement that the multi-papillary cutaneous test properly carried out materially facilitates the early recognition of the condition of active tuberculosis, is a material aid toward a general prognosis and a valuable indication in tuberculin treatment.

4. **A Note on the Use of Celluloid in Plastic Surgery.**—Charles Higgins states that during the past six months he has had the opportunity of doing from 80 to 100 plastic operations on the face, the greater part of them being for scarred or lacerated eyelids and shrunken sockets, though there were a number of deeply scarred faces and noses smashed flat. He found that paraffin when used to fill up a scar generally found a way to get out of position, and was anything but satisfactory. It then occurred to him to try celluloid. He has since used celluloid for replacing bone, and solutions for filling cavities and raising deep cicatrices. He uses two solutions, one celluloid dissolved in acetone, the other a secret preparation, made originally for trade purposes, its use being to make bad corks watertight and airtight. In all cases he has covered the celluloid over with skin taken from the remains of the part to be reconstructed, or by a flap removed from the immediate vicinity and attached by a pedicle. The only precaution he has found necessary to adopt is to take care that the celluloid plate, which is rather sharp, should not coincide with the line of suture after the wound is closed. This is easily obviated by undercutting the outer edges of the wound to be filled in, and pushing the edges of the plate beneath the skin so raised that its margin is external to the line of suture. In operations for the removal of cicatrices the fluid preparation is more satisfactory than the plates. This is introduced by making a tunnel under the scar and then injecting the fluid by means of a syringe until the scar rises a little above the level of the surrounding tissue. The writer entertains the hope that celluloid fracture plates may take the place of the steel plates now in use.

5. **A Case of Chorion-Epithelioma.**—H. Neville Taylor reports the case of a woman who had undergone a curettage for irregular hemorrhage, and a month afterward began to suffer from metrorrhagia and vomiting. It was thought that probably she had had an early abortion and that there might still be something retained. The vomiting and hemorrhage subsided under medical treatment. About three weeks later the bleeding recurred, and the patient was anemic with a very "malignant" look. A specimen was removed for examination. This was followed by further bleeding and the death of the patient from syncope. The specimen removed belonged to the second variety of chorion-epithelioma, as described by Galabin. In this case there had been no amenorrhea since the last pregnancy, two and one-half years previous, and no other suggestion of pregnancy. If deciduoma malignum is always the result of conception, and there was no conception in this case, then it is necessary to go back to the last pregnancy, over two years previous, to account for the chorion-epithelioma. Other cases have been reported which give ground for believing that in exceptional instances there is the possibility of such a latent period.

British Medical Journal.

October 7, 1916.

1. Remarks on Emergency Amputations in Military Surgery. —1. A Simple Modification of the Guillotine to Flapless Method of Amputation. 2. The Forceps Tourniquet. J. Lynn Thomas.
2. The Intraspinal Treatment of Syphilis of the Central Nervous System; with the Report of Cases. A. Rocke Robertson.
3. Notes on a New Ulcerative Dermatomycosis. Aldo Castellani; with Report on the Causative Fungus E. Pinoy.
4. Further Experiments on Ascaris Infection. F. H. Stewart.

5. Vaccine in Mediastinal Actinomycosis. W. S. Malcolm.
6. Post-mortem Findings in a Case of Exophthalmos of Long Standing Originally Due to Graves' Disease. Ronald Mackinnon.
7. A Universal Leg Frame, Splint, and Cradle Combined. Martin J. Chevers.

1. **Remarks on Emergency Amputations in Military Surgery.**—J. Lynn Thomas states that the following are the essential points in carrying out the circular amputation with lateral incisions: (1) The level at which the section of the bone is to be made must first be determined. (2) The proximal ends of the lateral incisions begin at this determined point, and are carried down to the bone and continued toward, or into, the damaged tissues. (3) A clean knife must be used for each lateral incision if available; if not, the knife should be thoroughly wiped and sterilized with flame. (4) The soft tissues are then divided by one clean sweep down to the bone after the manner of the old circular method. (5) The two flaps thus produced by the combination of the circular and the lateral incisions are retracted and the bone is sawn through at the level previously determined. (6) The vessels are ligatured with silkworm gut or catgut, not thread or silk, for fear of sepsis in the wound. (7) The flaps are then forcibly pulled down, forming a funnel-shaped cavity, in which the muscles are not in apposition. (8) This cavity is firmly packed with sufficient gauze wrung out of Wright's hypertonic salt solution or Dakin's fluid, so as just to allow the flaps to meet firmly over the packings. The flaps are secured in position by three strips of self-adhesive strapping and the ends of the gauze are allowed to project at each corner through the lateral incisions so as to insure efficient drainage. The ordinary rubber drainage tubes, Thomas says, must not be used at all.

2. **The Intraspinal Treatment of Syphilis of the Central Nervous System.**—A. Rocke Robertson reports eight cases, two of which showed early, and one a slight, involvement of the central nervous system within a year of the primary infection. Each had received during the secondary period a single injection of salvarsan, followed by maximal doses of mercury by mouth without, however, preventing the onset and progressive involvement of the central nervous system. It may be presumed, therefore, that this treatment was inadequate. A single combined treatment by intravenous salvarsan and intraspinal salvarsanized serum in one case sufficed to clear up the leucoplakia on the tongue and convert the pathological spinal fluid into a normal fluid. The other six cases were of long duration, and showed various manifestations of the disease. The consideration of these eight cases from both a clinical and laboratory standpoint shows that we have a powerful form of therapy in the combined intravenous and intraspinal treatment.

4. **Further Experiments on Ascaris Infection.**—F. H. Stewart records some experiments made since the paper published in the *British Medical Journal* of July 1 was written, and offers the following conclusions: If ripe eggs of *Ascaris lumbricoides* are swallowed by rats or mice they hatch. The larvæ enter the bodies of the rodents either by boring into venules of the portal system or by ascending the bile duct. They are found in the dilated blood capillaries of the liver, between the second and fifth days. The larva is in diameter three times the diameter of a red blood corpuscle of the mouse. It cannot, therefore, pass through a normal capillary. The liver cells in the neighborhood of the larvæ undergo rapid degeneration. The larvæ are thus enabled to work their way into the hepatic venules and pass by the hepatic vein and vena cava to the heart and by the pulmonary artery to the lungs. In the lungs they are filtered off at the entrance to the capillary field. Embolism of the arterioles takes place, and the larvæ pass with the effused blood into the air vesicles. They are found in the air vesicles on the sixth day, in the bronchi on the seventh day, and in the trachea and mouth on the eighth day after infection. It is probable that they emigrate in the saliva of the rodent on to food substances, such as bread. It has been shown that they can live for twenty-four hours on damp bread. The experiments which have been conducted so far tend to prove that the larvæ from the lungs of rodents can infect the pig, and it is probable that in nature infection of man and the pig takes place by food contaminated by rats or mice.

7. **A Universal Leg Frame, Splint, and Cradle Combined.**—Martin J. Chevers described this splint which consists of a galvanized metal frame, thirty-two inches long, seven inches deep, and nine inches wide; along the top on each side is fixed a row of brass studs, which serve to secure a series of ten straps. These straps, each three inches wide, are eyeletted, so as to be adjustable to half an inch; they are made of waterproof material, and may be sterilized by boiling. The advantages he claims for the splint are: (1) It is adaptable to any size, shape, or length of limb or amputation stump, and removal of one or more straps when being used on either the anterior or posterior aspect of the limb allows of easy access to a wound wherever it is placed without disturbing the limb. (2) By removing a strap, heel pressure can be relieved. (3) Elevation of the limb can be attained by steady graduated support to the whole under-surface. (4) It can be used as a double inclined plane by regulating the straps. (5) One or more straps can be used over instead of under the limb or amputation stump in order to steady it. (6) If alternate straps are lowered nearly to the bed, but so that the leg still swings, and the others buttoned tense across the top of the splint, the latter act as a bed cradle or as a rest for lotion trays or irrigation solution. (7) If any portion of the foot should project above the splint, an adjustable and detachable guard (∩ shaped) can be used; its legs fix firmly in holes placed at intervals in the upper parallel bars of the splint to remove the weight of the bed clothes at any required spot; this guard has a notch at the top, so that if the leg has been placed in another splint it can be suspended from the notch. (8) The waterproof straps are specially useful for keeping an ice-bag or dressings in place when the constriction of bandages is not advisable, or when excessively moist dressings are necessary, or where continuous irrigation is required (the receptacle being placed within the splint, underneath the suspended leg.) (9) The splint, when the limb is suspended in it, is almost immovable by the patient on any ordinary mattress and covering. (10) The foot may be kept at right angles to the leg or valgus prevented by wrapping two or three turns of a bandage round the foot and making the ends fast at each side to the perpendicular or parallel bars. (11) For fractured patella the splint acts better than a Thomas knee splint on account of the steadiness of the side bars, over or round which the bandages are passed, and across the front of the leg, keeping a firmer pressure on the pads placed above the upper fragment and below the lower fragment. (12) In cases of severe infection, where flush amputation has been necessary, skin traction in after-treatment is facilitated. (13) The waterproof straps can be made use of for a Thomas knee splint. (14) The disturbance caused by putting on and taking off bandages, the heating and constriction of the limb which may be the result of bandaging can all be entirely done away with, the straps being used instead.

Le Bulletin Médical.

October 7, 1916.

Troubles of Growth in Early Childhood.—Lesage refers to the period between the first and fifth years. There may be an arrest of growth in the first childhood, producing dwarfism in comparison with the stature of other children of the same age. This, a transitory condition, has nothing in common with nanism or true dwarfism, although there is often a close parallelism between the two. In some of the cases the stunted growth is due to defect in one of the glands of internal secretion, usually the thyroid or hypophysis. In the simpler forms the giving of one extract alone is sufficient to restore the ability to grow; but cases occur in which one has to experiment with various glands and combinations of the same. In certain cases they are all given in concert and good results follow. In an entire series of cases, however, the total failure to respond to opotherapy makes us think the other causative factors are concerned. The author accuses here a certain "digestive debility" noted even in the first year of life, and often inherited. The children and the stock from which they spring are arthritic. The child never has much appetite and seems to live on nothing. The trouble usually begins with attempts to wean. Nothing can overcome the anorexia, save when at rare intervals something pleases its palate. It has a marked intolerance toward milk, and often toward eggs. From lack of eating the tongue is always coated. Hence the parents are led to give purgatives. When these are not indicated, the stomach is atonic and secretes but little; it is often distended with gas. The production of bile is feeble. The bowels are never regular and constipation is the rule. There is much more fecal matter than could be expected under the circumstances, and its odor is very fetid. On physical exploration one is impressed by the small size of the liver under fasting conditions. If now the child partake of food of poor quality the torpid or quiescent state of the liver is at once succeeded by a congestion which is accompanied by great pain. Such children are sometimes operated on for appendicitis, but the surgeon finds only a distended cecum and colon. The appendix is removed but no benefit results. The torpid and shrunken liver should warn against abuse of anesthetics. Insomnia is common. As for the mental state, it goes to extremes—the child may be excitable or apathetic. Crises of vomiting occur, not due to acetone. The condition becomes fixed and chronic until it is termed a digestive cachexia. Its appearance is signaled by notable arrest of growth. In such cases the author believes that we have to do with a pure deficiency disease—a liver too small and weak for the economy to thrive. The indication is for hepatic extract, given either as a press juice or in powdered form. The dose should be very small—two or 3 grams daily of the latter, and in combination at times with thyroid extract, calomel, or ipecac.

La Presse Médicale.

September 28, 1916.

Hereditary Syphilis in the Third Generation.—Gautier described the following at a very recent meeting of the Académie de Médicine. The great grandfather died young of syphilitic paraplegia. The grandfather never contracted syphilis, and this is true of the father. Of three children born to the latter, one was backward, almost an idiot. The others presented no stigmata of congenital syphilis, but both had to be operated for adenoids, and one had skeletal and dental peculiarities. The Wassermann was positive in the father and all the children, and negative in the mother. The author regards the various ailments of the three children as all due to ancestral syphilis. These comprised cerebral dystrophy (idiocy), dental dystrophies (gap between central incisors), high palate, scoliosis, adenoid vegetations, strabismus, enterocolitis.

Icterus from Picric Acid Poisoning.—Brulé, Javillier and Baeckeroot, out of a large material of jaundice, discovered that ten cases were due to ingestion of picric acid, and hence were supposed examples of "false jaundice." The diagnosis should be simple, because there should be no bile pigments in the urine. Experiment, however, appears to show that picric acid causes a lesion of the liver, and therewith sets up true jaundice. The problem is one of chemistry alone, and the conclusions are as follows: icterus which follows ingestion of picric acid is an example of true icterus which cannot in any respect be distinguished from other forms of the latter. The chemical diagnosis is alone sufficient. Should the ingestion have been considerable and recent, picric acid should be present in the urine and recoverable therefrom, otherwise one should seek the presence of picramic acid, which may be present in traces long after the entrance of the drug into the body. If bile coloring matters alone are present, the reactions will be different. The presence of these substances never excludes that of picramic acid; but when, as is usually the case, the icterus is of the mild type, not biliary coloring matter but urobilin should be present.

Cure of Tetanus by Serum Despite Violent Reactions.—Nobécourt and Peyre related this case to the Medico-Chirurgical Reunion of the Fifth Army. A boy of 8 had received a slight wound on the thumb, already cicatrized. He was first seen on the fourth day of a severe tetanus. No serum was injected until seven days later, when 280 cm. of an American antitoxin was injected into the veins, with 40 cm. under the skin and 20 cm. into the cord. For the first six days no improvement was noted. On the sixth day of treatment an urticaria appeared, with fever, tachycardia and meningism. On the ninth day a second intravenous injection of 20 cm. was practised. A violent anaphylaxis at once developed. At the end of three-quarters of an hour there appeared a crisis of contractures, respiratory pauses, cyanosis, pallor, small pulse, etc. This state lasted half an hour. Despite these untoward phenomena, more serum was thrown into the veins. All this while the tetanus was improving rapidly, and at the end of three weeks the child was discharged cured.

La Presse Médicale.

October 5, 1916.

Colloidal Gold in Typhoid Fever.—Salomon first refers to the introduction in 1902 of colloidal silver by Netter, who studied especially its value in infectious diseases. It was noted later that typhoid patients did not very well tolerate the intravenous injection of this substance. In 1914 Letulle and Mage began to use colloidal gold in this manner for the same infection, and during the war it has been tried out on the troops, and its value has been pronounced incontestable. But it has never come into extended use because of its burdensome reactions, which can neither be foreseen nor prevented. Half an hour after an injection the patient experiences a chill and buries himself in the bed clothing; his condition closely resembles an ague, his extremities shake violently with extremely troublesome shocks. There may be vomiting or relaxation of the sphincters. The access lasts an hour or more, until the patient is dyspneic and cyanotic, with rapid, small thready pulse. The physician who is unprepared for such a sequence is in a painful state of mind. The condition slowly passes off, aided by hot drinks and heart stimulants such as adrenalin and camphor. Cya-

nosis may persist for several hours. The chill period is succeeded by one of heat and sweating, the temperature rising to 40° C., or in persons already in a grave, toxic, infectious condition to 42° C.; but after eight to twelve hours it drops to normal and subnormal. During defervescence perspiration is profuse. In certain fortunate cases the temperature does not again rise, but as a rule it soon regains its former level or higher, and further injections must be used. The polyuria which follows defervescence is often extreme. We see after each new injection the same temperature cycle, but the course of the disease does not seem modified; the patient gets well or dies, as under other conditions, but with a better chance for survival. The cardiac crises which require active treatment form the great disadvantage and the injections seem to favor intestinal hemorrhage. Doubtless they have caused death from collapse. The individual reaction shows great variation. A point in favor of the injections is that they become less intense with repetition. The author then gave the subcutaneous method a thorough try out, and found it harmless but inefficacious. He then turned to the intramuscular route and found this method a compromise—decidedly efficacious and free from grave dangers. Much depends on a good technique, which is fully described. Injections should be painless and cause no inflammatory reaction. They should be followed by an abortive chill and slight rise of temperature, succeeded by a fall, during which the patient feels better. The fever returns and the injections may be repeated several times. The intramuscular injections may well be used as a synergist to cool baths and permanent refrigeration of the abdomen—until the value of a specific (vaccination) therapy has been proved beyond doubt.

Reflex Manifestations Following Disarticulations of the Fingers.—Porot refers to motor, vasomotor, and trophic manifestations caused by traumatism of the peripheral nerves. These, in many ways, resemble those due to hysterical and organic disease. Under the term motor he includes the special attitudes assumed by the extremities (overlapping or rigid fingers), the pareses, with modifications of tonicity, and the so-called paratonias. Under trophic manifestations belong muscular atrophies, thinning of the integument and hypertrichoses. Vasomotor manifestations include cold hands, cyanosis, hyperidrosis. In all of these stigmata there is no sign of organic disease, and the neuromuscular reactions are all normal. A study of these phenomena which may be present under a variety of traumatic conditions shows that they are especially common after disarticulations and amputations of the fingers. The wound itself may be trivial. After disarticulation or amputation there is more or less scar formation, but it is impossible to determine the rationale of the manifestations which are seen to follow. To cite an illustrative case, a soldier was wounded in the left index finger by a piece of shrapnel. A few days later disarticulation was performed and the wound healed well. A flaccid paralysis of the arm supervened with segmental anesthesia (suggesting hysteria). Upon examination a reflex hypotonia could readily be demonstrated. There was marked reflex activity; if the injured finger of the paralyzed arm was elevated, an inexhaustible clonus resulted. Idiomuscular contractions were more marked in the affected limb, as was faradic excitability. There developed slight muscular atrophy in the forearm, while the skin was dry, scaly, and odoriferous. The author admits that it is difficult to exclude a hysterical component. Other cases cited do not suggest the latter. Mental tests show a normal psychical coefficient. One patient had developed tetanus from his wound, which complication must be reckoned with as a possible factor in the contractures which followed.

El Siglo Médico.

September 30, 1916.

A Medical Martyr to Infantile Paralysis.—In the medical news column is found an article taken apparently from a lay periodical, which regards the contraction by a physician of this disease as something sensational. In the Spring of 1913, Dr. Mulero Grijalbo, while treating a patient with poliomyelitis, contracted the malady and the resulting paralysis of his extremities has prevented him from following his profession. Technically he was the victim of a professional accident. There is no relief provided in law for such cases and the victim, deprived of his income, was forced to live in a small mining settlement. For twelve years (he is now 35) he had worked with ceaseless enthusiasm and zeal during epidemics of measles, scarlet fever, diphtheria and typhus, only to contract poliomyelitis from a sporadic case. Three children are mentioned as sharing his fate. With a view of making provision for such unfortunate victims the lay journal suggests legislation for the erection of a building for the maimed and crippled in the Department of Viscaya which would provide automatically for a case like that of Dr. Grijalbo. In addition to the Government benevolent societies, private philanthropy and the College of Physicians of Spain should be active in such a movement. A memorial should be presented at once to the law-making body. At present a wounded bull seems to be of more importance to the community than the afflicted physician.

Cocainomaniacs. — Sanchez-Herrero asks, "Why are there seekers for an artificial paradise?" Because degenerates are increasing in numbers, and such men are quite indifferent to their own health and to the perpetuation of the species. What does cocaine do? It prevents the transmission of impressions by paralyzing both centripetal and centrifugal waves for the time being. The addict has a sort of honeymoon period at the beginning of his addiction, or rather before he has become a true addict. As far as cocaine is taken to relieve suffering, the victim of nasal troubles is the most exposed to the cocaine peril. The world of cocainomaniacs is made up of what Gorki terms *submen*, who are denatured, dehumanized; all drug addicts, including alcoholics, tend to flock together. The drug evil has been caricatured as a spider's web with a woman's head in the center. About the web we find degenerates, the unoccupied, neuropathics, weak wills, prostitutes and their *souteneurs*. The drug evil degrades woman; the prostitute takes it to forget or to feel a spark of energy. A special class of addicts is found among writers. No amount of education or wealth can avert this peril. All who fall are alike in becoming antisocial, and those originally antisocial are naturally the easiest victims.

Hereditary Syphilis in the Second Generation.—At a session of the Zurich Medical Society an infant of 8½ months was shown. It was born healthy like the elder children, but in the sixth month hydrocephalus was in evidence, and a month later strabismus. Positive Wassermann in blood and cerebrospinal fluid. No spirochetes. The *x*-ray showed pronounced broadening of the epiphyseal line in the radius and ulna. After five intravenous injections of salvarsan the symptoms all vanished. The child's father was apparently normal. The mother gave a negative Wassermann reaction, but had sensitive pressure points in the tibiæ and fibulæ while the *x*-ray showed typical gummous periostitis. She had been deaf and dumb since her sixth year (labyrinthitis?) The case seemed to throw doubt on the value of positive Wassermann in infants.—*Correspondenz-Blatt für Schweizer Aerzte.*

Book Reviews.

THE AMERICAN YEAR-BOOK OF ANESTHESIA AND ANALGESIA. By Various Contributors. F. H. McMECHAN, A.M., M.D., Editor. Quarto; art buckram; India tint paper; 420 pages and 250 illustrations. Price, $4. New York: Surgery Publishing Company. 1916.

ANESTHESIA is coming into its own. Satisfaction merely with the practice of the art without refinement of method and without investigation of the science of anesthesia is passing, thanks to some, an increasing number, of research workers and the devoted efforts of skilled anesthetists, all of which puts Anesthesia as a profession on the high plane where it belongs. The newest advance is this fine volume of over 400 pages, which collects the work of about thirty investigators in the science or art of anesthesia. The topics include the Theories of Anesthesia; Blood Changes; Peripheral Origin of Shock; Effect of Posture; Anemia and Resuscitation; Blood Pressure; Respiration in Relation to Acapnia, Apnea, and Anoxemia; Mortality Statistics; Cardiac Fibrillation under Chloroform; Delayed Chloroform Poisoning; Kidney Function; Hospital Manufacture of Nitrous Oxide; Newest Methods, as Rectal Ether and Oil, Pharyngeal Insufflation; Obstetric Amnesia, Nitrous Oxide and Oxygen, Novocaine-Suprarenin; Local Anesthesia and Various Aspects and Uses; Gasserian Ganglion Injections. These subjects, treated by such men as Lillie, Casto, Mann, Gatch, Crile, McKesson, Henderson, Miller, Levy, Gwathmey, Polak, Rice, McMechan, and Hertzler, point out the importance and excellence of the articles, each an original monograph, and the whole constituting a veritable summary of recent advances. When the Anesthetists' Societies founded a Journal of Anesthesia, in the supplement to the *American Journal of Surgery* there was produced the long-needed medium of exchange, but until now no concise year-book has appeared and it will find, no doubt, a welcome among those who want to keep at hand the information contained. It is a well printed quarto volume of impressive appearance and the able editor, Dr. F. H. McMechan, deserves great credit for his enterprise. The admission of advertisements may seem to some quite a departure, but the helpfulness of reference to apparatus mentioned is among the reasons assigned.

A MANUAL OF SURGICAL ANATOMY. By LEWIS BEESLY, F.R.C.S. Edin., Assistant Surgeon, Chalmers' Hospital, Edinburgh; Lecturer on Surgery and Operative Surgery, Edinburgh School of Medicine for Women; Lecturer on Surgical Applied Anatomy, Edinburgh Postgraduate Courses; Examiner in Anatomy, Royal College of Surgeons, Edinburgh; Lately Demonstrator of Anatomy, Edinburgh University; and T. B. JOHNSTON, M.B., Ch.B., Lecturer and Demonstrator of Anatomy, University College, London; Lately Lecturer and Demonstrator of Anatomy, Edinburgh University, and Lecturer on Medical Applied Anatomy, Edinburgh Postgraduate Courses. Price, $3.75. New York: William Wood & Company, 1916.

THIS volume gives the main facts of anatomy as viewed from their practical application in surgery. Surgical operations are described from the standpoint of anatomy rather than technique, and in order to keep the volume within reasonable bounds the descriptions of amputations have been omitted. The authors have given special attention to the anatomical relations of the joints, and the bearings of their various structures with regard to the spread of tuberculous disease. Another important feature is the inclusion of brief paragraphs on the development of the different parts. The volume is well printed and illustrated, and is of very convenient size; and it should prove a useful addition to the working library of every practitioner.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINNESOTA. Edited by Mrs. M. H. MELLISH. Volume VII, 1915. Octavo of 983 pages, with 286 illustrations. Price, cloth, $6 net; half morocco, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1916.

THE constant increase in the amount of material contributed by the staff of the Mayo Clinic made it necessary to abstract in the 1914 volume some of the articles the material of which had been partially covered in that or in former volumes. In the present (1915) volume still further condensation has been necessary in order to keep the size of the book within reasonable limits. As in former volumes, the material is grouped under six headings. These, with the number of papers in each division, are as follows: Alimentary Canal, 26; Urogenital Organs, 10; Ductless Glands, 12; Head, Trunk, and Extremities, 16; Technique, 5, and General Papers, 15. A wide range of subjects is covered, and not only the continued studies but many of the articles on special topics are of even more than usual importance. For the progressive practitioner or surgeon, who wishes to keep in touch with the latest researches in surgery and allied branches, these papers of the Mayo Clinic are of considerable value.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. A Book Designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By PHILIP B. HAWK, M.S., Ph.D., Professor of Physiological Chemistry and Toxicology in the Jefferson Medical College of Philadelphia. Fifth Edition. Price $2.50 net. Philadelphia: P. Blakiston's Son & Co., 916.

TO those who have had the privilege of following the growth of this work through succeeding and successful editions, the appearance of this fifth revised and enlarged edition will be a welcome sight. Developed far beyond its predecessors in size, it has come to be a complete physiological chemistry and clinical pathology combined, though of course the microscopical side of the latter subject is hardly touched upon. It is a well-planned textbook for students, and also almost indispensable for the laboratory worker. The omissions are exceedingly few, the most important being the failure to include Vogel's method for the detection of mercury in the excretions. New chapters are those on Nucleic Acids and Nucleoproteins, Gastric Analysis, Intestinal Digestion, Blood Analysis, and Metabolism. That on Blood Analysis is a striking bit of evidence of the way in which methods have developed in that one field during the past few years.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. A Layman's Handbook of Treatment. By LAWRASON BROWN, M. D. Second edition, thoroughly revised. Price, $1.25. Philadelphia and New York: Lea & Febiger, 1916.

THIS little book is a valuable one to put into the hands of any patient, and a revised edition is welcome. The old days of mystery surrounding the knowledge of the physician, and of blind obedience on the part of the patient are past. This type of book is one of the last steps in the campaign of education which is being so vigorously waged. Even the most intelligent patient is going to make mistakes during the earlier part of his cure, and it is "to help the patient avoid blunders" that Dr. Brown's book was written. "It is not the author's intention that the book should be hastily read and laid aside, like the modern novel, but he believes that it should be read slowly, chapter by chapter, day by day." And taken in this dosage, it will give many a patient the needed stimulation to permanent cure. In the earlier days of cure it will help him to know why he is following certain orders, and later will be a reminder that repair is slow and cannot stand added strain. The poise with which the book is written and the absolute lack of exaggeration command respect and the work should for that reason carry more weight with those who have a long battle ahead.

SEX PROBLEMS OF MAN IN HEALTH AND DISEASE. A Popular Study in Sex Knowledge. By MOSES SCHOLTZ, M.D., Chief of Clinic and Clinical Instructor in Dermatology and Syphilology, Medical Department, University of Cincinnati; Fellow of American Medical Association, Ohio State Medical Society, Medical Academy of Cincinnati, Society of Moral and Sanitary Prophylaxis, etc. Price, $1. Cincinnati: Stewart & Kidd Co., 1916.

THIS is a conventional work, presenting the moral aspect of the problems involved in an attractive style. In a book intended for parents, teachers, and clergymen any other treatment of his subject would have been impracticable. But why push too far the analogy between male pollutions and menstruation? The former are almost always traceable to preventable causes. And why state that a youth feels better after a pollution? Not only does he suffer physical and mental depression, but a deep sense of humiliation, because of the publicity, so to speak, which invariably follows such events, the wrong interpretations and the comments based thereon. It is often the dread of pollution which drives otherwise moral youths to acts of onanism and sexual intercourse. It would have been a simple matter to have suggested measures of cleanliness in such contingencies.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twenty-ninth Annual Meeting, Held at Indianapolis, September 25, 26 and 27, 1916.

THE PRESIDENT, DR. HUGO O. PANTZER, OF INDIANAPOLIS, IN THE CHAIR.

(*Concluded from page 833.*)

Heat as a Method of Treatment in Some Forms of Cavity Carcinoma.—Dr. JAMES F. PERCY, of Galesburg, Illinois, referred to some of the historical probabilities of the use of heat in cancer, and gave briefly a résumé of his own work. In addition, he suggested the possibility of destroying cancer in the vagina, rectum and bladder by the continuous application of a bearable or a supportable degree of heat without the use of a general anesthetic. He gave this degree of heat as from 49° C. to 60° C. (120° F. to 140° F.) The author described the instrument by which the continuous heat was applied. He pointed out the difficulty of treating cavity carcinoma, especially that of the vagina, because of its usual lack of bulk or mass, as there was not enough tissue through which heat could be disseminated. If the ordinary pasteurizing temperature, delivered through the Percy cautery, was used, too much destruction of normal tissue cells might result from the treatment. If the parts were thin and the cancer disseminated, and not in mass, the author had found in two cases that the continuous application of the above mentioned degree of heat caused in one case a local disappearance of the growth, and in the other, also a vaginal case, a clearing up of the local symptoms, but not the entire disappearance of the growth which had invaded the cervix and base of the bladder. In both of these cases the continuous heat was applied, averaging eighteen hours a day in each case for six weeks. The work of the author was an effort to bring to the human sufferer from cancer the known facts in the destruction of cancer in the laboratory animal by the continuous application of heat.

Chronic Intestinal Stasis.—Dr. WILLIAM SEAMAN BAINBRIDGE of New York City said that chronic intestinal stasis, or what he had often termed defective human plumbing, was increasingly being accepted as one of the fundamental causes of disease. Gradually the profession was coming to consider the condition as an entity, with far-reaching results. Many of those to whom stasis and constipation were at one time synonymous were broadening their viewpoint and learning that there might be residual intestinal content doing damage to the entire organism, regardless of whether there were activity of the lower bowel or not. This was evidenced by the fact that some of the worst cases of stasis occurred in those with diarrhea. Unfortunately, in the minds of many of the profession (happily their number seemed rapidly diminishing) intestinal stasis had been thought to indicate only one kind of treatment—the removal of a large portion of the intestine with its consequent extreme surgical risk. Those who had given thoughtful attention to the teachings of Lane and others were recognizing the truth of the oft-repeated statement that the vast majority of all cases of chronic intestinal stasis belonged to the physician, through whose prompt and proper care the necessity of seeking ultimate relief at the hands of the surgeon would be obviated. Between this overwhelmingly large group and the relatively small number of neglected patients (those late in the disease, or previously treated by improper or inadequate surgery) who must have part of their plumbing removed in order to attain comparative health and not drift into chronic invalidism with attendant complications which might terminate life, there remained a mid-group. In these cases a careful application of conservative surgery to the abdomen, according to the principles of the mechanics of the intestinal canal, returned the patient to the first group, where with medical care and reasonable attention to hygiene and dietetics, he could be restored to health and strength. The writer, who had been for many years a close student of body plumbing, had published from time to time articles covering various phases of the subject of chronic intestinal stasis. It was his purpose in this and a number of subsequent papers to report succinctly a series of case histories illustrative of various types of stasis treated surgically and, though brief, it was hoped these would comprise the essentials in such manner as to present a sufficient ground work upon which to base conclusions. "Evidence was and must be the test of truth"; as it was only by weighing the evidence in relation to methods of treatment that medical progress was possible, it was hoped that case reports which gave actual results—good, bad and indifferent—might serve to facilitate this end.

Tuberculous Glands of the Mesentery.—Dr. ARTHUR T. JONES of Providence, R. I., drew these conclusions: "(1) Tuberculosis mesenteric glands are often a primary disease of the true tuberculous type. The bovine type was undoubtedly present in many children and without producing symptoms, the glands remaining quiescent, or having a tendency to subside. (2) It is impossible to make a correct diagnosis before operation, as a rule, unless there are palpable glands which may be felt through the abdominal wall, or by the finger in the rectum. (3) Tuberculous mesenteric glands may be present without giving symptoms. (4) There are two clinical types: (*a*) A slightly progressing one generally with palpable glands; (*b*) An acute fulminating type most often stimulating and impossible generally to differentiate from appendicitis. (5) Prognosis in the subacute stage is good without operation. In the acute stage exploratory laparotomy should be done, but the glands should not be removed unless there are definite indications either from adhesions, ulceration, or size of mass producing pain or much obstruction. (6) Tuberculous glands of the mesentery may not present any symptoms until breaking down begins in the glands, after which we get our symptoms of tuberculous peritonitis, intestinal obstruction, or symptoms simulating acute appendicitis. (7) In children and young adults with history of righ-sided abdominal pain, with or without palpable masses, tabes mesenterica should always be considered as a possibility."

The Relation of So-Called Ether Pneumonia to Pelvic and Abdominal Surgery.—Dr. WILLIAM EDGAR DARNELL of Atlantic City stated that for many years it was commonly taught that ether irritated the bronchi and was largely the cause of what was known as post-operative pneumonia. Such pneumonia was spoken of, and still was in most hospitals, as "ether pneumonia." Yet any surgeon in reviewing his experience might find many facts to disprove, and few or no reasons to prove that ether was the cause of pneumonia after an operation. Ether was administered in most hospitals many times every day, yet the condition known as ether pneumonia was a rare occurrence compared with the number of ether administrations given. If the pneumonia were the result of the ether, we ought to expect to have many cases every week. Again, if ether produced all the havoc it had been credited with, the administration of it by the intratracheal method might almost come under the classification of criminal malpractice. Yet we knew that this was done safely every day. Rovsing had proved experimentally that although ether did occasion increased secretion of the salivary glands of the mouth, that the larynx and trachea and the bronchi were not irritated at all, even when the animals were killed by administering ether through a tracheotomy tube until they were dead. The only way, therefore, that ether could produce pneumonia was by the aspiration of the accumulated saliva in the throat, usually the result of technical error on the part of the anesthetist, who should not allow the secretion to accumulate in the throat. Such secretions might, of course, be easily infected from the buccal cavity. It was quite possible under such circumstances that tonsillar infections, involvement of the nasal accessory sinuses or the teeth might be one of the causes of post-operative pneumonia which had been attributed to ether. Attention had frequently been called to the importance of the sanitation of the nose, throat, and mouth before all operations. If we looked on pneumonia after an abdominal operation just in the same light as we did the development of a subphrenic abscess after an appendectomy, they bore the same analogy to the point of original infection. The only difference was that in the one case the new focus of infection landed above the diaphragm, and in the other beneath it, but both were brought about by the carrying of infection from the original source in the abdomen up through the lymphatics and veins by the retroperitoneal route. The idea was further strengthened by the fact that most post-operative pneumonias would show a mixed infection containing streptococci, colon bacilli, or other organisms in addition to pneu-

mococci. On the other hand, it was often true that the appendix, the gall-bladder, the Fallopian tubes and the ovaries might be the seat of a pneumococcus infection.

It would seem proper to conclude, therefore, that cases of pneumonia following operations were not due to the ether. The term "ether pneumonia" should be discarded and forgotten Post-operative pneumonia occurred with great rarity except after abdominal operations, and was then probably due to an infection already existing in the bronchi or lungs at the time of operation, or to imperfect aeration and ventilation of the lungs by reason of the fear of taking deep breaths after a laparotomy, but most often such pneumonia was a secondary infection of the lung following a septic abdominal condition.

Hospital Management and Mismanagement. — Dr. GORDON K. DICKINSON of Jersey City discussed the fundamental origin of all hospitals. There was no proper definition of the term. There were three essential factors: Patients; attendance by physicians and nurses; superintendent and the board of managers. From the viewpoint of the first he discussed therapy, diagnosis, and education; from that of the second came system, red tape, economics, and autocracy. From the third, the board of managers, made up entirely of the lay public, came ignorance of the needs and the ideals of the institution, often working solely through the superintendent, who had made a home of the hospital for himself. We looked for finances and encouragement, but the results were disheartening.

The Surgeon's Responsibility to the Economics of the Hospital.—Dr. EMERY MARVEL of Atlantic City said that a mutual dependence existed between the hospital and the surgeon. This relation imposed upon the surgeon the duty of guardianship for, and a responsible duty to the institution. He became, in part, responsible for the waste and abuse of its resources. He was directly responsible for loss of service and embarrassment to the organization when late for operation, dressings, or other appointments; the waste in using unnecessary or unduly expensive supplies, and for misuse of funds occasioned by encouraging expenditures for construction and equipment which did not give commensurate beneficial returns. A staff surgeon must share responsibility for the neglect to utilize opportunities which, if taken advantage of, would benefit the hospital. It was his duty to inspire enthusiasm in attendants, maintain a congenial atmosphere for the patients and to teach improvements in service. It was the surgeon's opportunity to teach the patient better care for self and give him knowledge to prevent recurrence of disease or injury. His opportunities for service to conserve the institution's interest were many, and his responsibility proportionate.

Removal of the Appendix for the Cure of Trifacial Neuralgia and Other Nerve Pain About the Head and Face.—Dr. MAURICE I. ROSENTHAL of Fort Wayne said that the apology which he had to offer for presenting this very brief report of only seven cases was the startling results obtained. He did not claim in this small experience that he had established a new pathology for trifacial tic and kindred affections, but he did claim that in these seven cases he had fixed the pathology in the vermiform appendix, even though the physical and subjective evidence of appendicitis was so obscure as to be entirely overlooked. In all but one case there was present almost symptomless chronic appendicitis of the obliterating type; the other a symptomless pus case. It was very probable that a report of 100 cases might reveal some further startling results in recurrence and might explain the unsatisfactory results from resection or revulsion of the nerve as well as from injections used with a view to chemical nerve destruction. Case No. 7 of this series was more on the order of migraine or so-called sick headache. It had not been uncommon in his experience to note the cure of migraine and so-called sick headache after removal of a diseased appendix. It was quite possible that many of these cases came under the same pathology as did tic dolourreux and other nerve pains about the face and head. From the prompt cessation of the pain in six of these cases we might conclude that the disturbance was a toxemia with selective action. If the tonsils, the teeth, the hollow bone cavities gave rise to toxemias and bacteriemias of such far-reaching effect, we need not be surprised if the appendix, a hollow abdominal organ with its possibilities of aerobic and anaerobic bacterial development, should also give rise to a toxemia which might readily be the basis of a selective neuritis or nerve irritation.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-sixth Annual Session, Held at Scranton, September 18, 19, 20, *and* 21, 1916.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page* 831.)

SECTION OF SURGERY.

Chairman's Address. — The Chairman, Dr. LEVI J. HAMMOND of Philadelphia, stated that he hoped that he should have met in some sense his obligation, when he had reminded the members of the Surgical Section, for he was sure he was doing nothing more, of the great principles which this Section stood to promote. He said that we were in a time of unusual stress and test. There never had been a time, therefore, when we needed more clearly to conserve the principles for which this Section stood than the present time. That part of the world from which our inspirations, if not our methods, had in the past been drawn seemed for the present in the cauldron. Just what the outcome of this gigantic ebullition was to be no one dared at present even prophesy. We stood apart, as yet, unembroiled, conscious of nothing so much as our own powers, resources, and possibilities. There must be no difficulty so great, no truth so obscure, no problem so involved that the American surgical mind could and did not solve.

Symposium on First Aid—The Railroad Phase.—Dr. J. B. HILEMAN of Harrisburg read this paper in which he stated that the problem of first aid on the Pennsylvania Railroad has been to provide a simple dressing applicable to railroad conditions and to instruct the employees in its use. The first aid packet was air and moisture-proof, and was distributed in tin boxes which held six. On the outside were printed instructions for its use and a tag bearing an order for a fresh box as soon as the seal was broken. These packets were put wherever they might be of use. Stretchers and blankets were supplied to all baggage, mail, express and work cars, stations and shops. Employees were taught to confine themselves strictly to first aid, and in severe cases to send for the nearest physician. The dangers of infection and hemorrhage were pointed out. No drugs or whiskey were to be given. Employees were taught to effect resuscitation from electric shock by means of the Schäffer method. His rather extensive experience in first aid taught him that employees were keen in appreciation of this subject and did their best to put into practice the instruction they got. The results had been most satisfactory.

Injuries Common to Policemen and Firemen and Their First Aid Treatment.—Dr. HUBLEY R. OWEN of Philadelphia read this paper, saying that the common injuries to firemen were punctured and lacerated wounds, due to falling glass, treading on pointed objects, kicks and bites of horses, falling bodies, blows by harnessing apparatus; scalds and burns by hot water, steam or acid; asphyxiation by the great variety of smokes and fumes met with fractures and sprains; traumatic hernia. Injuries common to policemen were those due to being struck by prisoners, wounds of the fingers from striking prisoners; gunshot wounds, fractures, especially of the jaw from being struck; dog bites. The principles of first aid treatment of injuries were to stop hemorrhage, keep the wound clean and put the part at rest. The army tourniquet was used; wounds were swabbed with iodine. An immunizing dose of antitoxin was given in all punctured wounds; only one case of tetanus had developed in the first department since 1871. In shock morphine was used freely. Whisky was not a good remedy for smoke cases. Six pulmotors were in use in the first department.

Dr. J. B. CARNETT of Philadelphia said that unfortunately it was not often possible to have at the scene of accident the surgeons, ambulances, pulmotors, stretchers and the various other equipment described by Dr. Owen, as being sent out with the Philadelphia fire fighters. The fact that more than a million serious accidents occurred each year in the United States urgently demanded more widespread knowledge of first aid. A great many lives had been saved each year by the prompt application of first aid, and many more could have been saved had the principles of intelligent first aid been more generally known. It had been urged against the universal teaching of first aid that "a little knowledge is a dangerous thing." It was no doubt true that in exceptional instances first aid teaching, when

perversely applied, might lead to meddlesome surgery or even to disastrous results. Such deplorable instances, due to deficient knowledge, fortunately were rare and were overwhelmingly counterbalanced by the great number of lives that were saved by intelligent first aid attention. First aid, which thus far had been taught chiefly by the National Red Cross, military and municipal organizations, Boy Scouts and various corporations, had proven of such vital and practical value that it should henceforth be included among the subjects taught in the public schools.

Dr. W. F. Skinner of Chambersburg said that one of the first principles in applying treatment to wounds was that Nature was the best healer, and, if not interfered with too much, she would bring about a reasonably good result in her own way and in her own time. He felt that it was as important to know what not to do for wounds as it was to know what to do. With reference to burns generally, he felt that a good rule to follow was the washing of the parts with castile soap and warm water, using pledgets of cotton for the removal of foreign matter and then applying the normal salt solution, heavy dressings of gauze and parchment paper.

Dr. A. W. Colcord of Clairton said that he wanted to say a word on applying the tourniquet. He always emphasized that there were three methods of applying the tourniquet: on the artery, the vein and the capillary. The tourniquet must never be made tight enough to stop hemorrhage, only the spurting from the wound, and, when spurting was stopped, they must stop tightening the tourniquet. The remaining hemorrhages must be stopped by direct pressure on the wound. He placed the iodine treatment for wounds as the best for application at the roadside, the private home, hotel, or anywhere outside of the hospital. In emergency hospital work he did not believe the iodine treatment was best. He believed the constant wet dressing was the best. This was made of saturated solution of boric acid one-fourth and alcohol three-fourths. They put it directly to the wound and applied plenty of cotton. In several thousand cases they had not had a primary infection.

Dr. Edward Martin of Philadelphia said that the emergency which was commonest was not the fatal hemorrhage, or the discrimination between uremia, apoplexy, heat exhaustion or sunstroke which was to be done so surely in the books for the laity and which we ourselves so often failed to make, but infection, and to the credit or discredit of the profession, which ever one might choose to regard it, there was no concerted view as to how infection should be treated in emergency. There was no concerted view as to emergency dressing. It was time to formulate our knowledge.

Dr. H. R. Owen of Philadelphia said that they tried to teach firemen and policemen to do as little as they could. They carried first aid packages, and the policemen were taught to place a compress on the wound and tie a two-tailed bandage around. They had a very complete system of having wounds treated, using an ampoule of iodine. In regard to punctured wounds the firemen practically felt their jaws begin to tighten as soon as they received a punctured wound, and they reported at once for antitetanus serum.

Modern Hospital Organization in Rural Pennsylvania.—Dr. H. L. Foss of Danville presented this paper, in which he stated that Pennsylvania, with a population of about six million outside of the large cities, had about 150 hospitals good, bad and indifferent. Fully 90 per cent. of these had no trained laboratory workers; not over 20 per cent. of them were prepared for *x*-ray therapy or fluoroscopy. Whenever a young member of the staff attempted to develop a laboratory he received such poor co-operation that he soon became discouraged. The recent requirement of an interneship of one year on the part of those applying for license to practice medicine had led to great improvement in these conditions. Certain positions in order to get the best service required the incumbent be on a fixed salary. Staff appointments should be only on merit. The success of the rural hospital would depend largely upon the education of the people and to a great extent upon the training of the general practitioner on whom rested the initial responsibility in making the diagnosis and recognizing the need of hospital care. In addition to this the principal factors in success were dependent upon a clearly defined need for a hospital in the community; the construction of an adequate and well-equipped institution; a sound financial basis; a competent and efficient administrator who would see to the maintenance of high standards in the staff; a broad sensible policy, giving the hospital executive full authority and responsibility in which he would have the complete support of the trustees; thorough and scientific care of the sick; individual investigation of the financial resources of all patients and discouragement of indiscriminating charities; an efficient system of purchasing, so arranged under the direction of the institution's superintendent that he might be free to take advantage of all changes in price.

Dr. T. B. Appel of Lancaster said that in opening the discussion of the very important question of a hospital for the rural districts he wished to emphasize the fact that we should all agree on the importance of the development of the laboratories. He wished to say personally in relation to the hospital with which he had connection that the inspection there had made the efforts of the staff to increase the efficiency of that hospital so very much easier than before they had been told where they were deficient. The modern hospital, particularly in a small town, was in a sense an educational institution for the profession. These institutions should become centers of education for the profession in that neighborhood, that they might have an opportunity to see the advantages or to use the advantages of modern hospital care for patients.

Dr. A. R. Allen of Carlisle said that the present Board of Medical Examiners had done more to elevate the medical profession and bring the hospitals up to the standard than all the work done heretofore in Pennsylvania or in any other State. He wanted to compliment the chairman and the members of the Board for the great work which they had done in efficiency and increasing the good instruction the young medical men get before they were licensed to practice medicine.

Dr. William H. Walsh of Philadelphia said that he wished to express his appreciation of Dr. Foss's paper. He also felt that Dr. Baldy had done a great deal for the hospitals of Pennsylvania. A great deal of the opposition he had came from members of the staff of the hospitals. The improvements he recommended should have been realized years ago. In reference to the appointment of staff officers, that was a vital matter.

Dr. Frederick L. Van Sickle of Olyphant said that he thought a rural hospital to-day was confronted with a question which had not appealed to it so strongly in the past in relation to the newer developments of surgery and medicine which were to come under the head of sociologic or workmen's insurance. Employers were trying to get men and women cured in medical cases, and it appealed to the sense of the manufacturer, the mine and mill owner, when he was willing to pay somebody well to get the sick man cured. Therefore, the efficiency of the smaller rural hospital must be increased and the men doing the work must be up to the standard.

Dr. John B. Roberts of Philadelphia said that some things must be obtained for efficiency. First, a permanent medical dictator. Somebody must be on duty as a medical men and have control from the 1st of January to the 31st of December at 12 o'clock at night. The damnation of small and large hospitals was the fact that nobody was boss, and every man who came on duty every six weeks ordered something different. The form of treatment must be a standard which everybody must obey.

Dr. J. M. Baldy of Philadelphia said that the matter rested with the staff of the hospital. If they arose to the opportunities that had now come to them for the standardization of their institutions the State board would be patient. As medical men they had a unique opportunity to awaken interest, and he felt that if they did not measure up to these responsibilities eventually that the shame of it should come on our own heads. The unequal development was one of the crying evils of this State. They found in their inspection that from 75 to 80 per cent. of the work done in the rural districts was surgical, and that of that about 75 to 80 per cent. was emergency. He would like to know how the Bureau of Medical Education and Licensure could send an interne into such a hospital for his fifth year. If this condition was altered such institutions would simply get a credit for second or third year interneship and be classified as special hospitals.

The Treatment of Deformed Union and Non-union of Fractures.—Dr. John B. Roberts of Philadelphia read this paper, saying that deformed union of bone was usually due to lack of knowledge of efficient treatment of the fracture or to neglect in applying well-known mechanical or physical principles to the problem of treatment. Operative exposure for remedying de-

formed union of bone was demanded in only a limited number of cases. Subcutaneous refracture for the correction of angular deformity was comparatively easy. This procedure was available and successful for a long period after the fragments had been firmly united. After-treatment was on the same lines as in accidental fracture. Repair in delayed union should be hastened by massage, good food, air, and surroundings, and the interrupted use of constriction with a rubber band at the proximal side of the fracture. There should not be too hasty resort to operation in non-union. Using the limb and rubbing the ends together by manipulation, also injection of blood hypodermically into the tissues around the fracture, was helpful. When these measures failed operative treatment was demanded.

The Treatment of Compound Fractures.—Dr. JONATHAN M. WAINWRIGHT of Scranton read this paper, in which he stated that the main problems presented by compound fractures were to prevent or cure infection and to procure and maintain satisfactory reduction. The more important of these was infection; indeed, it would be better if we substituted for open and closed fractures the terms infected and uninfected fractures. Very few infected fractures were restored to even a near approach to normal. Researches in the armies in Europe had shown that Dakin's hyperchlorous acid solution was most effective in the treatment of infected fractures. These studies had also shown that the retentive fracture dressings must be such as to permit access to the wounds for the purpose of dressing. As regards drainage, we must accept the teaching of Moynihan, namely, that there "never yet was such a thing as a gauze drain." He believed that the fixation methods would narrow down to three: open operation and suture of the fragments by kangaroo tendon, the Albee sliding graft, or extension by the Steinman pin.

Dr. JOHN B. LOWMAN of Johnstown said that he thought the treatment of fractures was a very serious proposition. Very many angles should be considered before doing operation, and before doing it you should be perfectly satisfied in your own mind that you should do it. He had not been so successful as Dr. Roberts with these old fractures of four or five months by breaking them. He thought the success of the treatment of compound fracture lay in the primary dressing. In compound fracture too much was done in the way of first aid. You ought to let them alone. In their mills at home in a fracture nothing was done at the time except to put on a clean piece of gauze and the patient sent to the hospital immediately. Their men were instructed never to pull a fracture. He thought the thing to do was to convert the compound ino a simple fracture before attempting any method of operation. The thing to do was to wipe all the foreign material off you could and paint with iodine and put on a dressing. Their success with compound fractures by practically letting alone had been that their percentage of infections had become very low. He did not think any plate should be put on a compound fracture.

Dr. WILLIAM L. ESTES of South Bethlehem said that he was beginning to be in the position in which he dreaded to see a fracture. He believed that the indication in the compound fracture was, first, as the reader of the paper had said, to provide for as nearly absolute drainage as possible. He thought they might all conclude that a compound fracture was an infected wound when it came in. If these fluids which develop were dammed up they would inevitably press on the blood-vessels and a thrombus develop, and, if it continued, a necrosis. The indication then was to relieve that pressure as soon as possible and to prevent it. As absolute drainage as could be should be used. The great principle enunciated by the reader should be remembered, namely, that gauze was not a drain. One must provide tubular rubber, bone, or what not. He thought, too, that he was not quite in accord with the dictum that metallic plates should not be used. He persisted in using metallic plates with the greatest satisfaction. Speaking of rest, he thought we sometimes carried that principle too far. He did not believe that absolute immobilization was necessary for the union in fracture. He thought he had seen delayed union caused from immobilization. Certainly cases of delayed union had seemed to yield to use.

Dr. EDWARD MARTIN of Philadelphia said that, as a rule, a fracture united in proportion to the traumatism which had been inflicted. The greater the traumatism and larger the exudate, the slower the union. There seemed to be almost no constitutional condition which would either delay or interfere with the union of fracture. They had had the best results in those cases of delayed union by the Bier condenser and by the simple common-sense expedient of changing the treatment. Excepting in the operative cases, tney were not greatly troubled with non-union or greatly delayed union. In contravention of what had been said, it seemed to them that every case of fracture operated on whether by kangaroo tendon, bone plates, pins, pegs, staples, screws, unless there was some delay in union and the delay was proportionate to the traumatism inflicted on the end of the bone, they were to some extent led from the ideal of opposition.

Dr. CHARLES E. THOMSON of Scranton said that 50 per cent. of their compound fractures healed without marked infection with ordinary first dressings, or, if infected at all, the infection was negligible.

Dr. G. F. BELL of Williamsport said that in the large majority of cases that were infected it was due to the fact that the surgeon went into the operative field before proper aseptic preparations had been made. In the simple operation of necessity in these compound fractures one had to open up the field to see what blood vessels and muscles were torn, what fragments of bone were comminuted, or to see what muscles were between the fragments, which no surgeon could see and which no *x*-ray would show.

Ligation of the Superior Pole of the Thymus in Operating for Goiter.—Dr. LEVER F. STEWART of Clearfield read this paper, in which he said that about 30 per cent. of the cases of toxic goiter operated upon were either not cured or were not helped in any way. There were cases of Basedow's disease in which the thyroid alone was responsible, and others in which both the thyroid and the thymus were responsible. In dissections which he had made, in the majority of cases the inferior thyroid arteries gave branches to the superior pole of the thymus. In some instances this branch was given on only one side. In one out of ten cases no such branch was given off. Ligation of the inferior thyroid artery close to the gland did not touch its branch to the thymus. As a result the thymus might become congested and enlarged. Ligation of the superior pole of the thymus would circumvent this and in addition have a favorable influence upon the thyroid participating in the disease.

Dr. DONALD GUTHRIE of Sayre said this paper of Dr. Stewart's opened up a new line of reasoning. He thought, after all, that those who had done thyroidectomy in which either one lobe or part of one lobe had been taken out and where the inferior arteries had been taken out had been worried for the first or second day by a lot of pressure symptoms, and it was his belief that some of these cases might be suffering from an engorged thymus.

Dr. G. T. MATLACK of Wilkes-Barre said that in his experience in doing thyroidectomy it was very rarely he saw the enlarged thymus glands. He had removed three enlarged thymus glands, but not in exophthalmic goiter. It was a very hard thing to find an enlarged thymus gland when operating for goiter. He was looking for it all the time and did not find it. He believed we would have to give the thyroid credit for most of the evils.

Dr. CHARLES H. FRAZIER of Philadelphia said that he felt disposed to take the view that Dr. Matlack had taken as to the importance of the thymus gland in the intoxication we saw associated with the enlarged thyroid. He knew in the literature we found cases which were extraordinarily important in pointing in the other direction. He personally had not found them in his clinic and he had been lookng for them, having most of the patients fluoroscoped, but had not found as yet any coincident enlargement of the thymus gland in thyrotoxicosis.

Dr. GEORGE C. JOHNSTON of Pittsburgh said that the relation between the thymus and thyroid in cases of thyrotoxicosis was a very doubtful one. Practically he believed there was little connection. Lots of these cases of undoubted thymus were diagnosed as aneurism or mediastinal tumor, but if you put the patient in the recumbent posture you would find the thymus drop over and give the shadow of a dog's ear. It was such an unusual thing that it was absolutely diagnostic.

Support of the Stomach After the Beyea Gastropexy.—Dr. T. TURNER THOMAS of Philadelphia presented this paper, in which he said that Dr. Beyea's operation was the only one which hung the stomach in its normal, physiological position. All others attached the stomach to the anterior abdominal wall, so that it then hung in an abnormal position. Full credit had not been given to

the reported success of the Beyea operation, because it had always been claimed that the stomach afterward hung by the shortened gastrohepatic omentum, which was obviously too weak a structure to support such a weight. The His models, patterned after frozen bodies with the organs in their normal positions and formalin hardened bodies, proved that in life the anterior and upper surface of the stomach and the under surface of the liver were in close, intimate contact over a wide area. The effect of the Beyea operation, therefore, was to cause the development of strong, supporting adhesions in this area of close contact. Such close, strong adhesions were found in a patient reoperated on after a preceding Beyea operation. Therefore, the support of the stomach after the Beyea operation was ample for all needs and the stomach was in the best possible situation.

Dr. H. D. Beyea of Philadelphia said that while Dr. Thomas sought to form adhesions between the stomach and liver, he tried to avoid them. He scarcely retracted the liver to any great extent. The operation he did originally was the suture of the gastrohepatic omentum. He didn't think he ever got the stomach sufficiently high in the original operation. He now placed four sutures through the hepatic omentum and tied them, and this brought this in contact with the lesser curvature of the liver. Then inflammatory reaction took place with the formation of further adhesions. He had operated upon more than fifty cases. He had made no statistical study for the last two or three years as to the results. Up to that time 90 per cent. had gained in weight.

Dr. G. M. Dorrance of Philadelphia said that this tissue which Dr. Beyea spoke of was on the under surface of the liver and was very strong. It runs from the transverse fissure to the oesophagus. In thirty-four fresh cadavers they had found this band, and by suturing the stomach in the method he described and fastening scales to the bottom the stomach would stay up with 14 to 16 pounds' downward pull. Dr. Thomas did not take up the indications. There was practically only one indication, acute wrinkling of the duodenum, for this operation. If motility was good the stomach might be down in the pelvis and still empty itself.

Dr. T. T. Thomas of Philadelphia said that he believed strongly in the Beyea operation. There must be shown some other method than that conceded by Dr. Beyea by which the stomach was held up or the Beyea was not a rational operation. He thought he had shown clearly from the normal anatomy of the part that that operation cannot be done in any without the development of a considerable area of adhesions between the stomach and liver, which would be very much stronger than the gastrohepatic omentum ever was.

Obstruction of the Common Bile Duct.—Dr. C. D. Schaeffer of Allentown read this paper, in which he said stone was the usual cause of obstruction in the common bile duct. Stones were seldom found in the common duct, but came down into it from the gallbladder. They seldom caused complete obstruction; when the obstruction was incomplete there was a ball-valve action, as described by Fenger, which was attended by pain, irregular chills, followed by high fever and sweats, and later on by intensified jaundice. If the obstruction was in the ampulla of Vater or at the orifice of the papilla, bile might be retrojected into the pancreas, an occurrence which was followed by acute hemorrhagic necrosis of the pancreas. If the obstruction was due to a polyp, the health became impaired insidiously and there was progressive jaundice, persistent intestinal indigestion, and emaciation. The earlier the operation was done the more favorable the outcome. In cancer the operation must be done so early as to permit complete excision of the growth; if this could not be done, cholecystenterostomy might prolong life. Resection of the bile duct most suitable in the structural type of obstruction was attended by a mortality of 50 per cent.

Cholecystectomy the Operation of Choice.—Dr. A. R. Matheny of Pittsburgh read this paper, in which he said that as the work of Rosenow showed gallstones was not a disease per se but always a sign of a previously diseased gallbladder which, once diseased, either remained a nidus of infection or, as a result of inflammation, lost its function, it was probable that the gallbladder was simply a pressure chamber; but, even admitting that it was a storage reservoir, this function was nullified in cholecystitis. Therefore, given an organ whose function was impaired or destroyed and whose presence was a source of infection, it was reasonable to remove it if the risk was no greater than drainage would be. The mortality in the experience of several good surgeons in the past two years had been no greater from cholecystectomy than from cholecystostomy. From the point of view of end results, there could be no question that removal of the gallbladder showed less morbidity than did drainage. If we would remove the gallbladder, except where it was necessary for drainage, we would avoid the unpleasant experience of an unimproved patient and removal of the gallbladder by another surgeon.

Dr. J. A. Lichty of Pittsburgh said that Dr. Matheny had brought out a very interesting point in gallbladder disease which was not thought of when he began to compile his statistics upon gallbladder work. Several years ago he collected statistics covering twenty or twenty-two years. In the early part of that time, when the gallbladder was removed there was very little thought of it and he made no effort to compare cholecystectomy and cholecystostomy. At that time he published some 614 cases, and 193 of these were operated upon; 174 were gallstone cases, and drainage was done in most of these. Two of these had to be operated on on account of failure of the operation. Cholecystectomy had to be done. He recalled in his early cases one very satisfactory cholecystectomy. The question was whether the results would be comparatively good. He would rather have a live patient with the gallbladder in than a dead patient with the gallbladder out.

Dr. Ernest Laplace of Philadelphia said that only one reason stood in the way of removing the gallbladder, the supposititious one that it was a necessity to functionating of proper digestion. It had been proved that it was not. Therefore, why preserve an organ that was not of essential use to the system? He removed all gallbladders, every one and without exception, and only hesitated when the necessary time required for proper work might jeopardize the life of the patient. Not that he feared the after results, but that the doing of this operation in the correct way at the time did not seem possible.

Dr. J. H. Jopson of Philadelphia said that he found himself very much in accord with Dr. Matheny's views in the indications for the removal of the gallbladder. When he began to remove gallbladders the mortality of cholecystectomy was higher than cholecystostomy. With the improvement of technique he found the mortality was no more than in cholecystostomy and end results were very much better. He was still taking out gallbladders which he formerly drained. He thought when a gallbladder was acutely inflamed and patchy with gangrene, as in some cases of acute pancreatitis, or in occasional cases of infection of the gallbladder, we had better let it alone.

Dr. H. L. Foss of Danville said that there was no question about the value of cholecystectomy, as there were cases where there was a history of recurrence of stone. He recently performed a cholecystectomy on a patient operated on three times before for gallstones. When the gallbladder was removed he counted over 500 shotlike stones. That patient had been drained three times before.

Gastric and Duodenal Ulcer from the Study of Twenty-five Operative Cases.—Dr. H. B. Gibby of Wilkes-Barre read this paper, in which he said that the most common evidences of ulcer in his cases were pain coming on one-half to three hours after meals and progressive emaciation. The painful attacks were recurrent and sometimes morphia was needed for relief. Basing his opinion upon the etiology and pathology of ulcer, he would say that an ulcer cannot be permanently cured by medical treatment. Surgery met the requirements of a cure. The proper method of operation in gastric ulcer was either excision, if the ulcer was large, or destruction with the Paquelin cautery, if small, combined with gastroenterostomy. For duodenal ulcer his results had been good from folding in the hardened area with mattress sutures and doing posterior gastroenterostomy. In his series 88 per cent. had been relieved of soureructations and a like number of abdominal distension. In view of the results obtained, operative treatment seemed logical and justifiable.

Dr. H. D. Gardner of Scranton said that three or four times as many ulcers of the duodenum would be found as ulcers of the stomach. In operating make your incision under local anesthesia. In favorable cases you could do all your work in this way. In the more difficult ones you could make your diagnosis and plan your work, which often took half the time.

Dr. F. P. Ball of Lock Haven said that he was more and more convinced that gastric ulcer was much more common than was formerly supposed. If one looked for it he was much more likely to find it. More than four times as many cases of ulcer were found at autopsy as

were diagnosed before death. This would indicate that we were missing the diagnosis in a great many of these cases. The history in a good many cases was so indefinite and the symptoms so obscure that we could not make a positive diagnosis.

Dr. J. A. LICHTY of Pittsburgh said that when it came to chronic peptic ulcer he had the opinion that it was a surgical condition. That would mean that every patient with a chronic peptic ulcer should be operated forthwith. That was not altogether in the interest of the internist. But the patient was one party in the procedure, and it was not always possible to bring patients to operation. The indications for operation in peptic ulcer were very definite. For the last two years it had occurred to him that he was seeing quite a number of patients who had been operated, and it was a most discouraging thing when you took a history of chronic appendicitis and thought you would take the patient to the hospital, and before you got through he would say: "Two years ago I was operated upon and had my appendix taken out." Among 1400 patients of all kinds he had seen 126 cases who had beautiful ulcer histories and good operation, beautiful appendix histories and careful operations, and yet their symptoms continued; so surgery did not appeal to us so tremendously in these doubtful cases when we had experience of that kind.

The Value and Limitation of Radiotherapy in Gynecology.—Dr. F. E. KEENE of Philadelphia read this paper in which he said that his report comprised an analysis of 116 cases treated in the gynecological department of the University Hospital; 69 cases were of malignant growths of the vagina, cervix or urethra, and 47 cases of benign hemorrhage of myomatous or myopathic origin. The majority of cases received 85-110 mgms. for 24 hours. In one case of cauliflower growth in a woman of 28 who was six months pregnant 210 mgms. were applied with complete cure. The only immediate effects were nausea and vomiting which usually ceased 24 to 36 hours after removal of the radium. In 44 per cent. of cases of cancer there was complete healing and in only 2 cases was there no benefit. In not a single instance had there been a failure to check bleeding in the cases of benign hemorrhage. Mild symptoms of menopause were developed in 10 cases. In cancer of the fundus, operation was preferable to radium; this was also true of early cervical cancer. In cases of small myoma whose only symptom was hemorrhage 100 per cent. of cures might be expected. This work was still on probation.

Dr. H. K. PANCOAST of Philadelphia said that he had kept in touch fairly well with this work and could indorse all that Dr. Keene had said. The gynecologist had the advantage over the Roentgenologist in that he was able to use this agent himself; whereas the Roentgenologist was usually not a gynecologist. There were undoubtedly some advantages in radium over Roentgen rays in this one feature. The results of radium therapy in carcinoma of the cervix could not be classified as cures as yet because the longest cases had yet almost three years to run before they came within the five year period. There were cases in which a combination of radium and *x*-rays might do good, the radium not being quite strong enough to reach the outer border of the growth.

Dr. GEORGE C. JOHNSTON of Pittsburgh said that the disadvantage of this treatment was that it required the physician to have anywhere from $10,000 to $25,000 worth of radium. Also this work required considerable experience and a careful technique and the results which these gentlemen had so beautifully described might not be expected to follow the application of radium without regard to the case. Where simple hemorrhage was encountered aside from malignancy, these cases were controlled with mathematical exactitude by deep Roentgen therapy. He made that statement without any qualification whatever.

Advantages of Local Anesthesia. — Dr. HARVEY F. SMITH of Harrisburg read this paper in which he stated that patient and persistent use alone could train a judgment as to the limitations of local anesthesia and the type of cases in which it was indicated in preference to general anesthesia. The possible disadvantage might be noted as follows: The operative field could always be completely anesthetized or the mental attitude of the patient might not be right. However, the fact that painless surgery could be done without ether was becoming more widely known by the laity and converts to this method were usually easily made. Too much enthusiasm with too little judgment might lead to inexact or incomplete surgery. The question of additional time required for operations under local anesthesia was regarded by some as an objection. This was only relative and should hardly be considered valid. The advantages might be briefly summed up as follows: The novocain and adrenalin combination when injected in proper solution and with correct technique was absolutely safe. This was his personal judgment as well as the judgment of all users. There was a minimum of surgical shock and encroachment upon the patient's margin of safety; rarely was there vomiting, neither was there ether toxemia to overcome. Because of these facts the patient entered promptly upon a smooth and comfortable convalescence. There was prompt and, he believed, better wound healing due to the sharp dissection and gentle handling of the tissues. Moderate toxemia might occur, but no serious heart, lung, gastro-intestinal or kidney disturbance seemed to follow the use of novocain. Office and ambulatory surgery was simplified. Postoperative pain was less in abdominal cases if a 1/6 per cent. solution of quinine and urea was injected around the field of operation. This caused an edema of the tissues which was not serious if the suturing was not too tight. Weighing these limitations against the advantages and possibilities he felt that we could fairly say that novocaine anesthesia, plain or with one of the possible combinations, should be used when the operative field could be completely anesthetized and the mental attitude of the patient was right or when the vitality of the patient was low and the margin of safety was narrow and a minimum post-operative shock was regarded as a factor necessary for recovery.

Dr. J. TORRANCE RUGH of Philadelphia said that he wanted to mention a little point in the matter of the toxemia which resulted from the use of these local anesthetics. Very early in the discussion of the use of cocaine toxic effects were extremely common and all manner of stimulants, such as strychnine, whiskey, and so on were used to counteract the effect. In a case on which he was operating he had had no strychnine or any of those substances present and he used nitroglycerin with the happiest effects and it suddenly dawned on him that nitroglycerin was the physiological antidote of cocaine and of these anesthetic agents. Since then he had not seen any cases of toxic effect from the local anesthetic drugs. He used with the injection a small amount of the nitroglycerin and it physiologically controlled the toxic condition.

Dr. C. F. NASSAU of Philadelphia said that if the surgeon's enthusiasm led him to believe that he could stick in a few syringefuls of a local anesthetic and then go ahead and do his operation, he was going to be bitterly disappointed. The statements to be made to the patient had a great deal to do with the success. There was a certain psychological element that must be judged. One must not operate on every patient under local anesthesia even if he would like to. If one were in the habit of doing it and had in the ward of a hospital a patient who had successfully come through an operation conducted in this way, he had no difficulty in getting the next patient to be done in the same way. A local anesthetic sometimes meant the difference between life and death. He did not believe anybody had any business to give a general anesthetic for strangulated hernias.

Dr. ERNEST LAPLACE of Philadelphia said that he wished to express his conviction that infiltrating anesthesia was a superior mode of anesthesia. In his mind it was superior to lumbar, intravenous or rectal anesthesia, all of which were local methods. In infiltration anesthesia, you could direct, you could inject what you pleased. You knew when you were at the heginning and the end. You did just what you wanted to do.

Dr. S. G. GANT of New York stated that personally he had used eucaine in ⅛ of 1 per cent, solution for the last few years. He used it in all operations. Quinine-urea solution had proven satisfactory. When one did not get anesthesia it was because one did not understand the technique. If we gave an elaborate technique the measure was voted a success. Those who gave local anesthesia would have many patients and increase their reputation.

Dr. KATE BALDWIN of Philadelphia said that she simply wished to add her approval of using local anesthesia for operations more than had been done. She had done almost everything with it. She was very sure that she saw others using general anesthesia where they just as well use the local.

Conservative Treatment of Puerperal Sepsis.—Dr. E.

E. Montgomery of Philadelphia read this paper in which he stated that in his early experience 40 years ago puerperal sepsis was regarded as a specific condition; now it was recognized as being due to the same causes as general surgical sepsis. Then mortality in hospitals was much greater than in private practice and these patients were not admitted to hospitals if it could be avoided. His experience led him to condemn the resort to operative interference in cases of infection as being prejudicial to the patient. It was better to keep the patient clean and trust to nature rather than to interfere surgically. The objection to early surgical interference was that the organs had already passed beyond the reach of surgical measures and these only break down barriers which nature had instituted. He would advocate the use of autogenous vaccines prepared from the blood of the patient, and in cases where these could not be obtained the employment of prepared serums, even horse serum. Measures that should be instituted were those to promote effective elimination and immunity. He would not hesitate to employ surgical measures, even sacrificial surgery, in those cases in which the organs were destroyed and were simply foci for further extension of disease.

Dr. G. E. Shoemaker of Philadelphia said that the word conservative treatment must not be misunderstood as opposed to radical measures, if necessary, but he for one would like to join with those who believed that radical measures as usually understood were not required in the management of puerperal sepsis. He would say at once that his hospital experience was peculiar in this respect. The maternity infections which came were not those which they had themselves delivered. They were, therefore, without a history which was reliable as to the absence of retained pieces of placenta. There were other cases which came as the result of criminal interference and there they had no history. There were other cases which had been hastily examined and recognized and unloaded on the hospital. In these cases one must change his attitude as to noninterference. He must never forget that these cases tended to get well of themselves. In regard to an active interference by a cutting operation, he hesitated to do it above the pubis unless absolutely obliged to do so.

Influence of Lesions of the Rectum on Various Abdominal Conditions.—Dr. Ernest Laplace of Philadelphia read this paper in which he said that abdominal symptoms unaccompanied by any subjective rectal symptoms might be due to a rectal condition whose presence was unsuspected. The lymphatics and venous circulation of the rectum accounted for the ease with which toxins were absorbed and found their way into the general circulation, while the complex innervation of the rectum might account for many reflex symptoms so misleading as not to suggest their possible origin in the rectum. The cardiac, the pyloric, the ileocecal and the anal sphincter being in nervous communication with each other it was no wonder that the irritation of the one might result in reflex spasms of one of the others. His experience impressed him with the necessity of making a thorough examination of the rectum in every abdominal case which came for operation.

Dr. Reed Burns of Scranton said that the fact that cardiospasm could come from an obscure rectal trouble was new to him. He was glad to know it. Whenever one examined a patient for gastrointestinal disturbances he ought to begin at the mouth and end at the anus. There might be pyorrhea, diseased tonsils, or at the bottom of it chronic renal trouble, and gallstone trouble. It might be that the early symptoms of locomotor ataxia were making us think that we had gallstone trouble. So there was no end to it. Microscopical and chemical examination of the contents of the stomach and feces was necessary. A thorough examination of the patient all over was equally necessary and when we had excluded certain things then we figured the diagnosis so that it could be made out.

Closure of Fecal Fistula by Extraperitoneal Method.—Dr. C. F. Nassau of Philadelphia read this paper in which he said that in suppurative or gangrenous conditions of the appendix, two methods of closure were indicated, depending upon whether it was of the large or of the small intestine. For the method described the best condition was when the bowel was adherent to the abdominal wall without interposition of a small coil of intestine. With free exposure of peritoneal cavity, a small drain made hernia possible. Wound infection did not cause a breaking down. The skin scar was excised, cut away and the tract disinfected with phenol and alcohol, the top of the tract closed by sutures, the aponeurosis of the external oblique was cleaned and circular incision made around the tract. The abdominal wall was dissected away close to the fistula. After getting through the edges of the muscular layer, one came upon a layer of transversealis fascia, parietal peritoneum, and peritoneal covering of the bowel. The fistula was amputated, the tract was crushed and tied off close to the bowel wall and the wall of the bowel folded in by row after row of chromic catgut. After the fecal wall was folded out of sight the deepest layer was picked up and a continuous suture of the depth of the wound was made. The internal oblique and transversalis muscles were freed and brought together.

Dr. Ernest Laplace of Philadelphia said that the question Dr. Nassau brought up was most interesting. It was well that he had brought this one point out forcibly. That was the differentiation of these various fistulæ and suggested a method which in itself was bound to be a very successful method, although limited to a very small number of cases.

Habitual Dislocation of the Ulna, Report of a New Operation.—Dr. M. Behrend of Philadelphia read this paper saying that there were two kinds of habitual dislocation of the ulna, traumatic and pathological. Traumatic occur in conjunction with fractures of the radius and ulna. Pathological follow infection usually of the soft parts. His case followed severance of all the flexor tendons at the wrist. Infection followed. After a tedious convalescence it had been found that the ulna remained habitually dislocated. A review of the literature revealed 19 cases reported of habitual dislocation of the pathological variety. This included the writer's case. A new operation was performed which consisted in driving a nail transversely through the ulna and radius. Great care had to be exercised in avoiding the joint. Function was perfect except for a slightly limited supination of the hand. Pronation, flexion, and extension were normal. The patient had returned to his occupation of chauffeur.

The Value of Animal Experimentation.—Dr. Walter B. Cannon of Boston delivered an address on this subject before a general meeting of the Society on Thursday evening, Sept. 21. Dr. Cannon compared the two methods of learning about natural objects, that of observation and that of experimentation under which conditions were controlled, and showed how great had been the increase of our knowledge in physical realms through the application of the experimental method. Precisely similar had been the increase of our knowledge of medical facts through the application of the experimental method to the study of disease. Continuing this idea he showed that a sound basis of acquaintance with tuberculosis came through animal experimentation and that our present effective and hopeful fight against the disease was due directly to this knowledge. The same condition had proved true of bubonic plague; whereas formerly people placed their faith in anti-pestilential pills and royal antidotes, they now trapped the rats whose fleas conveyed the disease. Diphtheria, likewise, had had its mysteries revealed through experimental procedures; and antitoxin, which had very greatly reduced the death rate and suffering from the disease, had not only been discovered through animal experimentation, but was produced through the use of animals. Another disease of similar fearfulness was epidemic cerebrospinal meningitis. Through animal experimentation a method of treatment had been discovered which had reduced the death rate from approximately 75 per cent to about 25 per cent, and greatly lessened the defectiveness of those who survived. The development of surgical asepsis and with it the treatment of childbed fever had likewise been the outcome of experiments on animals. The saving of life from this knowledge alone had been immeasurable. Another way in which animals had been useful to man had been that of serving as means for the discovery of useful drugs, such as the sleep-producing drugs and the local anesthetics. Animals had been directly serviceable in the discovery of salvarsan as a means of treating syphilis. In public health laboratories and in the laboratories of hospitals, animals were used also for diagnosis of obscure diseases. In spite of the enormously valuable benefits which had come to mankind from animal experimentation, there were persons, the antivivisectionists, who had objected to the use of animals for this purpose. The antivivisectionists mainly based their claim on ethical grounds, but when we considered that we permitted the dehorning and branding of cattle, unspeakable barnyard operations, the slaughtering of myriads of birds and beasts for sport—all

without any anesthesia—it seemed ridiculous to select as an object for attack the methods employed in operating on relatively few animals in the laboratories with the hope of reducing pain and suffering in the world. Dr. Cannon then explained that throughout this country regulations had been adopted in all the laboratories where experimental methods were being employed in the study of medicine, which provided for the bodily comfort and the sanitary treatment of the animals, and required all the operations to be sanctioned by the director of the laboratory. Furthermore, that these regulations required all operations likely to cause greater discomfort than anesthetization itself, to be done under anesthesia and to be followed by painless death. The question then was whether in the presence of our ignorance of many diseases, such as measles, scarlet fever and infantile paralysis, we were to bow before the antivivisectionists and do nothing to increase out knowledge of these diseases, or whether we were to make use of the methods which had given us knowledge and consequently greater power in the cure or prevention of the diseases which had been mentioned. The physicians perceiving that more power to fight disease could come only from more knowledge, trust the deeper humanity of the investigators who were seeking that knowledge. In the end society must determine which of these contending parties should prevail.

Philadelphia Neurological Society.

At a stated meeting held October 27, Dr. Alfred Gordon presented "A Case of Astasia-Abasia in a Syphilitic." The patient was a colored man, 46 years old, an insurance agent, who rather suddenly found difficulty in walking, although he could execute all movements with the lower extremities while in bed. The gait was ataxic and station swaying, but the knee-jerks were exaggerated. There were no ocular changes, no sensory disturbances, and no derangement of the sphincters. Examination of the spinal fluid disclosed a strongly positive Wassermann reaction, and the case was looked upon as one of spinal syphilis, involving especially the white substance of the cord. Marked improvement ensued on antisyphilitic treatment.

Dr. George E. Price exhibited "A Case of Paralysis Following Inoculation Against Rabies." The patient was a barber, fifty-three years old, who, while under the influence of alcohol, annoyed a pet dog, by whom he was bitten. The animal was killed without examination of his nervous system, and with a view of averting possible rabies the man was treated with specific virus. As a result there developed paralysis in the lower extremities of progressive character, with exaggerated reflexes and impairment of sensibility, indicative of a lesion of the spinal cord.

Dr. James Hendrie Lloyd exhibited "A Patient with Syringomyelia and Arthropathy of the Shoulder-joint." The patient was a woman, about fifty-eight years old, who presented rigidity of the right shoulder-joint, together with wasting of the intrinsic muscles of the hands and partial *main en griffe*, with preserved tactile sensibility and impaired temperature sense.

Dr. Francis X. Dercum exhibited "A Case of Torsion Neurosis." The patient was a man, about thirty years old, who for a dozen years or more exhibited torsion of the neck and varus of the right foot, without hysterical stigmata.

Dr. Charles W. Burr exhibited "A Boy Presenting Mobile Spasms." The patient was about ten years old, and he at one time presented atonic muscular weakness with flaccidity, and at a later period a tendency to muscular overaction on slight provocation, without actual spasticity. The knee-jerks were increased, the ocular conditions were normal, the electrical reactions were not changed, the mental state was good, and sensibility was preserved.

Dr. William G. Spiller presented a communication entitled "Newer Views Regarding the Pyramidal Tracts, Corroborated by Syringoencephalia."

Ambard's Constant in the Clinic.—Leza concludes that the "constant of Ambard" is the most rational method for exploring the functional capacity of the kidneys. Prostatics are almost always nephritics, which explains the operative non-successes in prostatic subjects. Prostatectomy is advisable when the constant is below 0.07 or between 0.07 and 0.15, but is contraindicated when above 0.15. The constant is of value in the prognosis of nephritis.—*Revista Medica Cubana.*

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

The Dietetic Treatment of Diabetes. By B. D. Basu, Major, I.M.S. (retired). Published by The Panini Office, Bhuvaneshbari Ashram, Bahadurganj, Allahabad. 1916. Seventh Edition. Revised and enlarged. 105 pages. Price Re. 1-8.

I. K. Therapy in Pulmonary Tuberculosis, with a Summary of Cases and Forty-two Illustrative Charts. By William Barr, M.D., D.Sc., D.P.H. Published by William Wood & Company, New York. 1916. 82 pages. Price, $1.25 net.

Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of House Surgeons and Surgical Dressers. Edited and largerly rewritten by W. H. Clayton-Greene, B.A., M.B., B.S., F.R.C.S. Seventh edition. Fully revised with some additional matter and illustrations. Published by William Wood & Company, New York. 1916. 614 pages. Price, $4.50 net.

A Text-book of Pathology. By W. G. MacCallum, Professor of Pathology in the College of Physicians and Surgeons, Columbia University, New York. Published by W. B. Saunders Company, Philadelphia and London. 1916. Illustrated. Drawings by Alfred Feinberg. 1085 pages. Price, $7.50, cloth.

Facts for Freshmen Concerning the University of Illinois, Intended for Young Men About to Enter College. By Thomas Arkle Clark, Dean of Men, and Arthur Ray Warnock, Assistant Dean of Men. 102 pages. Published by The University. 1916.

Medical and Surgical Reports of the Episcopal Hospital of Philadelphia. Vol. III. 356 pages. Illustrated. Published by Press of Wm. J. Dornan, Philadelphia. 1915.

Traumatic Pneumonia and Traumatic Tuberculosis. By F. Parkes Weber, M.A., M.D., F.R.C.P., London. Published by Adland & Son and West Newman, London. Price, sixpence.

Universal Military Education and Service. The Swiss System for the United States. By Lucien Howe, Fellow of the Royal Society of Medicine; Member of the Royal College of Surgeons; Professor Emeritus of Ophthalmology. Published by G. P. Putnam's Sons, New York and London. The Knickerbocker Press. 1916. 138 pages.

The Healthy Girl. By Mrs. Joseph Cunning, M.B. (Lond.) Hon. Med. Director to the Open-Air School in the London Botanical Gardens and A. Campbell, B.A., Lecturer in Biology and Hygiene, Technical Institution, Swindon. Published by Henry Frowde, and Hodder & Stoughton, London. The Oxford Press, American Branch, New York. 1916. Illustrated. 191 pages. Price, $1.75.

Diseases of Children. By Edwin E. Graham, A.B., M.D., Professor of Diseases of Children in the Jefferson Medical College. Published by Lea & Febiger, Philadelphia and New York. 1916. Illustrated with 89 engravings and 4 plates. 902 pages. Price, $6.00.

A Purin Free Dietary: Sample Menus and Recipes. By Edna Alice Waite and Robert Ellsworth Peck, M.D. Published by Elm City Private Hospital, New Haven, Conn. Paper, 24 pages. Price, 25 cents.

The American Year-Book of Anesthesia and Analgesia. By Various Contributors. F. H. McMechan, A.M., M.D., Editor. Quarto; art buckram; India tint paper; 420 pages and 250 illustrations. Published by Surgery Publishing Company, 92 William St., New York City, 1916. Price, $4.00.

A Practical Treatise on Disorders of the Sexual Function in the Male and Female. By Max Hühner, M.D. Published by F. A. Davis Company, Philadelphia, Pa. 318 Pages. Price, $3.00 net.

Charity Inspector and Social Investigator, Examination Instruction—A Course of Instruction for Candidates for Institutional Inspector, Social Investigator, Inspector State Board of Charities, Charity Application Investigator, etc. By Solomon Heckt, Associate Editor, Civil Service Chronicle, and Julius Hochfelder, LL.M. Published by Civil Service Chronicle, 23 Duane St., New York City. 148 pages. Price, $3.00.

A Text-Book of Human Physiology, Including A Section on Physiologic Apparatus. By Albert P. Brubaker, A.M., M.D. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa., Fifth Edition. Revised and Enlarged with 1 Colored Plate and 359 Illustrations. 776 Pages, Price, $3.00 net.

Lippincott's Nursing Manuals—Care and Feeding of Infants and Children, A Text-Book for Trained Nurses. By Walter Reeve Ramsey, M.D., Including Suggestions on Nursing by Margaret B. Lettice and Nann Gossman. Published by J. B. Lippincott Company, Philadelphia & London. 123 Illustrations. 290 Pages. Price, $3.00 net.

The Problems of Physiological and Pathological Chemistry of Metabolism, For Students, Physicians, Biologists and Chemists. By Dr. Otto Fürth, Authorized Translation by Allen J. Smith. Published by J. B. Lippincott Company, Philadelphia & London, 667 Pages. Price, $6.00.

Physiological Chemistry—A Text-Book and Manual for Students. By Albert P. Mathews, Ph.D., Professor of Physiological Chemistry, The University of Chicago. Published by William Wood & Co., New York, 1916. Second edition. Illustrated. 1037 pages. Price, $4.25 net.

A System of Mature Medicine as Taught in McCormick Medical College, Chicago, Ill., founded 1893. chartered in Illinois. By Charles McCormick, M.D. Published by McCormick Medical College, Chicago, Ill. 1916. Vol. I, Optics and Ophthalmology. Illustrated. 319 pages. Price, $20.

Précis-Résumé de Chirugie de Guerre. Par Jean Fiolle, Chirurgien des Hôpitaux, Professeur suppléant à l'Ecole de Médecine de Marseille, Aide-major à l'ambulance chirurgicale automobile 21; et Paul Fiolle, Ancien interne des hôpitaux et de la clinique urologique de Marseille, Aide-major du Ier corps colonial. Préface de M. le Professeur Jacob du Val de Grace. Librairie Félix Alcan, Paris. 148 pages. Price, 2 francs.

Vaccine Therapy in General Practice. Third edition. By G. H. Sherman, M.D. Published by G. H. Sherman, M.D., Detroit, Mich. 1916. 523 pages.

Practical Bacteriology, Blood Work, and Animal Parasitology, including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes. By E. R. Stitt, A.B., Ph.G., M.D. Published by P. Blakiston's Son & Co., Philadelphia, Pa. Fourth edition, revised and enlarged with four plates and 115 other illustrations containing 505 figures. 497 pages. Price, $2 net.

Principles of Diagnosis and Treatment in Heart Affections. By Sir James Mackenzie, M.D., F.R.S., F.R.C.P., LL.D. Ab. & Ed., F.R.C.P.I. (Hon.). Published by Henry Frowde & Hodder & Stoughton, London. Oxford University Press, American Branch, New York. 1916. 264 pages. Price, $2.50.

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Syphilis and the Nervous System for Practitioners, Neurologists and Syphilologists. By Dr. Max Nonne, Chief of the Nervous Department in the General Hospital, Hamburg, Eppendorf. Authorized translation from the second revised and enlarged German edition by Charles R. Ball, B.A., M.D. Published by J. B. Lippincott Company, Philadelphia & London. 98 illustrations in Text. Second American edition revised. 450 pages. Price, $4.

Manual of Psychiatry. By J. Rogues de Fursac, M.D., Formerly Chief of Clinic at the Medical Faculty of Paris, Physician in chief of the Public Insane Asylums of the Seine Department, and A. J. Rosanoff, M.D., First Assistant Physician, Kings Park State Hospital, N. Y. Published by John Wiley & Sons, Inc., New York 1916. Fourth edition. Revised and enlarged. 522 pages.

The Rockefeller Foundation International Health Commission. Second Annual Report January 1, 1915—December 31, 1915. Published by the Offices of the Commission, 61 Broadway, New York, N. Y., U. S. A., January, 1916; 185 pages.

Seventeenth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts, for the Year Ending November 30, 1915. Published by Wright & Potter Printing Co., State Printers, 32 Derne Street, 1916. Public Document No. 63; 383 pages.

Therapeutic Hints.

War Treatment for the Eczemas.—While no new drugs are being used for the treatment of these conditions, it is interesting to note the test the old ones are standing. For moist eczema the following paste should be applied liberally and often. As there is a tendency for this paste to dry in the jar, a small amount of water may be added to it upon application:

℞ Sulphur, 10
Chalk, 10
Oxide of zinc ointment, 80

After the death of the cocci and consequent reduction of inflammation and itching, the application of a simple paste containing 1 per cent. carbolic acid or creosote, or 10 or 12 per cent. tar will be found very efficacious.

For the callous or horny variety of dry eczema, Hebra's lead ointment (unguentum diachylon), with the addition of 10 to 12 per cent. tar, or 2 per cent. salicylic acid, or 1 per cent. carbolic acid, or balsam of Peru may be applied. These drugs relieve the intense itching. Soap and water should be avoided in cases of eczema and a mild oil used to cleanse the parts. In the seborrhoic cases, which occur more often in summer, the chalk-sulphur-zinc paste already given is a specific. The dry papular eczemas may be treated by applying chrysarobin 1, collodion 20, to the affected area with a pledget of cotton wool or sterile gauze, and while it is drying Hebra's ointment may be rubbed in thoroughly with the hand. The application of the ointment upon the collodion removes irritation and spreading of the eczema. The dressing must be repeated when the crust comes off.—*Berliner klinische Wochenschrift.*

General Treatment of Chronic Nephritis.—Boyd follows this régime in these cases: Nitrogen retention must be reduced or eliminated principally through the diet. When the patient is able to stand it, all nourishment must be withdrawn for twenty-four hours and thirst satisfied with distilled water. Purgatives should be administered, as much nitrogenous waste can be carried off through the intestines. Hot air baths or hot packs may also be employed. After this rest period a non-protein diet is begun, consisting of arrowroot cooked with water, cream, sugar, and such stewed fruits that do not contain benzoic acid, such as apples, prunes, and figs. This plan may be continued for one or two weeks without any deleterious effect upon the patient's strength, and may produce a definite fall in blood nitrogen. Milk may now be given and stronger and more palatable farinaceous foods than water-arrowroot added to the diet. This rest treatment answers as well in the early stages of acute nephritis, as it allows complete, or nearly so, rest for the kidneys.—*Edinburgh Medical Journal.*

Sodium Hypochlorite as a Wound Dressing.—This drug possesses a high germicidal action even in the presence of serum, and is harmless also where surgical instruments and cotton materials, both colored and white, are concerned. It is used in the following proportions: Sodium carbonate, 550 gm., is mixed with bleaching powder, 800 gm.; this mixture is dissolved in half a carboy of water, the solution thoroughly shaken and made up to 40 litres, the clear fluid poured off and 150 gm. boric acid added. This is a concentrated form of the solution (4 per cent.); it must be diluted with six parts of water before use, and will keep for a month.—*Brit. Med. Jour. Prescriber.*

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THE CRUCIAL AGE OF MAN.*

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THE crucial age of man is practically that period of his existence ranging between the ages of forty-five and fifty-five. It is the age when the majority of active energetic men drop away or are seriously incapacitated by degenerative processes undermining their inherent vitality. Influences of birth, environment, education, etc., all have an effect to advance or lower the dial point of their existence. But from any point of view it is generally recognized that at man's crucial age the death rate is steadily increasing, especially among those who are the mental and physical brawn of professional and mercantile life. Their loss is preeminently a distinct one, for they drop out before their allotted cycle is complete or their work accomplished. Under this consideration as a profession we perforce ask ourselves the question. Is there not more active means whereby we may in a partial sense at least solve this medical problem? We realize that acute disease and so-called accidents of life may cause many fatalities at the crucial age. Then again many frail beings who through modern methods of treatment weathered the stormy conditions of childhood are wrecked on the rocks of middle life, their vitality exhausted and their span of life run out. But it is the average man under average conditions and modern environment who presents himself for our study and aid, and it is for us to carry him through if possible.

Amid the clouds of theory as to the incipient underlying forces that bear heavily upon this period of the active man's existence, basic causes are gradually being evolved which are weathering the test of experiment and we hope for increasing results.

The primary efforts in the solution of this question have been advanced through the effective conjoined work of the clinician and laboratory investigator. And in order to familiarize ourselves with those deductions which have passed beyond the theoretical test, it is well for us first to recapitulate the normal chemical changes and control in the human body. For it is not possible to appreciate the abnormal unless we have an absolute picture of the normal. That there are chemical and nervous causes for physical retrogression at the crucial age is well established, and it is universally recognized that the chemical changes in protoplasm which constitute its metabolism are the basis of all the phenomena of life. Sherrington shows us that all activities of the body, muscular, glandular, somatic, and visceral, are controlled and regulated by the nervous system. Herbst drawing his deductions from experiments upon lower animals, states that at some stage of development the nervous system has an important action upon growth and development. Bayless and Starling proves that an autonomic or self-acting system exists at different points in the human body apart from the central nervous system, and that the plexus of Auerbach, a self-acting point, presides over peristaltic movements of the intestines. Magnus indicates that even the swaying movements in the intestines formerly regarded as purely muscular are dependent upon the plexus of Auerbach. The existence of peripheral plexuses in the walls of blood vessels has been demonstrated by Dogiel, and their presence explains many of the phenomena of local control after nerve section. The further investigation by Langley Anderson and Gaskell indicates with emphasis the important influences of the nervous system upon development, growth and nutrition. Therefore the prime factor in the control of the human body in all its various functions is the nervous system.

The Chemical Aspect.—Under normal chemical conditions it is generally appreciated that the ductless glands and their internal secretions play an important part in sustaining the equilibrium of metabolisms. Paton holds that perfect metabolism of advanced life is governed largely by the internal secretions of the ductless glands. Mental emotions, especially care, grief, etc., powerfully influence the ductless glands with the secondary effect of slow degeneration.

Strauss, Adami and Watson deduced the conclusion that the liver and kidneys are closely allied to the thyroid, and when this gland degenerates the other organs are seriously affected. Eppinger and Falsa divide the ductless or endocrinous glands into two groups according to the action of their internal secretions.

1. The "accelerator" group, including the suprarenals, or adrenals, and the thyroid gland. All three increase protein metabolism. The adrenals cause mobilization of carbohydrates in liver. The thyroid causes increased fat absorption.

2. To the "inhibitory" group belong the pancreas and parathyroids; both retard protein metabolism and restrain sugar mobilization in the liver. According to this grouping and action, increased sugar production depends upon influences that stimulates the accelerator secretion of the suprarenals or lessen the restraining of the pancreatic secretions.

The gonads, or sexual glands, also have an internal secretion which acts upon the metabolism of the body to stimulate it in each sex in a specific manner. It has been shown that the interrelationship

*Read at a meeting of the First District Branch of the Medical Society of the State of New York, at Poughkeepsie, Oct. 14, 1916.

of the internal secretion and the nervous system seems to indicate a dominance of the nervous system over the internal secretion. The question is raised how far the body, mental development, and character of the individual are influenced by the condition of the endocrinous glands. The supposition in the light of present investigation is that the influence is an important one. Any disturbance of this perfectly controlled cycle brings lowered nutrition, diminished metabolism, and incipient degenerative processes.

Toxins.—The agents of unrest in this complete control are the toxins the insidious rust in the normally perfect mechanism. The initial step in toxic disturbances is based on our knowledge of protein digestion. Through the investigations of Kutscher and Abderhalden, and the epoch making split-protein announcement of Vaughan, much of the mist of the past has faded away as regards the ultimate of protein digestion. Vaughan holds that "the body to be in perfect health must have all the cells functionate in harmony, and as these cells are made up of protein to a large extent they must have protein food. The proteins entering the human system through the intestines are split into amino acids and synthesized into specific proteins. The cells of each organ have their own ferments peculiar to that organ and these ferments act to defend the cells against foreign proteins." If, however, the foreign split-proteins overwhelm these ferments the possibility of ultimate cell degeneration is imminent. The toxic products of the anaerobic bacteria of the intestines acting on protein bodies produce as we know, indol, phenol, etc. These compounds experimentally fed to animals bring about changes that are strikingly similar to those pathological processes common to the aged.

Lane has emphasized that in health maintenance the question of prime importance is body drainage, the non-absorption of poisons, and the elimination of whatever poisonous matters may be found in the intestinal canal. It is reasonably well proven by Armstrong and others that toward middle life the proximal end of the large intestine favors only the digestion of vegetable substances and the conditions are especially favorable to decomposition of protein products and the formation of bacterial toxins. The deductions of Fisher and MacFadyen after a series of test meals with subjects at the turn of active life, bring out clearly the fact that if food residues are abundant, intestinal stasis is prolonged, and the antiseptic natural power of the intestinal wall is weakened, then the putrefactive flora reaches its maximum development. Barger and Dale further argue that "we have not isolated all the active principles as products of bacterial action in the intestine, and these poisons have no doubt a powerful influence in disturbing enzyme activity. And as the enzymes are the foundation of cellular activity, any disturbance in their action would lead to abnormal phases of metabolism."

Eastman points out that toxemia from the colon can come from colitis, adhesions, colon dilatations, viscerptosis, and stasis. Bassler, Adami, and others have shown that various forms of anaerobic bacteria are the evident causes in the formation of adhesions.

Lane and his school hold that the human race would be better off without a colon because it is the seat of so much misery. The originality of Lane's idea, and the energy with which he followed his theory excited the admiration of the medical profession. But the vista of health and relief for victims of intestinal stasis and chronic arthritis through ileosigmoidostomy has yet to be more fully verified.

Mr. Arthur Keith of London, according to the *British Journal of Surgery*, believes that neither position of the intestines nor peritoneal bands play an important part in the causation of intestinal stasis, deducing his conclusions from a long list of *x*-ray pictures of Jordan.

Bottomley points out that in all his cases of suspected intestinal stasis the *x*-ray always reported positive, which report was not always demonstrated by operation. It is evident the final swing of the surgical pendulum tends gradually toward conservatism, and it becomes more and more evident that the long suffering colon is less the happy hunting ground surgically for the operative cure of most of man's woes. However, deducting an overenthusiasm in the original Metchnikoff idea, there still remains the broad ground of established fact deduced from unbiased sources and experience that the intestines are the seat of far-reaching insidious poisons, especially evident at the crucial age of man. Through the intestinal and metabolic poisons demonstrated and undemonstrated, which are potently active at the turn of life's activity, we find at least an argumentative cause for disturbance of the nervous systemic control and the foundation laid in metabolic changes for arteriosclerosis, uric acid excess, arthritic complications, and possibly diabetes mellitus.

Arteriosclerosis.—We know that arteriosclerosis is a low grade inflammation of the coats of the arteries, usually with progressive degeneration. We also know that these undermining processes, when they exist, are usually found after the age of forty. How well do we know the causes? The clinician and the laboratory worker urge that arteriosclerosis is probably evolved from a toxic origin, not the accepted toxic effect of syphilis and lead, but toxemias generated in the human body through lowered defense. Wheeler thinks that the usual, but not the only cause of this poisoning is a special animal protein to which the particular body cells have become sensitive. Vaughan also cites instances of this sensitive state being produced in animals by injecting them with the serum of the susceptible individual. If we knew the particular protein which is poisoning our patient, we could apply the "few protein" diet, and in theory at least work out his salvation.

Heredity no doubt is a factor in arteriosclerosis. The legacy of lowered resistance makes for the second generation a special susceptibility for the insidious advances of the gouty or uric-acid diathesis, with the complicating arteriosclerosis. This type seems to be unusually prone to meat-protein poisoning, and it is for them to be well advised as to dieteties. Then again there are types primarily normal in every physical sense, who unguided carve out their own cycle of existence. Their years are punctuated with a history all their own, a history of overindulgence in eating and drinking. They burn more than their quota of midnight oil in satisfying their mental and physical sense. And finally having fulfilled all the elements in the formula for producing arteriosclerosis, with high blood pressure and casts in the urine, they drop out in crossing the crucial bridge. As another example we have the earnest strenuous workers in both business and professional lines, whose brains acting in

close concentration keep the mental and physical forces at extreme high tension. With them the day of rest is ever an advancing point, an anticipated goal, evanescent as the will-o'-the wisp. There is no doubt, especially in this class, that certain poisons are developed probably from intestinal sources which have not yet been identified, which are produced by lowered resistance through high systemic tension. The toxins acting slowly and insidiously gradually undermine the vitality, causing increased blood pressure, cardiovascular changes and finally apoplexy or invalidism.

Uric Acid.—In gout there is always an excess of uric acid in the blood, and the prime lesion of gout is the deposition of uric acid in the form of sodium biurate at the points of least resistance. Although uric acid is always found in excess in the blood in even incipient gout, there is a growing conviction that it plays a secondary part in the symptom complex. Futcher emphasizes this in stating that uric acid is a mere weapon of greater forces comparatively unknown. There is no experimental proof that an excess of uric acid causes special toxic symptoms. The summary of the uric acid argument is that uric acid, or irregular gout, is a disease of intermediary purin metabolism, in which certain tissue ferments play an important role, and some unknown toxic agent or throw down of purin metabolism is the controlling force in the insidious terminal results.

Chronic arthritis may have an indirect affinity with the gouty diathesis; or again chronic arthritis may be acquired from a focal source due to a chronic confined infection or possibly some form of intestinal toxin. An examination of 498 cases of chronic arthritis in the service of Dr. Frank Billings furnished valuable information on the incidence of mouth infections, 76 per cent. of these showed well defined pyorrhea after *x*-ray examination. Focal sources of infection are usually found in the head in the form of alveolar abscess, tonsillar abscess, and various chronic sinus conditions. Billings considers focal infection as largely responsible for arthritis, chronic appendicitis, cholecystitis, pancreatitis, etc. In focal infection extreme difficulty has been experienced by observers in isolating the specific germ or germs. It is not found in the joint cavities, the place usually examined, but it is found in the areolar tissue about the joint. This definite organism has been isolated from the human subject afflicted with rheumatic fever injected into rabbits producing a disease identical with that in man—this has been confirmed by Tuboulet and Wassermann.

Rosenow emphasizes the fact that focal sites of infection furnish a place where bacteria may acquire new properties. These properties are brought about by a mutation or change of bacteria from one type into another type of radically different toxic effect.

Elliott also writes that in the treatment of our patients from focal infections the autogenous vaccines in order to be of any avail must be obtained from closed cavities under proper antiseptic precautions. These cavities are practically human test-tubes, and the streptococci in these concealed cavities under low oxygen pressure and in the presence of other bacteria lose their virulence and acquire a special affinity for joints or the endocardium.

Raines' theory that the organism causing the arthritis may also attack the nervous system is generally accepted. Any break in the normal must be met by prompt action especially at the crucial age when the defenses are weakening.

Diabetes Mellitus.—According to the United States mortality Statistics of 1909, diabetes mellitus is most common after forty, and therefore is a distinct menace to mankind at the vulnerable age. It is the belief of some authors that diabetes is becoming more frequent, the assigned cause being increasing wealth and consequent indulgence. Foster, however, asserts that better evidence is required to establish the fact. No theory has been advanced which explains to us all the insidious influences of this disease; the hypotheses brought forward evidently move us nearer a final solution, but in the meantime the general practitioner awaits the final verdict of the laboratory. Palacios considers diabetes a disturbance of metabolism from intestinal toxins. Allen holds that an amboceptor normally supplied by the pancreas is lacking in the disease state, and in default of amboceptor the cells are unable to fix and utilize the sugar.

Warthim and Wilson very recently showed histological syphilitic changes in six autopsies on diabetics, four showing the *Spirocheta pallida* in the myocardium; they deduce the conclusion that "it is very probable that latent syphilis is the chief factor in the production of this form of pancreatitis most frequently associated with diabetes, but diabetes is not always coincident with severe degrees of pancreatitis." Our present precise methods of treatment of diabetes mellitus are due to the well conceived idea of Dr. Frederick Allen, and through this impetus medicine has made a great stride forward in the management of this disease. Due credit should also be given to Nellis Foster, Joslin, and others, who have sustained this work in the study of human chemistry. Allen's methods are too well known to you for repetition, but I would emphasize that to be distinctly true to his plan, two weeks' initial treatment at least should be given your patient in a hospital, in close proximity to the laboratory. For it is only keen observation of the daily urinary changes and the physical condition of our patient that makes for ultimate success in true diabetes. Consider, however, your diabetic at the crucial age also afflicted with arteriosclerosis, traces of albumin in the urine and casts. This picture presents to you a problem demanding special skill to pilot your patient safely between the frowning rocks of dietetic possibilities. It has been well said that under such a cloud we must treat the man, not the disease, for the latter is incurable. We must rely on the proteins of milk, cream and cheese, and establish an index of tolerance toward certain foods as oatmeal and various starches. In order to keep our patient up to the highest possible point of physical energy, the caloric estimate of daily food consumption must be carefully made. Watch carefully heart and kidney function, being always alert to counterbalance an intensification of symptoms toward either disease.

Summary.—In this general review of real and theoretical data of possible causes of degenerative changes, we appreciate full well that the laboratory worker and clinician only partially answer the question of the possibility of conserving and prolonging life at the crucial age. In the face of this obscurity it behooves us to take the fragments of established fact and weave them into rules and methods and apply them with energy. In estimating the known processes of degeneration at middle life, there is but slight variance of opinion in the deduction that

toxins and acids are the insidious factors in gradually disturbing the balance and control of the human organism. These toxins, known and unknown as far as science has determined, are those generated in the intestines, those generated through faulty metabolism, and also those generated from infective or focal sources. Imbued with this present day enlightenment, we should advise our patients along a broad common-sense line of procedure. Individualize every case, appreciating that ancestry, mode of life, environment, and hygienic conditions are as important in the final estimate as the chemical and physical findings.

A full synopsis of causes bearing upon the integrity of individual welfare must be made with all the mechanical and laboratory aid within our scope. For this type of manhood relegate medicines to an accessible port, for refuge only in case of storm. Treat toxemia largely as a dietetic error, and regulate your individual diet lists accordingly. Food demands must be met by careful caloric estimates. As meat protein is especially susceptible to putrefactive changes in the intestines its use should be strictly limited. Substitute to an extent cheese for meat protein unless cheese indigestion forbids. Use vegetables and greens and the carbohydrates generally with milk and milk products. The use of fruits is largely a matter of individual estimate. If uric acid with gouty conditions prevail, acid fruits are forbidden, and the same argument holds true in a rheumatic diathesis. The use of tobacco and alcoholic beverages should be regulated through careful judgment as to individual temperament. My experience proves that a starvation day at stated intervals enables nature's defenses to reestablish their functions. Daily bowel actions are imperative, and this must be largely brought about with a ratio of coarse-grained food in conjunction with exercise and abdominal massage. Avoid cathartics as far as possible, but if laxatives are required high grade mineral oils hold the preference. A fortnightly dose of castor oil lowers decidedly toxic absorption.

For the extreme nervous tension of business and professional life, exercise in the open air is ideal. But exercise must always be tempered with caution, holding in mind that the rust of age is slightly in evidence. Walking either on the golf field, street, or country road, meets every requirement for relaxation of mind and body. The strong argument, however, leading to prolongation of life, is the consistent and judicious arrangement of periods of rest be it either in hours, days, or months. Nature demands recuperation and the penalty will be paid unless due heed is paid to her demands.

These brief deductions drawn from theory and practical fact, point out to us clearly, that with all our science, Humboldt was about right when he said, "Health is the most admirable manifestation of right living."

Pelvic Lavage.—H. L. Kretschmer and F. W. Gaarde publish their results with the treatment of colon bacillus pyelitis by this procedure. Acute cases are not included. They say that from their results they believe that pelvic lavage gives a greater number of bacteriologic cures in a less space of time than any other form of treatment, but it is important to insure a sterile urine in order to prevent recurrences. The number of injections required varies from one to eight. In several instances they obtained sterile urine after one or two treatments in patients who had been on internal treatment for many months without results. In patients failing to respond to this form of treatment there may be conditions other than simple pyelitis, such as tuberculosis, calculus, or ureteral stricture.—*Journal Am. Med. Association.*

MENTAL HYGIENE.

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NEW YORK.

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No one can long be in contact with the mentally ill, any more than he can be in contact with the physically ill, without being brought face to face with the questions of causation, of prevention, and, in a lesser degree, of cure. In view of the number of the afflicted, of the universality of their distribution, the physician is in constant touch with them and with the hereditary, social, environmental, as well as medical conditions which must be at their base. He has the opportunity of seeing the cases in embryo as well as when fully developed. Unfortunately, he does not often recognize the relation between early symptoms and fully developed cases. Those especially interested in mental conditions usually see only the fully developed cases—and in the hopeless stages. But for the physician to be able to help in preventive work he must be well orientated on this widely distributed malady. Often, however, even though he sees the causes that operate, and recognizes their significance in the development of these conditions, he is yet unable to prevent their coming into being or to encompass their removal, because the causes are so general, so basic, that they are quite beyond the individual to influence. Yet, unless he is well informed, he cannot be in position to urge on the public the necessary remedial measures. The physician can arouse the public to demand the protection of the mental health of the public, to promote the study of diseases of the mind, and to ameliorate the condition of the afflicted. These are, in a broad way, the elements of mental hygiene.

Mental hygiene is a medical problem, not a lay one, except possibly in the field work. Even there the medical man is of infinitely more value. The nature of mental conditions is not nearly so mysterious as the nature of many physical conditions. It is perhaps not too radical to say that mental conditions are as easily diagnosed as the physical, and that the first steps in evolving therapeutic, but especially prophylactic measures, have long since passed. General knowledge can be further encouraged by opening the psychopathic wards to the profession, by lectures, and by clinics. The idea that insanity and other mental conditions are, so to say, ultra-pathological, and not possible of comprehension or of attack except by the specially qualified or "anointed" specialist, must be cleared away here, as elsewhere, before much progress can be made in the movement for mental hygiene. They are as amenable to the ordinary medical mind as other pathological conditions. They are neither vague nor mysterious.

In speaking of mental hygiene, it is hard for many to conceive of the applicability of so definite a term as hygiene to the heretofore vague and nebulous conceptions of the mind. We usually think of hygiene in terms of the bath, the antiseptic, sewage, food, and the like. Yet whether metaphorically or actually, these factors all have their analogues with respect to the mind. Mental hygiene is, in fact, the basis of all hygiene, since right thinking includes the observance of all hygienic considerations and of all health regulations. At any rate, whether figuratively or not, there are certain

definite matters the institution of which, or the correction of others, lend themselves to the conservation of the mind. The field is wide and varied. It embraces hygienic breeding, actual hygiene of the body, prevention of disease and correction of defects, moderation in the use of food, drugs, and alcohol, abstenance from excesses of all kinds, general improvement of social conditions, proper mental, physical, and vocational training. It also embraces the segregation of the mentally defective and the mentally disordered in proper institutions or hospitals for observation, diagnosis, and treatment, so that they may not be in position to exert a deleterious influence on others. It includes, further, the teaching of right and proper methods of thinking, the training of even temperaments, the encouragement of healthful interests, proper introspection, and the discouragement of improper, artificial, or masturbatory mental habits. Neither school training alone nor home training alone is sufficient to carry out this aim; but both must work in intelligent co-operation.

Heredity plays an important part in mental states but usually only as the foundation for a superimposed abnormal structure built thereon by adverse conditions. There would otherwise be a foundation but no structure. Indeed, it is the aim of mental hygiene to prevent the building of such a structure over an hereditarily defective foundation. On the other hand, many of the mental conditions are not entirely preventable because they seem to be handed down as such from ancestor to progeny, as is so well illustrated in the profound mental deficiencies. There are less profound conditions which are handed down as weakened or inferior constitutions, which, however, requires some environmental adversity to activate. In the matter of prevention, or of hygiene, the only thing that can be done with them is early apprehension and segregation so that they may not come in contact with adverse conditions, and especially so that these stocks may be prevented from passing their defective strains to others. The epileptic, the feebleminded, and the insane are really subjects of notifiable disease conditions. There is as much contagion in them as in infectious diseases—either through improper example or the development or propagation of inferior strains. The clearing-house idea and compulsory central notification of all cases will do much to eradicate them. There are too many illustrations of the hereditary factor in respect to the central nervous system to warrant overlooking or underestimating it in the slightest degree.

The best method of keeping down the defective population has not yet been determined. Marriage laws are unsatisfactory because of the very nature of laws which are capable of combat, varied interpretation and nullification because of the reading into the law of so many exceptions. Although the requirement of health certificates, based on examination before marriage, is a step in the right direction, practically, it has not been found to work out satisfactorily because of the ease with which, for example, syphilitic reactions can be masked, or the difficulty of recognizing incipient conditions, and the injustice of refusing permission to marry to those of defective stock, although they may be greater factors in the transmission of this strain than even those with acquired disease conditions. From 50 to 70 per centum of the mental cases are hereditary. Defectives seem to be especially prolific, probably because they are really lower forms of beings. For institution defectives, criminals, etc., sterilization would seem to be the method of election to destroy the strain. There is, however, a great deal of opposition to this procedure because it is considered cruel, a deprivation of the human right of procreation, and on the ground that the laws of heredity are not yet clear enough on which to found so radical a departure. The study of the laws of heredity promises to be one of the most fruitful fields of human endeavor. At any rate, it is even now obvious that the mental hygiene of the individual must be enforced in the ancestor to be of value to the offspring.

Perhaps one of the largest contributions to the defective element of this country comes through immigration. This is quite natural, for immigration no longer demands the facing of hardships such as was encountered in pioneer days. On the contrary, it is often the path of least resistance for those who are unable to make a place for themselves among their own. Not only is there the likelihood of mass admixtures of defective individuals or of defective stocks but of whole atavistic or aboriginal races. Unless this source is strictly censored, not only with relation to the actual defectives but with relation to the potentially defective or constitutionally inferior, the more domestic or local measures will be continually bowled over by the influx of great numbers of these sources of contamination. Even the keeping out of such stocks *en masse* is not too radical a measure to prevent contamination. The prevention of the marriage of defectives, or other means of inhibiting their further propagation, the exclusion of alien foci of "infection' are hygienic measures of supreme importance.

While the hereditary cases may be considered in the light of damage already done and in so far irremediable, the great mass of acquired disease, which is causative of much of the mental disease incidence, and against which mental hygiene must be especially aimed, is almost entirely preventable. These acquired genetic factors include syphilis, alcoholism, tuberculosis, arterial degeneration, etc. Alcohol alone causes about 20 per centum of the insanities, while the so-called parasyphilitic nervous and mental diseases are almost entirely, if not entirely, syphilitic in origin. Even the many apparently innocent neuroses are of immediate luetic origin or are more indirectly the last shoots of a luetic ancestry. With alcohol may be included the excessive use of drugs. The increase of that part of the incidence of insanity caused by the increased consumption of alcohol and drugs, and against which the campaign for mental hygiene is especially directed, is made clear when one considers that in the last 20 years there has been an increase of 750 per centum in the use of drugs with an expenditure of over 150 million dollars per annum. Even if toxic, somatic, or other pathological conditions are not directly causative they are at least provocative. They are still, without doubt, intangible psychogenic bases combined with the acquired—both must be read together, too much importance placed on neither.

Among acquired conditions predisposing to, or causing insanity, and in the nature of intoxications, are the various infectious diseases, parasitic diseases, nutritional diseases, and internal gland diseases. There is a biochemical relation between mind and body; their greatest forces for good must

go together. Before attempting either to prevent or to treat mental conditions the physical condition must be inquired into. The part played by the hormones, the secretions of the ductless glands, in the causation of mental deficiency and mental disturbances has recently gained much prominence. It is a mooted question whether or not in mental conditions, where hereditary and somatic factors are not evident, the cause cannot be found in the internal secretions, as is illustrated in the mental states in thyroid disease, acromegaly, Addison's disease, etc. The prevention of all these must be left to preventive medicine. Their eradication will in so much reduce the field of the psychiatrist or of the mental hygienist.

Generally poor environmental and unhygienic conditions resulting from congestion, poverty, and ignorance are not, however, individually preventible factors. The hygienist must call the attention of the public to the significance of these conditions in the perpetuation of mental conditions and in arousing the public conscience to the improvement of general and social conditions. The movement of mental hygiene is broad enough to call for a social organization to combat this malady. Social medicine has now a definite place in the medical sciences. The improvement of conditions among the sick as well as among the well is quite within the sphere of social medicine. It already has an established place in many large medical institutions—with follow-up work, help, and advice subsequent to hospital or clinic treatment. This sort of work is even more necessary in psychopathic conditions. Pernicious social influences often activate the constitutionally inferior. For these a desirable environment must be created to keep them from changing from latent to active. Adverse environment acts badly on an already prepared mind—a mind prepared by heredity, by acquired disease, by vices, or by excesses.

Overspeed, highpressure, and overwork in the strenuous life of modern times are large contributors toward mental and physical degeneration. There is a tendency to overspeed for long periods without much rest, which soon breaks the worker down—a tendency to product-efficiency without individual physical efficiency. There seems to be, moreover, also an individual desire to work for a short period of life, at great speed, to acquire sufficient money to live a life of prolonged ease thereafter. It so often culminates, however, in mental and physical breakdown, and is, altogether, very poor economy. Likewise, speedy maturity, forced by improper methods of education, especially in the precocious, encourages early decline, decay, and mental deterioration. In these endeavors we take a great deal of stimulation of all kinds—with dire results to the nervous system. Such stimulants as alcohol, drugs, and pernicious sexual habits all help to hasten one to this end. Alcohol, syphilis, and speed are a trinity that causes much insanity.

Moreover, there are many congenital and acquired physical and sensory conditions which either retard mental development or irritate the nervous system and cause respectively deficiency or disorder. The correction of eye, ear, and nervous conditions is often preventive and curative of some very profound mental states. The correction of defects in early life goes a long way to prevent the development of disorder and disease especially in those with poor constitutions.

Of prime importance in all hygiene, as well in mental hygiene, and in the correction of ills, maldevelopments, etc., is physical training. Logically, physical training is the first step in mental training. A mind devoting itself to physical hygiene is devoting itself at the same time to mental hygiene. *Mems sana in corpore sano* is more true than ever before. Physical training, unlike education, must be begun early. It must be maintained throughout life. It is a habit that does away with many of the postural and sedentary ills of life. It supplies the strength and endurance needed in so many occupations and from which the weak are barred. Physical weakness causes economic weakness, disturbances, and poverty—all inevitable forerunners of disease and disorder.

Sedentary persons have whole systems of unused muscles, and in them corresponding brain areas are rendered useless. It is to this class that the neuropaths especially belong. Motor energy stored up by proper muscular energy can be used or converted into mental energy. The one is really reserve force for the other. The development of one goes hand in hand with the other. Neither can very well get along without the other. Muscular coordination and muscular action are the first things taught the mentally defective. It is through muscular activity that it is hoped to arouse the neighboring and bordering mental centers. Physical training must be selective—to bring out retarded muscle groups. The same physical education cannot be given to every person. In physical as well as in mental training each individual is a case by himself. Muscular development and physical training develop useful central activities, purposeful action, and do not encourage aimless, tiresome, fatiguing, and exhaustive activities. The strongest mind is the one with the least peripheral—useless—activity. It is the one in which most of the unused energy can be converted into mental energy, or used elsewhere in an emergency.

Mental training, while it includes, does not mean entirely educative training. In the last analysis, education is really only a training of the memory—to be sure, the most important faculty. Education lays up information that can be drawn from when needed. But perhaps more important than training the memory and laying up information, at least in the interest of mental stability, is the training of the disposition, the temperament, the general character, of proper methods of thinking, of control of the passions, of introspection, of an understanding of the proper proportion of things, of altruistic and of sympathetic traits, of rapid decision, etc. Indecision is the result of improper training. It is almost worse than too hasty and too superficial decision. Whether by religious methods or otherwise the cultivation of an altruistic sense is a help in maintaining mental equilibrium. Individual faculties which are found retarded must receive special training. It is only in this way that failures and disappointments can be prevented. These are themselves very severe mental traumata, conducive to the development of morbid mental states.

Insanity is rarely of sudden onset; it is the result usually of long standing and continued abuse of the mind, of the body, or of both. Besides, there are premonitory symptoms, often subtle, more often well marked. They may manifest themselves in changes of temperament, of disposition, of character, etc. Personal characteristics are usually very much an organic part of an individual and, normal-

ly, do not undergo sudden changes. It is difficult enough to train them purposely, and then only, if at all, after constant and studied effort. A change in personal character is always significant. Fortunately, in most individuals such a change does not go beyond this stage and does not degenerate into a definite psychosis, especially if there has been early mental training, or if the abuse of the mind has not been too severe. On the other hand, if the significance of the mere change is not recognized and the abuse, overspeed, or excitement, continues, the change turns into a distinct abnormality. And it is thus far the sad experience that when once the boundary lines of change have been overstepped return to the normal is not usual. It may be that the environment that provoked the original condition is still operating and keeps the patient under, or especially because facilities for early individual treatment are not yet afforded; besides, favorable environment is not an element easy to procure. Cures are not nearly such hopeful outcomes as prophylactic measures. Many of the cures are not really cures of the insane but of the pre-insane; and it is in these pre-insane especially that the greatest good can come from mental hygiene, and from voluntary admission into psychopathic hospitals.

Mental hygiene is as broad and comprehensive as preventive medicine, perhaps broader; it is too comprehensive to be definite. The prevention of every abuse comes within its folds. Mental stress and lack of adequate rest from fatigue are two cardinal causes of insanity. They may be classed among the toxic causes because the accumulation of the fatigue products acts as an organic poison. High pressure requirements can in a measure be overcome by periodic rests, changes, or vacations. Change is particularly a great regenerator and rejuvenator. Change of scene and recreation will very often anticipate a mental breakdown. Even the change of scene given in an asylum or hospital is of such benefit; and it is for this reason that it is now universally advocated that persons threatened with mental disturbances apply for voluntary admission to a psychopathic hospital long before the actual break has taken place.

While heretofore the operation of prophylactic measures did not seem as plain where the mind was concerned as in the more tangible somatic conditions, thanks to the mental hygiene movement it is becoming more apparent each day. The development and the conservation of the mental faculties are as important to mental health as the development of the muscles to bodily health. An empty and untrained mind is not a healthy mind. Atrophy is not health. Work and exercise are as necessary to mind as to body—but not overwork. The attempt to educate a nervous or feeble mind under the same conditions of speed and pressure as the normal child is as bad as requiring all children, no matter what their muscular capacity, to undergo the same amount and the same kind of physical training. Exhaustion must follow in both instances. The separation of children into appropriate groups for education and for physical development is a measure of highest prophylactic and hygienic importance. The school competitive system is not desirable for the rapidly growing child. It is perhaps that from the realization of this factor that the various new methods of individual teaching for children have sprung up. The competitive system is the cause of a great deal of menstrual retardation, hysterical manifestations, and psychopathic symptoms in girls about the period of puberty. An average minimum need for a school class should be the only one established and maintained. Native ability will come out in due time without competitive stimulation. Competition is best left for later life, and there is already too much of it even there.

Academic education for those who have ability or inclination only for vocational work causes many failures and disappointments, and acts as a direct injury to the nervous system which is so often permanent. It is highly fatiguing to these motor-minded individuals and its continuance is unhygienic. The teacher should be able to recognize mental fatigue and to provide against it. Fatigue, rest, habit, etc., are elements in the child with which the teacher should be conversant. The teacher can carry out her part in the movement for mental hygiene by being familiar with the physiological and psychological needs of her pupil. Fatigue is often a matter of bad training. It is just as necessary to build up a mental reserve force as it is a physical reserve force, for use in emergencies. Without proper drill aimed at individual needs, capabilities, and possibilities the school becomes merely a forcing or cramming medium. School inspection and child surveys are the means of bringing to light the defective, and the nature of their deficiencies. Coupled with investigation, entire defective family strains can be detected. Proper follow-up work with the defective families can do much to reduce "return" or new cases, as it has done in such diseases as tuberculosis.

Mental retardation and mental defect are not, however, synonymous. Retardation is due to disuse and to neglect; defect is due to inherent brain defect. The apparent results may, however, be the same if care is not taken to differentiate them. Every mental faculty, memory, attention, will, etc., may be retarded through neglect in training and through disuse. The lack of discipline of home or of school permits the mind to lag and allows outside pernicious influences the easier to take hold. Lack of interest follows lack of understanding. It is the discipline of effort, of work, of interest, that trains the mental faculties into habits of work and habits of right thinking. It takes the mind away from the many pernicious extrinsic psychological processes, so conducive to mental disturbances. In the better classes especially are nervous disorders the result of idleness, sedentary life, and a lack of proper mental interests. The ordinary forms of amusement are no longer satisfying to them, and excesses of various kinds are the natural results. They become blasé, introspective, self-centered, they suffer from functional nervous disorders, and then, lastly, actual psychoses. An unproductive life, no matter in what sphere of society, as well as all forms of overstimulation are factors in the development of mental disturbances. Mental and physical activity are hygienic and therapeutic measures, when properly selected and not overdone.

Mental training must include a training of self-reliance, else there will ensue a sort of negativism, indecision, apathy, and lack of mental energy. While these may be due to fatigue they are more often due to neglect. The acquirement of desirable mental habits is, likewise, a matter of training. Distinct effort will cure the tendency to trivial anxieties and worries. Perhaps encouragement to unburden themselves of their worries and anxieties

immediately as they occur to some one who is sympathetic, perhaps to counsellors and confessors, will be helpful. This may be the human origin of the confessional—and the calm and ease it affords those who can take advantage of it justifies its use.

Habits of exaggerating, of looking for slight personal affronts to brood over must be discouraged during the developmental period. The tendency can in a measure be overcome by teaching a philosophic analysis of things—a better understanding of real proportions in life. A relentless hunt for the good in the bad—for the sunny side of life, is a great help in overcoming such baneful mental habits as suspiciousness, supersensitiveness, seclusiveness, anxiety, fear, despondency, undue excitement, idleness, day dreaming, and the like.

The neuropathic, nervous children must be exposed to some adversity—to the elements, so to say—and not coddled too much; they must be encouraged to learn their own legs; they must be "hardened." Children who rarely display any emotion, and are of the "shut-in" type, must even be goaded to the display of emotion, almost by any method, in order that they may have an opportunity to indulge in the "gymnastics of emotion." Environment has a great deal to do with the development of desirable mental habits, and unless the desirable ones are knowingly developed and the undesirable ones knowingly eradicated the mind will founder with the first ill wind. Favorable external influences such as are furnished by settlements, recreation and community centers are hygienic measures social in nature and of very first importance. It is with this sort of therapeutics and prophylaxis that social medicine is concerned. For the very weakest mentally, occupations must be furnished that keep the mind pleasurably occupied, so that they may have no time to exercise their morbid mental habits. Perhaps the acquirements of hobbies is a valuable preventive measure.

Intense emotion is just as fatiguing as mental or motor effort. In early life, at least, and in the neuropathic, it must be studiously avoided. Those who are temperamentally thus inclined should be urged to keep away from displays, exhibitions, or anything which they know from experience has a tendency to arouse intense emotion—at least until they have trained themselves against it. To be of value to the organism emotion must be followed by action; much emotion should not be allowed to accumulate without some commensurate action. Distinct vital energies, without any adequate return, are consumed by such displays of emotion as anger, jealousy, etc. The telling of fear stories to children arouses emotion which often remains as a distinct psychic injury. For the same reason children should never be led into experiences that do not perfectly belong to their years.

Thus far the treatment of mental conditions has been almost entirely custodial. There were maintained asylums or retreats from which few returned. Yet even with the mere improvement of the custodial care given these patients the number of cures have increased. Further improvement with respect to facilities, space, etc., coupled with a rational search for the genetic factors will return many more to society. For incipient cases, for the so-called psychoneurosis, psychasthenias, voluntary admission to hospitals are recognized to be prominent factors in prophylaxis. Even mere residence in a hospital is of benefit because it takes these patients away from the noise and turmoil of life, from which they are really suffering and from which they seek to escape and submerge in the form of their delusions. The opportunity given for observation, diagnosis, and the correction of somatic difficulties must prove helpful. If indicated, psychoanalytic treatment can be given under the very best conditions. Hospital care can be combined with rest, work, exercise, and occupation.

On the other hand, definite therapeutic measures in the treatment of the insane has practically not yet been developed, except in the more recent methods of psychoanalysis. It is plain that the mentally ill must be taught to find themselves. And whatever may be said in criticism of the methods, principles, or possibilities of psychoanalysis this has been the means of opening the field of active treatment in cases heretofore closed to any but passive measures. Time and study will reveal how much actual merit there is in the method. It is intended by this to teach patients to find themselves by having them abandon their own aimless introspection and substituting instead a more methodical and rational introspection—an analytical and not a pathological introspection. Eventually, psychoanalysis must have its place taken by a sort of autopsychoanalysis—if the benefits are to be very broad. Rational psychoanalysis contemplates teaching the patient to become a "more rational, thoughtful, and mature individual." Here lies its place in mental hygiene. Psychoanalysis searches for the truth behind any impression, in order that the impression may not soar into the mysterious, beyond control, where it becomes a fascination from which it is hard to withdraw; not to allow impressions to become exaggerated, not to allow them to grow needlessly, but to analyze, interpret and separate all thoughts that obsess the patient into their component or genetic factors. In order to be in a position at any time to offer mental aid to a patient it is necessary to make complete analyses of the personality with respect to traits, habits, work, etc., so that any breach may be found and filled in. In all forms of mental treatment or of mental work a degree of intimacy, sympathy, and confidence must be maintained, much beyond that required in ordinary medical work.

Ordinary psychological investigations deal with motor, sensory, and purely intellectual elements; but these are difficult to interpret in terms of their dynamic relation to the personality of the individual—which is disordered in the insane. These latter may be called the intrinsic psychologic elements as against the former or extrinsic which deal with the external dynamic manifestations of the mind. It is with the intrinsic elements that psychotherapeutics is concerned. Therapeutic measures attempt to create order out of disorder, comprehension out of misapprehension—to clear away the psychic débris whose presence lends to unhygienic conditions in the mind.

One is said to be well balanced mentally who is able to hold and does hold a proper relation to his environment; he is unbalanced when in a dynamic sense he is disturbed by such psychogenic factors as conflicts, tangles, day dreams, etc. There is, then, no sharp line of demarcation between sanity and insanity. It is the ability to adjust or to readjust oneself under adversity which determines sanity or insanity. To cure means to help to readjust. Mental hygiene may mean a general readjustment of environment to the many of a class against

mere individual adjustment. During the period of maladjustment, there are manifestations of temper, fads, fancies, seclusiveness, etc. Normal persons may have these same symptoms after stress, but they are the normal ones because they are able to overcome them, and to readjust themselves, while the abnormal cannot—at least not without help.

In the body, fever, pain, and other reactions are Nature's efforts at protection; in the mind, such manifestations as delusions, illusions, etc., are efforts of the mind at readjustment, or attempts in this way to get away from sources of irritation. These are attempts to become readjusted to an environment of difficulty. There is an attempt to reestablish an equilibrium. We usually see only those who fail in these attempts. Those who have succeeded do not come under observation. As in other conditions a great many get well without observation, and, of course, without treatment. More of this type can get well, or, better, can avoid becoming ill, by conforming to general and mental hygienic measures. In respect to the mind, then, we are concerned mainly with the failures at readjustment, but we must also make it easier for the successful to determine a successful issue.

On the other hand, psychoanalysis has its limitations. By its very nature it is a therapeutic measure of refinement in language taking place between patient and physician. The best results can occur only in those who by nature or through education have acquired sufficient refinement of language so that many of the subtle variations of expressing mental processes can be conveyed to them. To the crude, whose range of language is restricted to the lower degrees of expressions—expressions even much lower than the sum of their very few experiences—in whom there is not even language for the grossest of their experiences, analysis cannot be made. Besides, of course, it cannot be applied to the excited or to the deeply depressed. It is limited in its action to the pre-insane, as a prophylactic measure, and is in no wise a panacea for all mental ills. Psychoanalysis is a therapeutic measure rich in language, in terms, and in expressions. The experiences of the ignorant are more often bodily than psychic. The range within which there can be injury of their minds is very small. A wealth of psychic experiences and actions in a constitutionally inferior mind are the most prolific causes of mental injuries.

Undue repression of desires, emotions, and sentiments are psychogenic factors, and while normally a certain amount of repression is necessary for social order, the weak can stand little of it, and perhaps even the strong not too much of it without harm. Society demands a certain amount of repression. It is the cognizance of the need for this demand and the ability to live up to it that makes for the normal. The tendency in the young to undue repression, dissociation of the personality into the unreal and the imaginative, to indulgence in emotional excesses and the like must be overcome by substituting appropriate action and healthful recreation. A little self-scrutiny does no harm, if it becomes the means of knowing onself, and provided it does not degenerate into too great an introspection; psychoanalysis is the giving of therapeutic introspection. The insane complex, in which there is a submersion out of harm's way, is a medium of protection. Psychotherapeutics must discover the conditions from which the patient finds himself forced to escape, and the removal of these conditions is the goal of treatment. Many of us normal beings submerge into minor depressions, the blues, self-pity, self-engrossment, fantasy, etc., in order to escape some unhappy or unpleasant condition; we are normal, however, according to our ability to rise again and stay on the surface. The abnormal cannot, at least not without help, and even then some not at all, because they have sunk for the third and last time, so to say. Perhaps the ability to supply them with a more fruitful, different, or less harmful medium in which to submerge would not be so fatal.

The elements in mental hygiene are, then, the eradication of the hereditary element by restricting propagation by known defectives, by eliminating the disease, the drug, the alcoholic and the excess factor in acquired mental conditions, by the exclusion of alien foci of "infection," by the improvement of general hygienic and social conditions, by proper physical, mental, and vocational training, by voluntary admission of the pre-insane into psychopathic hospitals and the subsequent follow-up work, by psychotherapeutics wherever possible, and lastly by a better understanding by the profession at large of the various phases of mental disorders and their early recognition.

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THE TREATMENT OF MERCURIAL STOMATITIS.*

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Some years ago, in conversing with a friend on the effect salvarsan would have on the treatment of syphilis, he remarked that it would certainly make us more strenuous in our employment of mercury. That we have become more exact in our dosage, and more methodical and more energetic in the administration of mercury is most true. Possibly the reasons for this change are not so much the introduction of salvarsan, however, as the discovery of the spirochete and of the Wassermann reaction. The first gives definiteness to our therapeutic thought, and the second impels us to secure a negative result. In the endeavor to obtain a negative result, however, we run the risk of causing inconvenient or distressing symptoms from the drug itself, and in giving mercury prolongedly, as must be done in syphilis, one of the chief incidental accidents is stomatitis.

Mercurial stomatitis is caused by the mercury administered, but in many of its manifestations is far from being directly due to it. The state of the mouth and very especially the sanitary condition of the teeth are of great importance in rendering the patient susceptible to mercury. The mere presence of the teeth is important, as shown by the infrequency of stomatitis in infancy and in toothless old age.

The Normal Mucous Membrane of the Mouth.—The mucous membrane of the mouth should be pink and smooth, and the normal gums should be firm and should hug the teeth tightly. The interdental pyramids of the gums should not be prominent but should sit in between the teeth, so closing the space around the neck. No matter how close the apposition may be, it nevertheless constitutes a weak joint receptive to bacterial attack. An ideally perfect mouth is, however, seldom seen except in infancy.

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The modern civilized man always has a gastro-enteritis, the condition of which is reflected in his oral cavity. In many people with a dirty mouth, a coated tongue, and a foul alimentary canal, the gums become spongy and redundant and fall away from the teeth, leaving a more or less deep open groove between the gum and the tooth, and besides this the gum pyramids elongate and tend to flap outwards, leaving still larger pockets between the teeth. Food is forced into these grooves and pockets, and when the particles are protein they are attacked by the anaerobic putrefactive bacteria, the deleterious influence of which in combination with mercury, will be taken up later.

The formation about the teeth of phosphate of lime deposits, commonly called tartar, also throws the gums away from their natural close apposition to the teeth. After these inflammatory changes have lasted sometime the gums shrink, exposing the teeth still further to deleterious influences. Although these conditions are not normal, yet their presence in a more or less marked degree is so usual as not to excite comment.

Effect of Mercury on the Mouth and Alimentary Canal.—Mercury, no matter how given, excites the alimentary canal throughout, and the larger the dose the greater the effect. It causes redness and tenderness of the mucous membrane of the mouth, swelling of the gums and of the tongue, a disagreeable metallic taste, a characteristic nauseating fetor of the breath and salivation. The teeth become sensitive in chewing, or when smartly clamped together, or to acids or to heat, and especially to cold, such as ice water, and they get a curious feeling of being too long; in some cases they may loosen and even fall out.

In considering the condition of the mouth the state of the rest of the alimentary canal is of interest, as any disturbance along it reflects itself in the mouth. There may be redness and soreness of the throat, with an abundant accumulation of frothy mucus, such as is so graphically described by Rabelais.[1] Mercury may also cause icterus, vomiting of glairy mucus, and painful diarrhea with watery, mucous stools stained with blood, simulating dysentery.

The local trouble may give rise to severe neuralgia of the fifth nerve. I well remember one of those stubborn, elderly men with fixed habits of thought, who consulted me on account of what he insisted was a neuralgia due to syphilis. I found that besides the neuralgia, he had tender, swollen gums, a wet mouth, and the familiar fetor, and he had been receiving mercurial injections. The pain was so intense that he felt overwhelmed by it, and was bent on having me give him more mercury, although evidently he already had had too much. With the utmost difficulty I persuaded him to defer the mercurial treatment.

Mercury, therefore, when given to a man with a normal mouth may, through its own physiological action, cause highly disagreeable symptoms of a congestive nature, and when the oral cavity is illy kept and irritable, mercury is especially adapted to add seriously to his troubles.

The Interaction Between the Putrefactive Bacteria and Mercury.—Almkvist has worked out this subject in a most fascinating way.[2] As before mentioned, when the proteid foods are pressed into the pockets about the teeth, or into the recesses of the mouth, they are attacked by the anaerobic putrefactive bacteria, principally the fusiform bacillus of Plaut-Vincent and the *Spirochæta dentium*. Among other iniquities perpetrated, these bacteria form H_2S gas.

When mercury is given, either by the mouth, by inunctions, or subcutaneously, it is principally taken up by the blood, and so circulates in the capillary loops of the papillæ of the mucous membrane of the mouth. Here it comes in contact in the capillary wall with the above-mentioned sulphureted hydrogen produced by the putrefactive bacteria, causing a precipitate in these capillary walls of the black sulphide of mercury. This black sulphide, Hg_2S, although usually estimated as being insoluble, is only relatively so, as it exerts a detrimental action upon the capillary loops, and interferes with the function of the vessels in transmitting nourishment, which in its turn, brings about degeneration and molecular death of the superimposed epithelium. This affected epithelium constitutes, therefore, additional dead proteid matter, furnishing still more nutriment to the anaerobic putrefactive bacteria, and so on progressively leading to erosions and to ulcerations of greater or less extent and depth, abscess formation, periostitis, necrosis, for instance of the lower jaw, and even the death of the patient.

Further investigations may either substantiate or invalidate Almkvist's views of the sequence of events constituted by the anaerobic bacteria, H_2S, Hg_2S, and lesion of the capillary walls, but it is unlikely that anything will be found to diminish the etiological importance of the anaerobic bacteria themselves as a cause of inflammation and ulceration in mercurial stomatitis. The weighty influence of this knowledge in our estimation of this condition will be appreciated when treatment is considered.

Sensibility of Certain Locations in the Mouth.—The gums just behind the lower last molars have long been recognized as being particularly sensitive. This seems partly due to the narrow angle between the tooth and the ascending ramus of the lower jaw. If the gum here becomes swollen it is apt to be crowded and irritated in the angle. This irritation is increased if the treatment falls at a time when the wisdom tooth is breaking through the gum, which is not such an unusual coincidence, as I have two such cases in the office at present. Because of the remoteness of this position also, it is difficult to reach it with a tooth-brush, and therefore food frequently lodges, ferments, and irritates. The mucous membrane in this situation often rises into a tender, easily bleeding point, which Almkvist says is nothing more than an interdental pyramid. The gums behind the upper front teeth are also, in my experience, often sensitive, which may be also partly due to the difficulty of getting a tooth brush into this region, and the consequent accumulation of tartar. In a patient under treatment now, this is the only situation that is sensitive, but the sensitiveness in him is not near the teeth, but a little farther back on the riffles.

Almkvist says that he finds the gums behind the upper last molars to be as sensitive as those behind the lower last molars. He ascribes the sensitiveness to the existence of a natural pocket, called the pterygo-gingival angle. There is a fold of the mucosa that extends downwards and outwards from the palate to the gum, called the pterygo-gingival fold. The above-mentioned pocket lies between this fold, the tooth and the cheek, and is therefore called the pterygogingival angle. It is my impression,

however, that the gums about the lower molars give more trouble than those about the upper ones.

The cavities of a carious tooth may also form a focus for troubles, which cause irritation and infection of its gum. A woman at present taking inunctions under my charge has had this trouble adjoining a cavity in which the filling is broken. A portion of the edge of a soft tongue projecting into such a cavity may also become infected. Almkvist gives a striking instance of this.

As before mentioned, one of the specific effects of mercury is to cause dilatation of the blood vessels in the tongue. This and the sympathy that naturally exists between the tongue and the rest of the alimentary tract cause the tongue to become heavily coated, flabby, and swollen. Its edges and the under surface of its tip, lie in contact with the affected gums, and therefore become infected by them. The softness of the edges of the tongue make them take the impression of the teeth against which they lie, giving rise to saucer-shaped facets with yellow purulent borders, the well-known "orchestra chair" tongue.

The very same thing that occurs on the edges of the tongue, occurs also in the cheeks. The soft mucous membrane of the cheek pouches takes the impression of the teeth, and extends as a ridge between the upper and lower sets, forming what is called the interdental line. The tonsils too, when they are hypertrophic and full of cavities in which food may lodge, may form a starting point for ulcerations.

The Complicated Etiology of Mercurial Stomatitis.—The upshot of the matter is that there are many etiologic components entering into the incidence of stomatitis and its gravity, besides the direct action of the mercury itself. There is the previous state of the mouth, the stomach, and the alimentary canal, the presence of the anaerobic bacteria and the susceptibility of the patient to their deleterious action, and the sensitiveness of the individual patient to the drug mercury itself. Intricate as the disease, hydrargyrism, is, there is a distinct advantage in appreciating these different etiologic factors and in knowing where trouble is likely to break out, as giving a greater objectivity and intelligence to therapeutic measures. The other danger of being so cautious as to render the treatment of syphilis ineffective out of fear for the remedy must also be avoided.

The severer forms of stomatitis are rarely now seen, but the milder grades are frequent, and should receive attention as indicating that the limit of tolerance for the drug is being reached, and also because intelligent treatment may add much to the patient's comfort.

Grippe as a Complication in Treatment With Mercury.—One of the accidents that may befall in giving a course of mercury is a grippe infection. The patient becomes constipated, and develops a metallic taste, and gingivitis and ptyalism supervene. The conjunctivæ may become yellow, and bile may appear in the urine. The patient feels utterly miserable. If the mercury is not stopped, severe mercurialism will almost certainly develop. In ordinary grippe a dose of calomel is given as being the best intestinal antiseptic and aperient. When this disease supervenes during a mercurial treatment, this remedy, of course, is to be avoided.

The chemical changes in our body are unbelievably swift, and the corporeal structure is held together and the initial energy is furnished by what is hypothetically called vital energy.* Some men have much of this vital force, others have very little, but whether much or little of this driving energy is present as a natural endowment of the individual, there is no common disease that will so suddenly lower it as "grippe."

When the functions of the organs work perfectly and the food is duly transmuted into energy, and the waste is cleared away steadily by the emunctories, the stream of mercury given for the cure of syphilis flows along and is uninterruptedly discharged. Let, however, the vital energies decrease, and the chemical activities of the body slow down, and the emunctories slacken in their discharges, then the mercury will accumulate and begin to act detrimentally. All these misfortunes and more too may happen as a consequence of a "grippe" infection, and time and again I have had to interrupt a mercurial treatment on account of this interloper.

Prophylaxis.—As before mentioned, mercury causes very little trouble in the mouth in infancy, but in the adult the susceptibility is so marked that the laity is well aware of it, and patients frequently ask for directions regarding the care of the teeth and mouth. In almost every case, at some time during the treatment, there will arise some irritation, generally controllable by quite simple means. In fact no one thinks of interrupting treatment because of these slight symptoms, which are regarded as signs that the patient is well under the influence of the drug. When the symptoms become more serious, however, the mercury is stopped immediately, and means are taken to facilitate its elimination and to control the oral trouble.

As a preliminary, at the very outset of treatment, the patient is requested to brush the teeth after each meal three times a day, using any of the good tooth powders or pastes, of which there are some on the market, containing chlorate of potassium, that are excellent for this purpose. As for chlorate of potassium, many men have adopted the routine of prescribing a tooth paste containing it, for no other reason than that it acts well. As we shall see later, this is a sufficiently interesting circumstance.

The brushing, however, is essential, and the clearing away of the food from between the teeth, and the depression of the gums with silk floss or a handkerchief wrapped around the finger or a pointed orange woodstick. Indeed as brushing is sometimes very painful, the orange wood stick, the finger, and the silk floss may be the only means of cleaning tolerated. Tartar should be removed and decayed teeth filled or evulsed. In florid syphilis the dentist, of course, should be warned for fear of infection.

The patients frequently become very sensitive to acids that set their teeth on edge, such as those of the citrus fruits and vinegar. This often leads them to blame the acids for the salivation, and incidentally, the physician, if he had not warned them of this contingency. It is rare, however, for a little dash of lemon or vinegar to act either disagreeably or detrimentally—when the teeth become very sensitive, of course, it is a different matter.

Moderate smoking may be allowed except when the mouth is very irritable. There is no question that alcohol is injurious. Mouth washes or drinks that are too hot or too cold should be avoided; ice water seems to be particularly harmful.

*This is also called by Prof. Benjamin Moore, biotic energy. "The Breath of Life," by John Burrows, 1915, p. 107. This change of name was introduced because the phrase "vital energy" had fallen into such ill repute.

Peroxide of hydrogen is now regarded as almost a specific in mercurial stomatitis. Nicholas mentions that it will often prevent its development, and frequently will cure one already under way. Scholtz says that as soon as the gums begin to swell and a purulent film appears, a very dilute perhydrol solution (1:500 or even 1:1000) constitutes the best mouth wash. The question as between peroxide of hydrogen and perhydrol is an interesting one. Perhydrol is a 30 per cent. solution of peroxide of hydrogen, H_2O_2, and is free of acid. It, therefore, differs from the peroxide of hydrogen solution of the pharmacopœia in being acid free, and in being ten times stronger. The addition, however, of a very small quantity of acetanalide stabilizes the H_2O_2 and enables it to be made so slightly acid as not to be hurtful, so that the difference between the two preparations, when carefully made, is reduced to a matter of strength, and as they are almost always employed highly diluted in stomatitis mercurialis this difference may also be equalized. Perhydrol has the disadvantages of being expensive, and being liable to explode. Expense under the circumstances is a matter of importance, as the free use of the mouth wash is essential.

Scholtz employs the following prescription:

℞ Sol. perhydroli, 5.00.
Aq. ad., 200.00.

M. Sig.: A teaspoonful in a half or a full glass of water as a mouth wash, several times a day.

As peroxide of hydrogen is one-tenth the strength of perhydrol an equivalent prescription would be:

℞ Peroxide of hydrogen, 50.00.
Aq., ad, 200.00.

M. Sig.: A teaspoonful in a half or a full glass of water.

This is slightly astringent and antiseptic, it cleans the mouth and gums, and dissolves and scatters the mucopurulent coating, and therefore deprives the anaerobic bacteria of their food. As occasion requires, this solution may be employed stronger.

In cases in which the margin of the gums is still more strongly affected, as in pyorrhea alveolaris, undiluted peroxide of hydrogen may be directly applied, or a mixture of equal parts of peroxide and a 20 per cent solution of nitrate of silver:

℞ Peroxide of hydrogen.
Argent. nitric. (20 per cent. sol.) aa, 10.00.

M. Sig.: Apply with a cotton swab.

Both chlorate of potassium and peroxide of hydrogen, the two remedies found so excellent in mercurial stomatitis, give off their oxygen very readily, and it may be presumed that it is to this circumstance that they, in a great measure, owe their effect in interfering with the activity of the anaerobic bacteria.

Liq. alumini acetatis, a teaspoonful or less in a glass of water, makes an excellent mouth wash and gargle.

There are several good mouth washes on the market of the same general formula as the liquor alkalinis antisepticus. A principal ingredient of these is borax, a mild antiseptic of an unctious, soothing nature. Boric acid may be used advantageously alone, dissolved in water, a heaping teaspoonful in a glass. Years ago I ran across a recommendation by Louis Brocq of adding boric acid powder to slippery elm bark tea, which makes a particularly smooth, simple, mildly antiseptic preparation in irritative lesions of the mouth. First the infusion is made by putting a handful of the bark in a moderate sized pitcher and adding hot water. After standing for some time the tea may be poured out through gauze. A heaping tablespoonful of boric acid powder may be added to a quart bottle of this infusion. If this is more than sufficient to dissolve, the residium sinks to the bottom of the bottle, and in any case can do no harm. The patient may carry a quantity of this in a flat bottle in his hip pocket for frequent use. Every author insists on the frequent employment of these mouth washes as being of the utmost comfort to the patient, and it is one of the chief advantages of the acetate of aluminium, boric acid, and of the very dilute peroxide of hydrogen mouth washes that they can be so employed, without either inconvenience or financial embarrassment.

Chromic acid, in 10 per cent. solution, is the best application for erosions. It must, however, not be used too frequently, as in that case it will irritate an already irritable condition. A swabbing every two or three days is usually much better than a daily application. Nitrate of silver, in 10 per cent. solution or as the stick, may also be used in the same way, but usually does not act so kindly. When the gums are very soft and swollen, it is best to brush them with a 10 per cent. or 20 per cent. solution of nitrate of silver followed immediately by a 10 per cent. solution of chromic acid (Scholtz).

Chromic acid may be used in yet another way when ulceration occurs. A 25 per cent. solution is brushed over the surface, followed by the application of nitrate of silver stick (Boeck). A combination of red chrome silver is formed as a crust, under which healing takes place. In larger ulcerations iodoform gauze may have to be laid between the gums and the cheeks. I have never had to employ either of these expedients, but no man can say when he will have to do so, as in giving mercury hypodermically the dose is irretrievable, and the patient may be hypersensitive to the drug. Furthermore it is well known that the most severe cases of stomatitis may occur with the inunction treatment. The two effective ways of administering mercury, therefore, are intimately linked with a possible severe stomatitis.

Tincture of rhatania, tincture of nut-galls (gallarum), and tincture of myrrh are employed for their astringent effect. They are, however, of lesser value than those previously mentioned, but may be very useful when the gums are in good order.

℞ Tr. rhataniæ.
Tr. gallarum, āā 15.00.

M. Sig.: Fifteen to twenty drops in a half glass of water as a mouth wash.

Eliminatory Treatment.—The elimination of an offending substance must be fundamentally more important than the control of the symptoms it produces. This axiom holds as good for mercury, causing a severe stomatitis, as for any other foreign body. The first step to be taken, therefore, is to stop the drug, and if inunctions have been employed, to give a hot bath with plenty of soap to free the skin of the mercurial ointment. Some would add Vleminckx' solution to this bath in order that the inert black sulphide of mercury may be formed. The essential, however, is the water, the soap and the scrubbing to free the skin of the mercury, and so to stop absorption and inhalation.

Formerly the impure sulphuret of potassium, called "liver of sulphur," was much used for sulphur baths, but now Vleminckx' solution is generally preferred. This solution is made by adding quick lime to sulphur and boiling it down:

℞ Sulphuris sublimati, ʒv.
Calcis vivæ, ʒxx.
Aq., ℥l.

Boil together with constant stirring until the mixture measures ʒxxx. This is sufficient for about five baths.

One hundred and fifty to two hundred grams, or five or six ounces, are added to a bath. The two disagreeable features of this bath are its evil odor and the way it blackens a metal bath tub. The advantage to be reaped in fixing the metal mercury as the black sulphide is very small, as all the metal attainable on the surface can be removed by a bath of soap and hot water.

The rate of the elimination of mercury varies greatly in different cases, and the reasons for the variability are usually unascertainable—one of them, however, an attack of la grippe, has been previously discussed. There seems to be no doubt that the chief emunctory is the intestinal canal. Vogel, and Lee, for instance, recently have found that, in cases of bichloride of mercury poisoning, the mercury persisted longer in the feces than in either the stomach washings or in the urine.[3]

The next measure, therefore, after stopping the drug, is to see that the bowels are acting properly. A dose of castor oil may be given as the best cleanser of the alimentary tract, and this should be followed by a steadily acting laxative, such as senna or rhubarb, which may be advantageously combined with a diuretic:

℞ Pot. acetatis, ʒv.
Ext. sennæ fl., ℥ii.
Aq. gaultheriæ ad., ℥iv.

M. Sig.: A teaspoonful in a little water p.c.tid.

To give a diuretic and not to give abundance of water is like putting a mill wheel in a dry mill race. The patient, therefore, should be advised to take warm drinks in plenty. The value of the various teas rests probably in the fact that many people cannot take plain warm water without nauseation. These teas set the skin as well as the kidneys in action, and if to this ingestion of hot water there is added a hot bath with a subsequent rest in bed of two hours to encourage perspiration, much will be accomplished.

Here may be mentioned the administration of atropine as a hypocrinic. A hypocrinic is a drug that lowers the secretory activity of a gland, and for this purpose the use of belladonna and atropin have been advised to control the tormenting salivation. If, however, these drugs are given to lower the activity of one set of glands, they just as surely lower activity in others, and therefore interfere with the intestinal, renal and cutaneous elimination of mercury. Furthermore the effect of these drugs on the salivary glands is apt to be very little, whereas their general effect on the entire secretory system may be quite pronounced, and therefore more harm than good may easily be accomplished by their employment. All the other hypocrinic or inhibitory drugs are in the same catagory. Many men, for instance, prescribe opium with mercury as a routine practice in giving mercury by the mouth, with the double purpose of preventing a diarrhea and of allowing the mercury to accumulate in the body. It is not, however, the mercury that accumulates in the body that does the good, it is that that actively changes into a form noxious to the spirochete and then passes through, carrying with it the peccant materials. The action is, therefore, spirocheticidal and eliminatory, and any interference with elimination is detrimental both in the treatment of syphilis, and in any of the accidents produced by mercury.

In reflecting on the phenomena of mercurial stomatitis one cannot fail to be struck with their intimate connection with the teeth. Sensitiveness of the teeth is one of the first symptoms; the trouble is most apt to begin in the neighborhood of the teeth; the condition of the teeth is of the first importance in the incidence of the symptoms, absence of the teeth secures a comparative immunity, and the treatment is largely directed toward the care of the teeth and gums.

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323 GEARY STREET.

THE CARE OF DIGESTION.*

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DIGESTION deals with the processes of food ingestion, assimilation, and ultimate waste elimination. Health and life are dependent upon the harmonious working of the digestive apparatus. Its disturbed function creates disease; its interruption for a longer time carries death with it.

It appears worth while to consider here some of the points which serve to keep the digestion in good shape, in order thereby to preserve health.

For this purpose we may divide our subject matter into the following items: (1) Food intake: quantity required in growth, manhood, old age; (2) State of the body for this act; (3) Period of assimilation; (4) The final act of waste elimination (defecation).

The quantity of food required is very definite and is greater in the period of development and manhood than in middle age or old age. During the time of growth a large quantity of the nourishment is utilized for the upbuilding of the body. In manhood the greatest activity is manifested, and this again requires additional nutritive material. In middle and advanced age the activities are gradually reduced and the food requirements are accordingly lessened. With the beginning of middle age there is often a tendency to corpulence; for occasionally at this period with the reduction of work there is no decrease in the quantity of food intake. The surplus of nutritive material is then stored up in the body in the form of fat.

The diet should be watched and arranged somewhat differently for these different periods of life.

In most instances in health our instinct guides us correctly and the appetite is a sufficient monitor to go by. Transgressions may, however, occur in both directions by faulty habits (overeating on the one hand and too scanty nutrition on the other). Thus opulence and high living give rise to an overabundance of the food intake, while poverty and avarice in the parent's house or in the boarding

*An address delivered before the employees of New York City, October 11, 1916, at the Municipal Building, New York.

establishment may lead to subnutrition. Both hypernutrition and subnutrition practised for a longer time may become established as a habit, *i.e.* the appetite here becomes deranged and is no more a fit guide for the best purposes of the organism.

In order to look for good health we must guard against either of these faults.

How shall we know whether we eat just right? The quantity of food physiologically required is known, and for the physician it is a simple matter to make a computation and to state whether somebody eats enough, too much, or too little.

The layman, however, can likewise easily find the right measure. First, his appetite may be used as a guide; second, everybody should eat about as much and as often as his neighbors and associates; third, everybody can see whether his body and strength are in good condition. If everything is harmonious and goes on smoothly, this alone is sufficient. If not the scale may be utilized and weighing yourself once a week or so will soon show whether there be too much or too little food taken.

What kinds of foods should be taken? Here, again, the answer is: look at your neighbors, do the same, and you will not go wrong.

The following rules may, however, be given in a general way. Arrange for a great variety of food, which should embrace most nutritive substances easily digestible and also difficult of digestion. To select a diet in health consisting merely of easily assimilable foods would be a great mistake as it would serve to decrease the efficiency of our digestive apparatus.

Eating being one of the most important functions of the organism should not be done haphazard, but performed with care. A moderate amount of work preceding the meal increases the appetite and enhances the digestive function.

A few more rules regarding diet in health may here be added. There is a tendency in this country toward eating too much meat, which often leads to constitutional disturbances. Some people here take meat regularly at each meal. As a rule meat should be partaken of once or twice daily in quantities of about one-quarter of a pound for an adult, but not much above this. Plenty of vegetables should be served with it. Bread and butter, fruits, and salads should be used liberally. Water should be taken with each meal, and if thirst be present also in between. Its importance cannot be too much appreciated.

Water itself is one of the principal ingredients of the organism. It contains, besides, in small quantities, mineral salts of different kinds which are utilized in the body economy. Food digestion, assimilation, and elimination require for these processes water as an intermediary, without which life is impossible. Fresh cool spring water at meal time increases the appetite and augments the pleasure of eating.

Too great fatigue destroys the appetite and banishes the joy of eating. The latter is then done mechanically, almost with disgust, and the process of digestion is thus disturbed right from the start. During meal time rest of the mind and body is essential. A comfortable seat, a nicely set table, pleasant company, wholesome food and drink (fresh spring water) are important factors in increasing the worth of the meal. General conversation not requiring much concentration of mind is rather useful. Direct business talk should be avoided. The meal should be ingested leisurely and time given to the enjoyment of the different courses (food articles). The eating should be performed neither too quickly nor too slowly. Both deviations lead to manifold digestive disturbances. A short period of rest following the meal is advantageous. A mild cigar and pleasant conversation contribute toward the enjoyment of this after-table act.

The real act of digestion begins after the ingestion of food. The alimentary canal may be likened to a factory in which all the material brought in is sorted and changed in such a manner that it can enter the circulation and by means of that stream of communication reach all the body tissues.

Assimilation of Food.—Unfit substances or the remnants of food which cannot be utilized any more are carried along the digestive canal to be eliminated at the end. The tissues of the body likewise throw off dead or waste material. They accomplish this through the eliminative systems (lungs, kidneys, skin, and alimentary tract, including the liver) reached by all the tissues through the blood stream. The digestive canal is thus one of the principal avenues for the traffic also of waste products of the body itself.

The assimilation is greatly favored by keeping the body in good trim. For this the organism must be in a state of contentment, which can be reached by satisfactory mental and bodily work. Every occupation should be performed with a good will and pleasure, and should not be carried on to overfatigue and annoyance. Thus assimilation will be helped and good health made possible. Plenty of fresh air and a certain amount of muscular exercise (walking, horseback riding, rowing, gymnastics) are of importance. In the same way after the working hours rest and a sufficient amount of sleep (eight hours daily) are essential for good digestion and perfect health. Both exercise and rest, properly apportioned, enhance assimilation as well as elimination.

The final act of digestion consists in the expulsion of all the remaining unutilizable food substances and some waste products from the alimentary tract (defecation). This usually occurs once daily in normal individuals. Regular attendance to this natural event is likewise important for the well-being of the organism. With regard to this act the call of nature should be obeyed at the right time. Frequent neglect to perform this duty as well as too much devotion to it lead to irregularities of the bowel and ultimately to ill health. In health the best principle is to let things take their natural course. Too much interference with it often leads to abnormal conditions and disease.

To sum up, the care of good digestion embraces the following items: simple life, in which work and rest for mind and body are harmoniously divided; regularity of meals, frugality, great diversity of wholesome foods taken, in just the right proportion; an abundance of water; proper attention to the call of nature. Good digestion is also the best promoter of good health and a long life. There is no elixir of youth for old age, or a rejuvenation remedy. In keeping our organism, however, in good trim, in looking out for its steady and harmonious activity, we succeed in delaying and perhaps also shortening the advancing state of invalidism and the dissolution period, with death at its end.

Life is not complete without death. The latter is a natural event at some time for each living being and its advent should not be begrudged.

20 East Sixty-third Street.

AMBULATORY TYPES OF THYROID DISEASE.*

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In the last eleven months 134 cases of thyroid disease have passed through the Cornell Medical Clinic. As in dispensary practise in general, they have been, for the most part, patients with the less serious manifestations of the trouble, the large majority belonging to that most obscure class, the formes frustes. However meager our knowledge of real Graves' disease may be, it is a flood of light compared with our understanding of the processes taking place in the organism to produce these aberrant conditions. While the laboratory attacks the subject of their cause from the experimental point of view, some light may be shed upon the problem by a more careful observation of the demonstrable results as shown in the clinical pictures presented. With this end in view a study has been made of the material seen in the Cornell Thyroid Clinic.

For every new admission during the year a chart, such as here shown, was filled in, and at each subsequent visit a careful record has been kept of the progress in respect to pulse, weight, circumference of the neck, blood pressure, tremor, and the patient's own statement of how she feels, with, of course, the treatment. For this purpose the second blank was used.

First, a word about the patients. A small majority were American-born; of the rest Russian-Jews and Austro-Germans were numerous, with only an occasional representative of the Irish, Italian, and other nationalities. Practically all were women, half the number being single and half married. Most of the married women kept house and had children. The single patients were about equally divided between school-girls, girls engaged in some semi-domestic occupation, as sewing or domestic service, and workers in miscellaneous industries. Though all were poor, there was comparatively little destitution among them.

Clinically, there was found the greatest variety of combinations of signs and symptoms. An attempt to classify some order into this confusion revealed a serious difficulty, namely, the inadequacy of our ordinary classifications. There were a few cases of real Graves' disease, many cases of partial Graves' disease, no cases of true myxedema, some cases vaguely suggestive of myxedema, though differing from it in many essentials, and a large number combining the elements of a partial Graves' with a suggestion of myxedema in a way that no mere variation in the quantity of thyroid active principle could account for. An attempt to classify our cases as vagotonic or sympathicotonic according to the work of Eppinger and Hess† gave no more illuminating results. There is still much doubt as to which division of the vegetative nervous system is responsible for many prominent symptoms. Then, too, even accepting the conclusions of these workers in this regard, very few of our patients fell wholly or even predominantly, in one class or the other, but combined symptoms and signs of both to such a degree that the picture was more confused than simplified.

*From the Medical Clinic of the Cornell University Medical College in New York City.

†Eppinger and Hess: Vagotonia, Nervous and Mental Disease Monograph, Series No. 20.

So discarding all preconceived ideas and focussing attention only on the patients, an attempt was made, finally, to see some principle on which a sound division could be made, a principle that should not pretend to explain or assign causes, but which should be so true to facts that it could be used when the time comes to help test explanations and theories of causes. Aside from nine simple goiters without symptoms, the patients fell clinically in to (1) those in whom stimulation was the chief factor, stimulation of metabolic processes, of the nervous system and heart, and (2) those in which functional depression was the outstanding feature. In addition there were all intermediate gradations and combinations of the two conditions.

The first group, or nearly half the total number, can be quickly dealt with because it presents the well-known syndrome of hyperthyroidism. All these patients had a goiter, usually small or moderate in size, tremor and nervousness. The increased metabolism was shown by loss of weight, tendency to elevation of temperature, and the compensatory mechanism of sweating. One-half were poorly nourished and nearly two-thirds complained of sweats. Three per cent., however, were over-stout, but these were all middle-aged women who had had the disease in a mild form for years. More or less exophthalmos occurred in 70 per cent. of the cases. All the pulses were irritable, running up abruptly with the slightest exercise or excitement, and in addition most of them were rapid, 72 per cent. being over 100. There were a large number of young girls in this class, 37 per cent being between 10 and 20 years of age, with the number in each succeeding decade progressively falling. Menstrual disturbance though occurring in some slight degree in 45 per cent., consisted in half the number of only a reduced or retarded flow, and hence was not prominent as a complaint.

The second group contained those characterized chiefly by depression of function. There were 27 of them, well-nourished, a majority in fact over-stout, usually with good color, yet complaining bitterly of weakness. This symptom stood out above all the rest, and was the thing for which 90 per cent. primarily sought relief. This is in marked contrast to the hyperthyroid group, in which, though it included two bad cardiacs, two recent operative cases, and all the very sick people, only 26 per cent. complained of weakness. Though largely subjective, expressing itself in easy fatiguability, disinclination for mental or physical exertion, loss of concentration, and emotional depression, there was also definite muscular relaxation that was evidenced by posture and abdominal flabbiness, often with visceroptosis. With this were associated frequent headaches in 85 per cent. of cases, constipation in 71 per cent., and in 78 per cent. a distressing sense of pressure in the neck or choking sensations, which had no apparent relation to the size of the goiter or the probability of its interfering mechanically with surrounding structures. Menstrual disturbances were the rule, and were very troublesome. There were more large goiters among these patients than among the previous group, the age tended to be older, and the duration longer. This, with the tremor so frequently present, suggested the possibility that the depression phase might be a late sequel to that of stimulation. In a few cases this appeared to be true, notably in two in whom a slight exophthalmos occurred, but the great majority gave a history that could not fairly be so in-

Department No.	Indexed	Seen by Dr.	CORNELL UNIV. MEDICAL COLLEGE MEDICAL CLINIC OUT-PATIENT DEPARTMENT	Chief Complaint	Diagnosis

Name, Age, M. F. Date, Nation,
Address, Occupation, S. M. W. Race,

SUMMARY	Etiology-Predisposing Exciting Signs and Symptoms in Order of Appearance
ETIOLOGICAL FACTORS	Type of Case—acute, chronic, mild, severe, hyper-, hypo-, mixed Probable cause—Exhausting or infectious diseases (Tonsillitis) Pregnancy Sudden shock or prolonged strain
ONSET	Gradual or Sudden Prev. Simple goitre (duration and how caused) Approximate date First symptom Subsequent developments (see outline below)
PAST HISTORY	Childhood—scarlatina, diphtheria, rheumat, chorea, rickets General health ( ) acute rheumat, typhoid, malaria, pneumonia, pleurisy, tonsillitis, colds, winter cough, sore throat headache, indigestion, gonorrhea, syphilis alcohol tobacco, drugs Habits Sleep Bowels Food Menstruation—age at start accomp. by goitre or nerv. regularity duration pain Miscarriage—no. loss of blood Pregnancies—no. and character
FAMILY HISTORY	Insanity, Neroses, Thyroid disturbances, Epilepsy, Cancer, Diabetes
PRESENT CONDITION	THYROID—Enlgm'nt Rate of growth Effect of excitemen Lobes affected Consistence Pulsation Thrill Bruit Dilated veins Pressure sympt. (dyspnoea, hoarseness, dry throat, choking sensation { Von Graafe's, Stellwag's, Moebius EYES—Exophthalmos (degree, uni-or bilateral) Injection of conjunctivae HEART—Rate Force Area of impulse Additional pulsations Size Quality of sounds Murmurs Palpitation Irritability ARTERIES—Pulse (rate and character) Pulsating vessels Murmure BLOOD PRESSURE NERVOUS—Tremor, parts affected character Weakness of muscles (where and how manifested) Twitchings and spasms Pains and Neuralgias Restlessness (mental and physical) Apprehensiveness Irritability Defective memory Sleep CUTANEOUS—Sweating Pigmentation (location, character) Edema Rashes (Erythema, Urticaria, Papules) Hair DIGESTIVE—Diarrhoea Vomiting Appetite Thirst GENERATIVE—Menses Effect of pregnancy WEIGHT TEMP.

Department No.	Indexed	Seen by Dr.	CORNELL UNIVERSITY MEDICAL COLLEGE MEDICAL CLINIC	Chief Complaint	Diagnosis

Name, Age, M. F. Date, Nation
Address, Occupation, S. M. W. Race,

Date	Pulse	Weight	Neck	Bl. Pres.	Tremor	Treatment	

terpreted. However, some of our own hyperthyroid cases appear to be going through this transition while under observation, so it probably does occur.

Thus far the cardinal symptoms, asthenia, physical and mental fatiguability, headache, intestinal sluggishness, and choking sensations, might be attributed to a hypothyroid condition, and doubtless this plays a part in producing the picture. However, there are some important differences. The patients do not look myxedematous; they lack the pallor, the apathy, the somnolence, the falling hair and thinning eyebrows.* They are alert enough, generally have normally moist skins, pulses that average about 82, and not one had the slightest sign of the characteristic infiltration of the skin.

Perhaps the most conclusive evidence that the condition is not so simple as a mere thyroid deficiency is the combination of the symptoms of the latter group with those of hyperthyroidism in every conceivable arrangement. Thirty-three cases of the series were thus classed as intermediate, each patient having symptoms belonging to both types. For instance, nervousness, tremor, more or less emaciation, and irritability of pulse may be associated with lassitude, inertia, emotional depression, and headaches. Or again, there may be on the one hand, tachycardia (120 or more) and sweating, and on the other, obesity, constipation, and asthenia. A case history will illustrate the combination.

Mrs. M. Age 26, a Roumanian Jewess, married but with no children, has had, for nearly two years, a small goiter, some exophthalmos, and a marked tremor. She is very nervous, poorly nourished, and is slowly but constantly losing weight. Her pulse is moderately accelerated, 108, and she sweats considerably, though able to do light housekeeping. So far, a pretty straight case of mild Graves' disease. But in addition, she complains of great weakness, headaches, constipation, almost constant choking sensations, and dysmenorrhea, except for the poor nutrition, an equally complete picture of the opposite type.

A few cases have come to the clinic after having a partial thyroid lobectomy. The tachycardia, tremor, and exophthalmos remain, but the operation has been followed by a marked gain in weight, even to the point of obesity, headaches, choking sensations, asthenia, and constipation. There is here an extrathyroid element, probably adrenal or pituitary. Somehow the balance between the thyroid and the other endocrine glands has been upset.

Summary and Conclusion.—1. Of 134 cases of thyroid disease, there were: (*a*) Nine simple goiters; (*b*) sixty-five cases in which stimulation from excessive thyroid activity was clinically the chief feature; (*c*) twenty-seven cases in which depression, physical and mental, was the chief feature; (*d*) thirty-three cases in which there was a mixture of stimulation and depression.

2. Simple quantitative change in thyroid secretion is inadequate to explain groups *b* and *c*, but the cause must be sought in some at present ill-understood incoordination between several endocrine glands. Hence of 134 cases of thyroid disease, at least 60 present features of a complex endocrine disturbance.

103 EAST TWENTY-NINTH STREET.

*Hertoghe, E.: Thyroid Insufficiency, MEDICAL RECORD, Sept. 19, 1914; *Practitioner*, Jan. 1915.

CONGENITAL CLUB-FOOT.

CLINICAL STUDY OF A SERIES OF 21 CASES WITH REMARKS ON TREATMENT.

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THIS report is based on a study of 21 cases, seen at the clinic of the Hospital for Deformities and Joint Diseases and from the services of Drs. H. C. and H. W. Frauenthal, whom I want to thank for the privilege of reporting same. This study must be considered purely preliminary in character. For the purpose of simplicity and aid in reaching conclusions, a history form was gotten up, presenting a number of important data.

Each case on the first visit to the clinic was made the subject of the following inquiries: The name and age, the character of labor, the question of hereditary taint, the time when the deformity was first noticed, the presence of associated congenital abnormalities, the type of deformity, whether single or double, etc., were all noted. Later on the method of treatment, and the complications, if any, were also considered. Each patient was photographed, and where absence or deficiency of bone elements was suspected radiographs were taken. In this series there were 21 cases, taken as they came and unselected. Of this number 12 were males and 9 females. The ages of the deformed ranged from 10 hours to five years.

To enable us to consider the question of traumatism during birth, the character of the labor was carefully gone into. Of the series 19 of the cases had perfectly normal births and in the remaining 2 the delivery was instrumental. So that it is fair to assume that trauma plays a small rôle, if any, in the production of this condition. The question of heredity is a rather interesting one. In the series only one case gave a definite history of a familial tendency. In the case of M. G., an older child of 10, was afflicted with a similar deformity. This case is rather of unusual interest and will be reported in detail further on. Personally, I feel that hereditary predisposition is a factor, a contributing one, perhaps, and not a direct cause.

In all but two of the series the deformity was noticed soon after birth; in one case it was not observed until the third day and in the other one week following birth. It may be safely said, however, that the deformity in both cases was undoubtedly congenital, for all other etiological factors can be excluded. It was interesting to note that in this series 5 cases presented associated abnormalities. In case of M. L. there was a fusion of the third and fourth toes on both sides. Case of T. B. presented an anomalous condition of the small toes of both feet. The metatarsophalangeal articulations of these toes were perhaps one-half inch posterior to the normal situation. Case of M. L. revealed a congenital constriction about the second finger of the right hand (amniotic adhesions). Case of M. G. showed congenital malformation of the left ear, and case of H. Z. presented congenital dislocations of the fourth toes of both feet, at the metatarsophalangeal joint line.

A rather frequent condition that I noticed in a number of the cases was the relative smallness in size of the big toe in the affected foot. Whether this is to be considered an abnormality or not I am unable to state.

The types of talipes as seen were as follows: Equinovarus numbered 15, ten of which were bilateral. Of the five single deformities three involved the right foot and two the left one. Three of the cases in the series were pure varoid in character. All were bilateral. There was one case of calcaneus affecting the left foot and two cases of valgus. Of the latter one was double and the other single, involving the right foot.

Anatomical Observations.—Inspection of the afflicted members presented a number of points. In all of the cases seen the heels were found small and when there coexisted a contracted tendo Achillis a fold just above the heel was always encountered. These folds were also observed about the ankle, on either side, depending on whether a varus or valgus deformity existed. In talipes varus the folds were found on the inner side of the foot, and in valgus on the opposite side. As correction of the condition progresses one notes the appearance of the folds of the skin onto the opposite side of the joint, and at the same time an associated stretching of the original folds.

In talipes equinovarus the outer border of the foot assumes a curve with its concavity facing the median line. A few cases in the series presented marked displacement of the astragalus. This is of great importance. Until this displacement is corrected, no true and stable cure is obtainable—at least that has been my experience. Indentations or dimplings were encountered a number of times. These have been seen on the soles and inner border of the feet. They are supposed to be due to amniotic adhesions.

Treatment.—The treatment to be described is according to the method in use at the clinic of the Hospital for Deformities and Joint Diseases. No claim for originality is made. It consists of three fundamental principles—correction, retention, and supervision.

Correction is obtained by manipulation, with especial effort toward replacement of any existing faulty position of small bones of the foot, especially the astragalus and cuboid. The earlier treatment is begun the better the prognosis as to a cure. Each foot is manipulated for a period of about five to ten minutes, following which the limb is fixed in the corrected position. For the purpose of retention we use first adhesive straps, followed by plaster of paris. The patients are instructed to return at least once a week, the dressings, however, are changed about once in two or three weeks, when the same process is gone through. This in brief is an outline of the treatment for talipes in general. The different types, however, require special considerations.

Talipes Equinovarus.—After manipulation a primary roller of gauze (one inch bandage) is applied from the toes to the knee. This is to fit snugly, each turn overlapping the previous one. Care is exercised not to leave any exposed and uncovered areas, as these make fruitful soil for ulcerations. With the deformity corrected as much as possible, and the gauze roller applied, the next step consists in holding the acquired position by use of adhesive straps, usually one or two in number, rarely three. These straps are about one-half inch wide and from 4 to 7 inches long, depending on the size of the leg. They are applied from within outward and should partly overlap. They should be long enough to go beyond the knee. A second roller bandage is now applied in a similar fashion as the first. This helps to

maintain the adhesive straps in the desired position. When the knee is reached the adhesive straps, which extend beyond the joint, are then reflected and kept there by a few turns of bandage. Over this a thin light cast of plaster of paris is applied. A one-inch bandage is usually found sufficient.

Recently we have modified the above to the extent of adding and incorporating in the bandage or dressing a thin wooden splint, measured to the size of the sole of the foot and so applied. The object of this is to prevent a narrowing of the forepart of the foot. Before applying the splint it should be well padded.

After correction of the deformity is obtained the feet are placed in very light metal braces which are easily removed, so as to allow for massage. This is applied especially to the peroneal group of muscles. At this time the patients are instructed to return three times a week for massage treatments. When the child has reached the walking stage, proper shoes are ordered and so constructed as to force the feet somewhat into valgus position (elevation of the soles on the outer side with a small pad under the arch to prevent breaking down completely. In other words, to prevent flat foot). From now on the case is supervised to prevent relapse.

In those cases where manipulation is not sufficient to overcome the equinus position, the patient is referred to the hospital for surgical relief (tenotomy, tendon lengthening, etc.) But this takes the patient from the clinic and I shall not describe these measures.

Talipes Varus.—Treatment consists in the same measures as used in overcoming the varus deformity in equinovarus, and as this has been described no further mention is necessary.

Talipes Valgus.—In this condition manipulations to be used are the reverse of those in varus deformity. It is a good plan to apply any bandage that may be necessary from without inward. This aids in overcoming the valgus. The same holds true to the application of adhesive straps. They should be started on the dorsum of the foot, running outward over the external border of the foot, across the sole and then up alongside the inner margin of foot and leg. When the stage of correction has been reached and massage is indicated, this is to be directed mainly toward muscles of the legs, which, when active, produce inversion of the foot. Shoes, when ready to be worn, should be constructed so as to throw the foot into a slight varus position (inner side of sole raised).

Talipes Calcaneus.—In this form, the foot is dorsiflexed on the leg at an acute angle. On the dorsum one may see folds of skin. The dorsiflexor muscles are found shortened and the extensors lengthened—notably the tendo achilles group. In the one case of calcaneus in the series, it is possible with just the merest use of force to dorsiflex the foot so that the toes actually touch the front of the leg.

For the relief of this type we use a malleable metal splint, well padded. This splint is applied so as to increase the angle of dorsiflexion. It is applied posteriorly, extending from a distance a little above the knee to the toe line margin. The part is first manipulated in such fashion as to stretch the contracted or shortened anterior group muscles and to shorten the calf muscles, then a gauze roller is applied. The splint is then fitted to the limb, bent at the knee, and at the ankle. In the latter position it is bent so as to keep the foot in equinus. The knee is taken in so as to allow for greater correction of the deformity. The splint is held in position by another gauze roller and this is followed by the application of a plaster case.

When correction has been obtained massage, especially directed to the calf muscles, is instituted. The part is then redressed as above described with a plaster of paris splint (removable). This is done to enable one to remove the dressing easily. When the child begins to walk, it may be advisable to elevate the heels of the shoes somewhat. This has a tendency to maintain the equinus position.

For the correction of different types of club foot I have found that the average time is about four months. Occasionally delay in cure is caused by intercurrent infantile diseases and complications due to the correction of deformity. In one of the cases (equinovarus), as a result of faulty application of corrective dressings, pressure sores developed on the anterior surfaces of both ankles. It took ten weeks to cure these, leaving ugly scars.

The results obtained at present writing may be spoken of as cured, improved, and unimproved. By cured, it is to be understood that stable correction of deformity has been obtained. By the term improved, some correcting has been obtained, but not entirely so. The designation unimproved refers to those in which no change for the better has resulted. In this latter class I have included those cases in which treatment has been given for a short time and in which no change is yet to be expected. Among the cured there were five cases of equinovarus and one of calcaneus. Two cases of equinovarus, one of valgus, and one of varus were improved. Seven cases were unimproved, of these two were equinovarus deformities, one valgus, and four were of varus type.

After all is said and done, the correction of deformity is accomplished in a comparatively short time, a few weeks or months, but the result can be determined only after constant and active supervision for two or three years following so as to guard against relapse.

57 East Ninety-sixth Street

A FOUR YEARS' STUDY OF THE KELLING HEMOLYTIC TEST.

By B. G. R. Williams, M.D.,

Paris, Illinois.

About four years ago I became sufficiently interested in the promise of Kelling's hemolytic reaction to undertake tests with a view to diagnosis. The first of these was set up on September 18, 1912. This test was positive. At the time I warned the people that the reaction was still in the experimental stage and could not be regarded as specific. The patient was alive nine or twelve months after that date and consultants were of an opinion that the growth was after all a benign one. The patient agreed to an operation. Exploration, however, revealed an inoperable tumor mass and the patient died within a short time.

Meanwhile I had refused to undertake further tests until convinced that the results of this first one had not been misleading. Led to believe that the test might have a clinical value, I then adopted it as a laboratory procedure of probable worth and have applied it, not routinely, but in cases selected according to the conditions noted below.

The number of tests made under these conditions

is 90. About 100 other tests might be added were I to count controls and reactions used for study, mainly in normal cases. I have no apology to offer for a report on so apparently small a number for the reason that the selection of sera was not haphazard from hospital wards and so on, but in every case there was some good reason to regard malignant neoplasm of the abdominal viscera as a possibility. I might say, however, that this reason was sometimes merely the fact that some physician had suggested cancer, although we saw no real clinical signs or symptoms confirming such a diagnosis. According to available reports one or more of the "positives" are still alive since tests set up several months ago, but in general the results have been so convincing as to prompt me to make at least the following brief conclusions as to the value of the test.

Probable Value of the Kelling Test.—My experience seems to prove that when properly applied and interpreted the Kelling test is of value in the diagnosis of cancer and especially in the differential diagnosis of benign and malignant abdominal neoplasms. As a routine procedure for the diagnosis of all cancers in all stages it is practically valueless and misleading.

The value of the hemolytic reaction in my hands may best be expressed in the words ventured by me about four years ago:[1] The so-called "exploratory operation" is becoming altogether too frequently applied in cases which are probably fatal and inoperable. The chief promise of the hemolytic test is that of preventing hopelessly developed, necrotic, and metastatized abdominal tumors coming to the operating table. On numerous occasions I have witnessed these cases, and no pen can paint the horrible picture of the ubiquitous, rotting masses of daughter tumors revealed. It seems to me that in such surgery there is little actual reward, and any test which promises to illuminate will be most acceptable to a conscientious surgeon. Any abdominal malignant tumor of several months' growth or one which is palpable is invariably inoperable, and if the malignant nature is known it requires not even a glance into the belly to prove that it is too late for the knife. As a matter of fact, the exploratory operation is not ordinarily attempted to determine whether or not it is too late to operate, but whether or not the growth chances to be benign and can be removed by virtue of this fact. The case is altered, of course, when certain indications suggest (regardless of malignancy) that a gastroenterostomy is to be done to relieve the patient.

Workers apparently agree that the sera of patients with late malignant neoplasms of the viscera invariably cause hemolysis of alien corpuscles, and that this hemolysis is usually prompt and marked. More interesting and valuable than this is the fact that the sera of patients with *benign operable tumors do not cause hemolysis unless the test be applied very late indeed.* It has been claimed that when certain techniques are used (not that of Kelling) the sera of patients with advanced tuberculosis, syphilis, and so on, bring about these reactions; but such conditions are likewise not operable, and the value of the test, even though judged by an incorrect application, is not limited by these possibilities. So also pernicious anemia and nephritis (easily differentiated by blood and urine examinations) may, according to some techniques, cause hemolysis, and these conditions are likewise inoperable. Suppurations, it is claimed, may also produce positive sera, but such conditions do not usually enter into the differential study of benign and malignant tumors and may be regarded as no greater source of error than a positive Wassermann in a case of scarlet fever. Moreover, if Kelling is right the hemolytic properties of the sera of pus cases are lost by raising the temperature to a certain degree, while those of the cancer sera are retained, and we have thus a very accurate method of differentiation.

It would not, perhaps, be just to ignore all of these claimed exceptions. But keeping in mind the countless variations (most of them uncalled for) in technique which have characterized the work of our American investigators, and the constant results noted above, certainly the future promises much for the reaction, at least in those circumscriptions of diagnosis which I have indicated.

In brief, therefore, I suggest that the questioned positive reactions given by other sera include chiefly the nonoperative conditions, and these are usually diagnosticated by other methods and do not enter into the special differential question. They should not detract from the main proposition that if the serum of a person (who has been affected for several months with a condition which *may* be malignant, and if so is certainly by this time inoperable, but even at this late hour the possibility that it is benign still exists) invariably brings about a prompt and marked hemolysis of standard suspensions of alien corpuscles we should not hope to find at operation benign fibroids, simple peptic ulcer, or other condition easily remedied by the knife, and we should hesitate to approach surgery which promises so little. We do a great injustice to the patient when we recommend such surgery.

Selection of Cases.—I would hesitate to propose binding rules for the selection of cases. Now and then with our greatest care we will deny the test to the patient who would be served the best by its application. I have touched upon some of the main points when considering the value of the reaction. The following suggestions may be added:

1. There must be some reason to suspect abdominal neoplasm—a palpable tumor, cachexia in a good subject for cancer, an unexplained and suspicious stomach history, a suggestive gastric analysis, a diagnosis of malignancy proposed by another clinician, and so on.

2. Essential anemia, nephritis and so on should be ruled out by proper laboratory examinations before undertaking and interpreting a hemolytic test. Rule out tuberculosis if possible, although some cases of abdominal tuberculosis may be regarded in a class with cancer so far as surgical treatment and prognosis are concerned.

3. The hemolytic test should be preceded by the use of *x*-ray and gastric analysis in questioned stomach cases and by a diagnostic examination of curettings in uterine cases.

4. It is not necessary to be able to palpate the abdominal tumor, though it is much better and usually possible to do so by the time the advisability of the test is considered.

5. Do not hesitate until the tumor is very large, for it is conceivable that hemolysins may arise by virtue of retrograde changes in enormous benign growths denied proper pabulum. This introduces a very dangerous source of error.

What Is the Hemolytic Test?—Kelling found

that there exist in the blood sera of patients affected with malignant disease certain substances or a substance innately capable of destroying the red blood cells of organisms not cancerous, but only to a limited extent the red cells of the cancerous patient, the latter appearing to be immunized (if such a term is proper) to these bodies.

Furthermore, these cancer sera rapidly hemolyze erythrocytes of chickens and other aliens, whereas normal sera have but little effect. The precise nature of the cancer hemolysin has not to my knowledge been accurately determined. Wade has shown that it is poisonous. It is especially plentiful in cancers of the mucous surfaces—stomach, intestine, etc. It may be a toxic protein remnant. Again it may be a salt or salts of certain fatty acids (cholesterin or sodium salts of oleic acid) which have been shown to have hemolytic properties.[2]

Claims of Kelling.—The first communication of Kelling appeared about nine years ago,[3] and subsequent reports by him concerned mainly case reports and technical modifications rather than any change in opinion regarding the value of the reaction. He claims that when the test is properly applied it is specific for internal cancer even in its incipiency, and that the reaction depends upon the presence of antibodies in the serum capable of causing hemolysis of the corpuscles of the hen irrespective of the location of the growth, its structure, or any retrograde changes which may be taking place in its cells. I am unable to verify or refute this broad claim, being denied the use of material in a charitable institution or an endowment to make possible such an undertaking in my laboratory. The claim of the originator of the hemolytic test should not be lost sight of, but cannot be considered in this paper.

Choice of Technique.—Instead of adhering to an original technique long enough to prove the value of a reaction, laboratory workers (and especially those of this country) begin at once to modify and "improve" upon it, with the result that many good tests are "botched up" and dropped in disgust. This has been the case with the Kelling test. It is to the shame of our workers that there is today no standard or universal technique for the hemolytic test. Four years ago I made a plea for such, and so far as I know I am the only man in this country who still adheres to the technique as proposed by Kelling. Modifications have been empirical, uncalled for, and entirely stupid, and it is not difficult to understand why the reaction has never gained a place in the average diagnostic laboratory. Parenthetically, I might say that Kelling has modified the technique somewhat, but the changes are not sufficient to subtract from the value of the original method nor the cases he examined by that method.

Preparation of Serum.—All operations should be carried out under aseptic conditions, not because the reaction depends upon the isolation of microorganisms in pure culture, but because a number of hours are necessary and some of the materials (citrate, etc.) may spoil. Secure blood from the patient in a sterile test-tube. Fifty drops are sufficient in a possible case of cancer, where we do not wish to deplete the circulation. Where a normal individual must supply serum for several controls the blood may be secured from a vein by a needle. For a single control the finger is cleaned with alcohol and pierced with a Moore spring lancet. I do not usually separate the serum by mechanical methods as by centrifugalization, but merely slant the tube and place upon ice. Keep it there for twelve hours. Then draw off the serum carefully with a sterile pipet and dilute 1:10 with physiological salt solution (formerly we did not dilute, but used practically the same amount of the serum in the end as contrasted to the corpuscle suspension). Empirically we now incubate for 24 hours at 37° C. This is claimed to render inactive certain lysins and inhibiting substances which might be present in noncancerous sera and yet not affect the cancer-produced hemolytic substances. In most of my work I have used also nonincubated serum, and the results have been about the same. Personally, I have seen no advantages thus far in incubation before mixing with corpuscles. The serum is now ready for use and should not be set aside, but the corpuscle suspension should also be ready at this point for making the test.

Preparation of Corpuscles.—With a pair of small, sharp-pointed shears open a blood-vessel on the under side of a hen's wing. The hen should be healthy, and it is best to pick a fowl known to have been healthy for several months. I select a good laying hen, and by keeping my own stock am assured that it is healthy. In case the hen is purchased just before doing the work it is best to kill it and be assured that the viscera are free from sarcoma. Receive the fresh blood directly into a vessel containing 2 per cent. sodium citrate solution. This prevents coagulation and is preferable to defibrinating with glass beads, because the latter method injures the red cells and thus favors hemolysis. Centrifugalize. Draw off citrate and substitute physiological salt solution. Repeat this process several times until the corpuscles are entirely washed. It is best to centrifugalize slowly, which avoids adhering of corpuscles into a mass, for the breaking up of such a mass injures the cells and favors hemolysis. Finally add enough or subtract enough supernatant salt solution to approximate a 5 per cent. suspension, again mix by inverting the tube, and this second component is ready for use.

Technique.—Slender serum tubes are used. In each place 10 drops of the corpuscle suspension. To one or more add equal part of the iced, diluted, incubated, unknown serum. To others add equal part of the iced, diluted, incubated, normal serum. To still others add equal part of physiological salt solution, and yet others equal part of distilled water. If at hand, serum from a cancer patient may likewise be used to control. Place tubes in rack and incubate from 24 to 48 hours at 37° C. Each tube should be tightly corked and inverted hourly, providing for thorough mixing.

Readings.—Hemolysis is most marked in the tube containing distilled water. It is marked in the sera of patients with late growths. We have found it most marked in cancers of stomach, intestine, and uterus. There should be absolutely no hemolysis in the controls with healthy sera or physiological salt solution, or else an error must be suspected. Following is the proper positive test:—

Suspected serum, marked hemolysis.
Normal serum, no hemolysis.
Physiological salt solution, no hemolysis.
Distilled water, very marked hemolysis.
Known cancer serum, marked hemolysis.

Conclusions.—Several American workers have tried out this reaction upon a series of cases from

hospital wards with a view of verifying the claims of Kelling in regard to the reaction being specific. I am perhaps the only laboratory worker in the country who has put the method to use for the purpose of diagnosticating and differentiating inoperable abdominal tumors.

This communication has been prepared to answer a large number of inquiries from laboratory diagnosticians and other physicians concerning the technique and interpretation I have used. It seems to me that the method is a promising one and deserves further study, not so much by the research worker as by the diagnostician.

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109 EAST COURT.

AUTOINTOXICATION FROM CHRONIC INTESTINAL STASIS, DUE TO HYPERTROPHY OF THE SPHINCTER ANI, SIMULATING APPENDICULAR COLIC.*

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THIS case derives its interest from the circumstance that the patient was ill for four weeks with subacute abdominal symptoms, which were attributed to appendicitis, for which operation was advised.

The patient, a woman, is 20 years old, married, has one child of 2 years; her family history need not detain us. Menstruation and urination normal, habits good, appetite poor, bowels regular up to one year ago. Since then it has become increasingly difficult for her to have a normal movement; the stools being small, hard, dry, and lumpy, accompanied by straining, necessitating enemata and physic, even then productive of but poor results at the expense of much abdominal distress. She has been accustomed to only one movement in nine days for the past year.

Four weeks before she presented herself for examination, her condition became markedly worse, with pain in the right lower abdominal quadrant, cramps occurring at frequent intervals, obstinate constipation, nausea, headache, dizziness, backache, radiating pains in the legs, cardiac palpitation, but no fever, chills, or vomiting. Examination of the abdomen showed some distention, diffuse tenderness on deep pressure over the right iliac fossa, and hyperesthesia of the skin over the right lower abdomen; there was no pain on the right side when pressure was made over the left, no pain when the fingers were suddenly withdrawn after deep palpation, no subjective disturbance in the abdomen when the thigh was flexed on the pelvis. Temperature 99°, pulse 76. Vaginal examination showed no evidence of tubal or ovarian disease. Digital exploration of the rectum disclosed a small, tightly-contracted, irritable anus, with a hard, thickened muscular band surrounding the anal canal, which permitted only with difficulty the introduction of the little finger. The rectum was distended with feces.

The signs elicited by abdominal palpation were suggestive of subacute appendicitis, but the previous history of the patient, the function of the bowel, and the condition of the stools, together with the physical findings obtained on examination of the anal canal, pointed to partial intestinal obstruction due to hypertrophy of the sphincter ani, with secondary toxemic manifestations. Hence it was thought advisable to relieve the condition at this point, by division of the sphincter muscle. Ths was done under quinine and urea hydrochloride anesthesia, the wound was drained, and the anal canal dilated with a No. 10 Wales bougie daily. The patient had a satisfactory movement on the day following her operation, unassisted, and a normal defecation every twenty-four hours since; her abdominal cramps and tenderness in the right iliac fossa disappeared with the establishment of normal bowel function, all subjective gastric disturbances ceased, and she feels better than she felt in a year.

No attempt is made to draw any general conclusions from one case, and it is simply reported as an interesting instance in which symptoms indicating a grave intra-abdominal condition were apparently due to an obstruction in the anal canal, and were promptly relieved when the obstruction was removed. The writer is well aware that this patient may quite possibly harbor an appendix in a latent state of inflammation, which may light up at some future time—that is a negative proposition which he is not disposed to argue; nevertheless, it will be admitted that there appears to be a significant relation of cause and effect in the condition of this patient before and after the operation.

Two points deserve attention: (1) That toxemia from absorption of intestinal contents may produce symptoms which simulate appendicular colic; (2) That the cause of chronic constipation may be found in mechanical conditions of the rectum and anal canal, which are aggravated by physics and enemata, but yield at once to simple operative measures, which may be undertaken under local anesthesia.

748 FIFTH STREET.

* Reported before the New York Physicians Association, May 25, 1916.

Medicolegal Notes.

X-ray Photographs as Evidence.—In an action for alleged malpractice in the treatment of a fractured wrist, expert medical witnesses called by the defendant testified that *x*-ray plates of the wrist offered in evidence for the plaintiff as showing an indentation showed the epiphyseal line. In rebuttal the plaintiff showed by a medical witness that on the preceding day the latter was requested by the plaintiff's attorneys to take an *x*-ray photograph of a pair of normal wrists and that he had done so. The plaintiff then offered the *x*-ray photograph so taken for the purpose: (1) Of rebutting the defendant's evidence that the radii shown by the *x*-ray plates in evidence were normal; (2) of rebutting the testimony given in defense that the epiphyseal line appeared on the *x*-ray plates (in the case) of the radii, and (3) of showing normal radii, the condition and appearance of normal radii, to rebut the testimony of the defendant's witnesses that the radii shown by the *x*-ray plates in evidence showed normal conditions. It was held that this evidence was properly excluded for two reasons, if not more: (a) The receipt of the photograph offered would have raised many collateral and immaterial issues, such as whether the wrists there represented were in fact normal, whether the age of the person whose wrists were shown was such as to make his or her wrists fairly and reasonably similar to the normal wrists of the plaintiff, whether the photograph was taken in a manner fairly to represent the wrists of the person in all respects material to the purpose for which it was offered, etc. On all the questions so raised evidence would have been admissible, and thereby numerous immaterial collateral issues would follow bearing no relevancy to any question before the trial court. (b) The *x*-ray photograph offered was the result of an experiment entirely outside the case. The photograph was held to be admissible only in the discretion of the trial court, and the wisdom of its exclusion was obvious from the immaterial and collateral issues likely to arise if it were admitted.—Davis vs. Dunn, Vermont Supreme Court, 98 Atl. 81.

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THE MEDICAL ASPECT OF UNIVERSAL MILITARY EDUCATION.

IN all the great amount of discussion which has been going on about "preparedness" and compulsory military service or education, the arguments have largely centered around the legality of the procedure, its military necessity or advisability, and the possibility of the development of a militaristic party which would endeavor to force the country into war. Advantages which would accrue to the individual in the way of physical and mental development have been mentioned but not, we think, with sufficient emphasis.

While this country may excel in a competition of trained athletes or in certain kinds of mental ingenuity or shrewdness it is certain that the average man is far from being a picture of perfect physical development, and the lack of self-control and the extreme contempt for the law of the American have become proverbial. A casual inspection of the crowds on the streets of any one of our large cities will reveal pale, undernourished, and poorly developed youths and pasty, flabby men in large numbers, and will convince the open-minded observer of the desirability for the individual of some form of regular physical training. That the country-bred, moreover, are not greatly superior to those brought up in the city has been the experience of most military men who have had occasion to handle large numbers of troops.

In addition to this physical handicap the country is cursed with the presence of a very large group who, confusing liberty and license, confess allegiance to no constituted authority. These individuals demand from society every protection and the opportunity for material gain but deny the right of that society to exact any return. It is particularly in respect to these points that Dr. Lucien Howe develops his discussion in his recent book on Universal Military Education and Service.* He points out the position of the United States in world politics and our need for adequate preparation, and outlines briefly the Swiss and Australian systems and their applicability to this country.

The many advantages of universal military education to the nation are so evident as to need little discussion and he devotes most of his attention to the development of his chief argument, the advantages of such education to the individual. Education should include the development of the pupil in at least four different directions—health, knowledge, character, and efficiency. He points out that of twenty million pupils in this country about three-fourths have physical defects sufficiently grave to require attention and seriously to threaten health. Partly as a result of this poor start the standard of health of the average American is so low that over 50 per cent. of the applicants for the Army and Navy were rejected for physical disabilities in 1914 and in the following year less than 10 per cent. of the applicants for the Marine Corps were found to be physically fit.

Most certainly any system of military training would necessarily include gymnastic exercises and these regularly performed and accompanied by the regular routine physical examinations would inevitably rapidly raise the standard of physical health of our youth. In the matter of knowledge America does not rank so low as she does in military strength yet there is still room for improvement. In all countries the percentage of illiterates is much less in the army than in the civilian population and in Germany, the most militaristic nation of our time, there is but one illiterate for every 385 in the continental United States.

In its effects on character and efficiency a military training would have no less striking and important results. The lack of deference shown by the American boy to his elders is notorious and parallels his lack of self-restraint and self-sacrifice, qualities out of which character is developed. As logical consequences of our slackness in early training America stands high among the nations in intemperance, divorce, disobedience to law, and crime. The most sure way of correcting these fundamental faults in our youth is shown to be some form of military discipline. Universal military training would also provide trade instruction for the youth and thus increase his efficiency as a unit in the country's productive strength. The girl also would receive her share in instruction and would be better prepared to share in governmental responsibilities and in the education of the young. The attitude of the so-called "pacifists" and their apparent number afford strong support to the disgraceful accusation that many Americans rank low in loyalty and in readiness to sacrifice personal interest to the good of the country.

The one great lesson taught by military service is the one great lesson most needed by the citizens of this country: *obedience*. The attitude of the "anti-preparedness" adherents is strongly remindful of that of the antivivisectionists who are always perfectly ready to receive the benefit of any medical progress which is founded directly on animal experimentation but who, from either a silly sentimentality or dense ignorance, deny the right of the profession to use the means by which such knowledge is obtained. It is a sad commentary on the condition of things in the United States that such a book as that of Howe's should be necessary. It is a hopeful sign for the future that such a book has been produced.

*Universal Military Education and Service; the Swiss System for the United States, by Lucien Howe, F.R.S.M. Price, $1 net. G. P. Putnam's Sons. New York and London. 1916.

THE CARE OF RURAL SCHOOL CHILDREN.

THERE is little doubt that in every country physical efficiency is rare, this is to say, that in the large majority of individuals there exist defects which subtract considerably from the ideal of perfection. Of course, no one is physically perfect and most of us are far from that state. That physical imperfections abound is continually being demonstrated by the rejections for army service in all countries. Before the outbreak of war in Europe the rejections in Great Britain were numerous and in this country a similar state of affairs prevails. Dr. Taliaferro Clark, surgeon, U. S. Public Health Service, writing in Public Health Reports, Oct. 6, 1916, states that an officer connected with the recruiting station of the U. S. Marine Corps, New York City, has been quoted by George J. Fisher in "Physical Preparedness" to the effect that only 316 of 11,012 applicants for enlistment in this branch of the public service were up to the required physical standard.

The particular point, however, that Clark makes, is that it has been noted by observers in other countries that, in the case of volunteers for military service, rejections because of physical unfitness are in direct relation to the number of years spent in the school. The writer therefore, seems inclined to think that there may be some truth in the hypothesis that the schools may be responsible in a measure for such lack of development. He further holds that this view is all the more evident when it is recalled that the greatest number of rejections for enlistment on account of physical defects were due to abnormalities of physical development, defective vision and hearing, heart disease, faulty teeth, and postural defects. These defects are to a great extent preventable, or at least controllable, depending upon their prompt recognition during childhood, the period in which so many of them have their origin.

In discussing the condition of school children in one county in Indiana, in which investigations were undertaken by the Public Health Service with regard to physical averages, it is pointed out that, compared with the records of children in most urban centers as tabulated in "A Manual of Diseases of Infants and Children," by John Ruhräh, the boys of this county were below the average height from the age of 6 to 17. The girls were under mean height from the age of 12 to 17. The deficiency ranged from 0.7 to 2.3 per cent. among boys and from 0.2 to 2.8 per cent. among girls. The deficiency of weight from the age of 7 to 15 varied from 0.2 to 5.9 per cent. in boys, and from the age of 7 to 16 in girls 0.6 to 8.9 per cent. Unsuitable food was found to be the chief cause of this backward physical development. Moreover, no adequate facilities for play were provided and no systematic physical exercises were practised in any of the rural schools of this county.

Ear troubles, impaired vision, and defective teeth were found to be very prevalent. With regard to impaired vision faulty illumination is held to be largely responsible for the condition and in addition to this, a number of rural school children were badly in need of glasses and had never been refracted. It goes without saying, that the rural school child is greatly in need of instruction in the care of the teeth and in need of adequate dental service. It was shown that no fewer than 49.3 per cent. of the children of this county had defective teeth and only 16.9 per cent. had dental care. Furthermore, 14.4 per cent. of these children never used a toothbrush, 58.2 per cent. used one occasionally and only 27.4 per cent. used one daily.

Sufficient evidence has been already gathered to indicate that the school is a factor in the spread of communicable diseases in rural communities, due largely to the fact that the children of different families are rarely in intimate contact except at school. The question then arises how are all these conditions to be remedied and according to Clark the answer is: (1) By abolishing school districts and establishing a country unit of school administration; (2) by establishing an efficient system of health supervision of school children; (3) by consolidating rural schools.

When it is borne in mind that rural school children in this country constitute 60.7 per cent. of the total school enrollment of the country, the vast importance of properly caring for their health and of endeavoring so to bring them up that both mentally and physically they may be able thoroughly to fulfill their duties and responsibilities is too obvious to require elaboration. In order to attain this object their health supervision should be more strict by far than it is at present. This Indiana county presumably offers a fair example of what school children are in an agricultural district and the investigations of the Public Health Service plainly show that reforms should be promptly introduced if a decent standard of health among the school children of the country is to be hoped for. Children of a school age spend more of their waking day at school than at home and it behooves the authorities to insist that every effort should be made to establish and maintain their physical and mental health.

THE DIAGNOSIS OF RENAL TUBERCULOSIS.

GUINEA-PIG inoculation has long been accepted as the most reliable method for the diagnosis of tuberculosis, not only of the kidney, but also in other parts of the body, such as the pleura, peritoneum, etc. The method has the great advantage of being almost absolutely sure in its results, but has the disadvantage of requiring a long time before the results of the test can be obtained. Several attempts have been made to shorten this time without weakening the value of the test. The French advocated injecting the material into the lactating breast, which was said to be especially susceptible to infection with the tubercle bacillus. Three years ago Keene and Laird injected the material into the thigh and traumatised the inguinal glands, both before and after the injection. They claimed to be able to recognize tuberculosis of the traumatized glands on microscopical examination ten days after the injection. But lactating pigs are not always at hand, and traumatising inguinal nodes of thirty or forty pigs every day, as would be demanded in a large hospital laboratory, would use up a deal of time.

To shorten time and assure results, Morton has recommended the use of the *x*-ray. He bases his work on the demonstration by Murphy and Ellis that white mice which have been exposed to *x*-rays are made markedly more susceptible to bovine tuberculosis than normal animals. This increased susceptibility was apparently related to a destruction of the lymphoid tissue. Morton first ascertained (*Jour. Exper. Med.*, 1916, xxiv, 419) that guinea-pigs could tolerate a large amount of *x*-rays without apparent injury to their health, and that one massive dose would reduce the total white cell count by about one-half. This reduction affected mainly the lymphoid cells and was apparent for a period of more than one week. His method was to radiate the animal, at the time of the inoculation, for ten minutes with a Coolidge tube at 12 inches, with 5 milliamperes and 8½ inches of spark. From one to two cubic centimeters of urine was injected intraperitoneally and the animals were killed and examined after ten days. His results were excellent in a small series of animals. He lost but one out of ten from a mixed streptococcus infection, and all the control animals gave negative results.

The only objection to the method is that susceptibility is increased to other infections beside the tuberculous, and in those cases in which a mixed infection is present it would probably be advisable to inoculate two animals, one treated and one not, so as to avoid the loss of the animal. The method could, of course, be extended for use with fluid from the chest, abdomen, and spinal canal, and if continued favorable results were obtained, would effect great saving, not only in the feeding of animals, but also in the stay of the patients in the hospital.

Intraspinal Injections of Tuberculin in Meningeal Tuberculosis.

The high mortality of tuberculous meningitis is warrant enough for any effort to reduce it. The number of recoveries from this affection is very small; some years ago the few alleged recoveries were discredited, the diagnoses having been purely clinical, but with the introduction of lumbar puncture the possibility of cure was demonstrated. The intraspinal injection of tuberculin as a form of local therapy is of quite recent date, Bacigalupo, one of the first to test the remedy, having cured two patients, one with three and the other with two injections. Laforo, in *La Pediatria Española*, says he failed to cure two cases treated, but obtained in one a markedly favorable response to the remedy. A girl aged 9, with evidences of the disease, received lumbar puncture without incidental relief. The fluid was clear, and came out without much pressure. There was an intense lymphocytosis. An injection of tuberculin (Koch's old tuberculin) was made. The symptoms remained severe for some hours. A second puncture gave exit to much fluid, under high pressure, with prompt improvement throughout, the temperature becoming normal. The following day another decompressive puncture relieved the symptoms, which had reappeared. The child, however, slowly succumbed to the disease. The second child was 18 months old, and had been ill 20 days when the first puncture was made. Withdrawal of 10 c.c. of fluid gave some relief. An injection of tuberculin caused a slight reaction and was followed by striking amelioration. For two days recovery seemed to be taking place, the child beginning to take nourishment with avidity. It was thought best to make another puncture and mix the fluid with tuberculin. An intense reaction followed, with headache, vomiting, strabismus, convulsions, and death two days later. The treatment went wrong because the puncture was mixed with blood, which clotted, and prevented admixture with tuberculin. In his next attempt the author, if he can obtain a clear punctate, will proceed to mix it with tuberculin, thereby securing a physiological serum in imitation of the Swift-Ellis salvarsanized serum. A solution of tuberculin in physiological serum, 1 to 100, is used, and from this is formed another of 1 to 10,000. Of this 1 c.c. is mixed with the punctate (10 or 15 c.c.), and the whole is slowly thrown into the spinal canal. In the favorable results on record, headache, vomiting, etc., disappear.

The Fourth Disease in Italy.

The Italian literature of the so-called Filatow-Dukes disease appears to be very light, for in a representative bibliography of important reference works we see nothing in that language. In fact, we obtain the impression that the disease is not cumulative in southern Europe. However, Donetti of Lucca reports 15 cases in *La Riforma Medica* for August 21, and his conclusions evidently concur with those of the classic writers on the subject. It is a clinical entity, a children's disease of the general infectious type, with an incubation period of from two to eight days in most cases. It begins as an angina, simple or follicular, with reaction in the proper lymphnodes. Fever is due to the anginous component. The eruption comes out during a period of four or five days, beginning about forty-eight hours after the first evidence of disease. At first there is a general rash, but small papules soon replace it, and appear to characterize the disease. The fever subsides long before the completion of the outbreak. There is a rapid period of desquamation, the epidermis of the digits coming away in flakes. Itching is usually present. Complications may be renal or pulmonary. Enlarged cervical and submaxillary lymphnodes may persist for a long time. Not infrequently the general health suffers. The incidence is epidemic throughout.

A Cynic's View of Syphilis.

Nothing is safe from the ridicule of a witty Frenchman, and Voltaire was the wittiest of them all. Naturally, the great problems of life, death, and disease were, with him, the material from which epigrams could be made. In those days, syphilis held sway untroubled by premonitions of the days of salvarsan, and its ravages were frightful. Thus, in *Candide*, the author tells of the horrible havoc played with the features of Pangloss by the disease, and its failure to cure his optimism. He makes his characters tell of the prevalence of lues among the soldiers, two-thirds of whom, he says, were affected. By means of the military this affliction was carried into country villages where, hitherto, love-making had been as free and unrestrained as among the birds of the air. To combat its encroachments, mercury was used lavishly, until the treatment became only the exchange of one form of poisoning for another. The experience of the

present war is again illustrative of the way in which the disease is spread by soldiers, showing that often the life of the soldier, whatever may be its value in inculcating habits of discipline while he is on duty, tends to relaxation and license in his leisure moments.

A Discussion on Health Insurance.

In writing on health insurance a few weeks ago, we expressed the hope that every medical society in the State would set aside at least one evening for the discussion of this important subject, so that when the Legislature takes up the matter, as it must at the coming session, the medical profession may be informed regarding it and be able to cooperate intelligently with the lawmakers in formulating a fair and workable measure. We are therefore glad to learn that a public meeting has been called by the Committee on Medical Economics of the Medical Society of the State of New York, to be held at the Academy of Medicine on Thursday evening, November 23, to discuss the entire subject of compulsory health insurance. The topics announced are the following: "Introductory Remarks," by the Chairman, Dr. Samuel J. Kopetzky; "Relations to Preventive Medicine," by B. S. Warren, M.D., U. S. Public Health Service; "The Labor Man's Point of View," by Mr. Hugh Frayne, American Federation of Labor, National Civic Federation; "The General Medical Practitioner's Point of View," by Eden V. Delphey, M.D.; and "The Advantages of Compulsory Health Insurance," by Mr. Miles M. Dawson, Insurance Expert. Now that the State Society has set the example, doubtless the county societies will follow suit, and then when the measure is introduced at Albany it will more likely be in the form of a wise and just law and one that will be acceptable to physicians and the public alike.

News of the Week

Foundation of a Medical School in the University of Chicago.—The General Education Board and the Rockefeller Foundation have announced the appropriation of $2,000,000 for the establishment of a medical department in the University of Chicago. It is understood that the university will set aside at least an equal sum for the same purpose, will give a site on the Midway, valued at $500,000, and will raise a further sum of $3,300,000, and that, in addition, the present plant and equipment of the Presbyterian Hospital, Chicago, valued at $3,000,000, will be placed under the control of the medical department of the university. At present, the University of Chicago has no medical school of its own, though it has an agreement with the Rush Medical College. The new school, however, will be entirely independent of the latter, which it is expected will go out of existence as soon as the new department is ready. It will thus be possible to organize the medical school from the beginning along the most recent developments in medical education, and it is planned to include in the Faculty and teaching force only full time men, as regards both laboratory workers and clinical teachers. Laboratory buildings will be provided and also a university hospital. The latter, under complete control of the university, with laboratories and an out-patient department, will offer ample facilities for clinical teaching. The restriction of the members of the teaching force to full-time workers is in line with action already taken at Johns Hopkins Medical School and at the Medical Department of Washington University, St. Louis. The new school is expected to provide accommodations for 300 students, all of whom will be required to have an academic degree before entering, and it will also have facilities for postgraduate work.

Prevention and Relief of Heart Disease.—The Board of Governors of the Committee for the Prevention and Relief of Heart Disease has developed plans for an active campaign to arouse public interest in the important problems with which it is dealing, and has placed the work in the hands of special committees dealing with various phases of the problem. The Committee on Relief has outlined a program which covers, first, occupation for cardiacs, both children and adults; second, the establishment of classes for cardiacs, when possible in connection with hospitals, with duties divided into medical and social; third, the obtaining of more opportunities for cardiac patients in convalescent institutions; and, fourth, provision for permanent institutional care. The committee's program is of especial interest in connection with the plans now being laid for the after care of poliomyelitis patients, the two problems presenting many of the same aspects, though the care of cardiac patients is really the more important of the two. It is estimated that there are in the city about 20,000 children alone suffering from heart disease and requiring systematic care. In a number of ways the two groups need similar provision for relief; both should be under constant social and medical supervision; the members of both should be fitted for occupations suited to their infirmity; some of the children in both groups need to be taken to school in conveyances. It would seem, therefore, that a way might be found to coordinate the work of existing agencies to the fullest extent. The committee on relief appeals for funds to carry on its work.

Gifts to Charities.—By the will of the late Mrs. Caroline A. Wilson of New York, the Presbyterian Hospital of this city receives a bequest of $25,000.

New York Physicians' Association.—At a meeting of this Association to be held Thursday, Nov. 23, 1916, at 8.30 P. M., Prof. Alfred Stengel of the University of Pennsylvania will present a communication on "Practical Differentiation Between the Various Types of Chronic Nephritis."

St. Joseph's Hospital, St. Francis' Hospital, the Home for the Blind, and St. Rose's Home for Incurable Cancer, New York, receive bequests of $500 each by the will of the late Catherine E. Brown of Brooklyn.

A bequest of $15,000 is made to the House of Mercy Hospital, Pittsfield, Mass., by the will of the late Mrs. Louise F. Crane of Lenox, Mass.

Personals.—Dr. William T. Councilman of Harvard University and Dr. Robert A. Lambert of Columbia University will accompany the expedition headed by Dr. Alexander Hamilton Rice, which will sail shortly for South America. The members of the expedition will make a topographical survey of portions of the Amazon Valley and a study of the diseases of natives in those regions.

New Medical Society.—At a convention held in Pensacola, Fla., on October 27, the West Florida and South Alabama Medical Society was formed, the following officers being elected: *President*, Dr. Louis de M. Blocker, Pensacola; *First Vice-President*, Dr. M. S. Davie, Dothan, Ala.; *Second Vice-President*, Dr. E. Porter Webb, Laurelhill, Fla.; *Secretary-Treasurer*, Dr. Fritz A. Brink, Pensacola.

Obituary Notes.—Dr. William Judkins Conklin of Dayton, Ohio, a graduate of the Medical College of Ohio, Cincinnati, in 1868, and a member of the Ohio State Medical Association and the Montgomery County Medical Society, died at his home on October 31, after an illness of several months, aged 72 years. Dr. Conklin was formerly a member of the Starling Medical College, Columbus, Ohio, and since his removal to Dayton had been active in many ways in the city's life, serving in the Board of Education and in the Library Board, of which he was for eighteen years president.

Dr. Frank S. Stirling of Lewiston, Idaho, a graduate of Cooper Medical College, San Francisco, in 1864, and a member of the Medical Society of the State of California and the Nez Perce County Medical Society, died on October 15. Dr. Stirling was formerly physician and surgeon for the Pacific Mail Company, and served as surgeon in the United States Army during the Modoc war.

Dr. Clinton E. Sapp of South Omaha, Neb., a graduate of the Medical College of Ohio, Cincinnati, in 1875, died at the south Omaha Hospital on October 12, aged 64 years.

Dr. James Bennett Gould of Minneapolis, Minn., a graduate of Jefferson Medical College of Philadelphia, in 1886, and a member of the American Medical Association, the Minnesota State Medical Association and the Hennepin County Medical Society, died from apoplexy on October 17, aged 56 years.

Dr. John P. Moore of Astoria, L. I., a graduate of the University of Vermont, College of Medicine, Burlington, in 1894, physician to St. John's Hospital, Brooklyn, and a member of the Associated Physicians of Long Island, and the Greater New York Medical Association, died on October 24, aged 50 years.

Dr. Frank Duane Maine of Springfield, Mass., a graduate of New York Homeopathic Medical College and Flower Hospital, New York, in 1872, died suddenly on October 29, aged 77 years. Dr. Maine was a veteran of the Civil War.

Dr. Franklin S. Jewett of Providence, R. I., a graduate of Hahnemann Medical College and Hospital of Philadelphia in 1894, died at his home on October 24, after a long illness, aged 59 years.

Dr. Edward Sydney McKee of Cincinnati, Ohio, a graduate of the Medical College of Ohio, Cincinnati, in 1881, and a member of the Ohio State Medical Association, the Hamilton County Medical Society, and the Cincinnati Obstetrical Society, died from malarial fever at Quito, Ecuador, on October 20, aged 58 years.

Dr. Jacob M. Dennis of Hopkinsville, Ky., a graduate of Jefferson Medical College of Philadelphia in 1860, died from paralysis recently, at the home of his son, aged 82 years.

Dr. Charles William Penn Brock of Richmond, Va., a graduate of the Medical College of Virginia, Richmond, in 1859, and a member of the Medical Society of Virginia and the Henrico County Medical Society, died at his home on October 19, aged 80 years. Dr. Brock was a veteran of the Confederate Army.

Dr. D. L. Howell of Big Rock, Va., a graduate of the Medical Department of Vanderbilt University, Nashville, in 1877, died at his home recently, aged 59 years.

Dr. James M. Coyle of Nashville, Tenn., a graduate of the Medical Department of the University of Nashville, died at his home on October 21, aged 66 years.

Correspondence.

CALCIUM DEFICIENCY IN NEPHRITIS.

To the Editor of the Medical Record:

Sir:—To the question, "Is calcium deficiency incidental or an essential factor in nephritis?" I can now answer positively in the affirmative. The proof is to be found in an examination of the blood, and, of course, this puts the treatment of the disease upon an entirely new basis. Thus, it will now be possible to determine with exactness the defective metabolism in this disorder, since it is not a difficult task for a chemist to make this test. This information was brought to my attention by Dr. P. B. Hawk, professor of physiological chemistry in Jefferson Medical College, who has been studying calcium metabolism during the past few years, and he has advised me that the same holds true in respect to diabetes mellitus. Such being the case, it follows that rheumatism, so-called neurasthenia, and a long list of chronic ailments fall into the same category, confirming my clinical evidence relating to the deleterious effects of acid excess.

John Aulde, M.D.

1305 Arch Street, Philadelphia.

A DISCLAIMER.

To the Editor of the Medical Record:

Sir:—During the progress of the Anderson trial in Brooklyn I was reported in the newspapers as having said that the case was not one of anterior poliomyelitis. I endeavored in vain to obtain a retraction of this statement both from the reporters and the editors responsible for it. I would like to have published the statement that at no time did I give to anyone, not even to counsel, my opinion of the case until it was given to the court while I was on the stand. John P. Davin, M.D.

117 West Seventy-sixth Street, New York.

OUR LONDON LETTER

(From Our Regular Correspondent.)

ROYAL COLLEGE OF PHYSICIANS—HARVEIAN ORATION—DONATION OF £10,000 FOR RESEARCH—CAN VENEREAL DISEASES BE STAMPED OUT?

London, October 21, 1916.

The Harveian oration at the Royal College of Physicians was delivered on Wednesday by Sir Thomas Barlow. The chair was occupied by Dr. Frederic Taylor, president, and there was a good attendance of the Fellows. Among the guests was the Archbishop of Canterbury. The orator gave a summary of the life of Harvey and pointed out that he was carrying on a tradition that had arisen from that great physician, who was one of the principal benefactors as well as ornaments of the college. Harvey's discovery of the circulation of the blood was made during a period of great revival of learning, when the creation and dissemination of England's finest literature was in progress. Astrology was as widely accepted for science as astronomy, but physics was not then a science at all. Chemistry was dominated by unreliable hypotheses or mere guesses. Harvey's *magnum opus* was for a long while during his lifetime linked with the College of Physicians. For 12 years he expounded his doctrine and met with only one adverse critic among the Fellows. He was not only a *doctor*

medicinæ but a *doctor medicorum*, and in paying homage to him to-day the Fellows were only reviving the great respect and homage that had been paid to him by the college during his lifetime. He several times gave expression to his belief in God and the Christian faith. He displayed intense love for his family and friends, and willingness to take trouble on behalf of the students of his time. It behooved Fellows to seek out the secrets of nature as he had done and to continue in mutual love and admiration among themselves.

The orator announced that in June last the sum of £10,000 in $2\frac{1}{2}$ per cent. annuities had been offered by Mrs. Eliza Streatfield for the purposes of endowment and research. The gift had been gratefully accepted by the college.

A morning paper has been discussing the possibility of stamping out venereal diseases, thinking that the record of the president of the local Government Board in respect to rabies a reason for expecting from him that active administrative action and dogged perseverance which he displayed in that case. As hydrophobia is produced in man only by direct contagion from animals—most frequently from the bite of a rabid dog, though occasionally by handling contaminated material—so syphilis and gonorrhea are spread only by inoculation of their specific poisons from person to person. That is the rule, but exceptionally the infection may be carried by contaminated articles, as, for instance, a pipe or a towel. Hydrophobia is not a common disease in England—never has been. The highest number of deaths from it in any one year since 1880 was 60—in 1885. Since 1902 no death has been recorded from this disease, if we except two doubtfully ascribed to it in 1910 and 1911. This result has been attained by means of the regulations enforced by Mr. Walter Long, who prevented the landing in this country of dogs from other countries until after a period of quarantine exceeding the period of incubation of rabies, and who in spite of the opposition of many dog owners, especially women, insisted on the continuance of his muzzling order until not a single case of rabies remained in the country. This remarkable success may encourage the hope of similar results in other directions. But the detention of travelers until they can prove themselves free from venereal disease is obviously not practicable. Yet if all the forces of prevention and treatment can be brought to bear, some success in controlling the spread may be attained. Among the chief measures requiring attention are those for securing the early recognition of these diseases and their treatment under the best modern conditions. It has been suggested that confidential notification to the medical officer of health might be tried, but even if possible the practical drawbacks to this would prevent its success and the attempt to introduce it would drive many patients into the arms of the quacks. Early treatment is so important that it is of the first importance to get patients to submit themselves to their attendant on the first symptom, and to carry on his treatment until he pronounces them recovered, and still further to watch for and refer to him every suspicious appearance of a return. It is by persons who have neglected treatment that these diseases are chiefly spread, and it is persons who do not recognize the significance of early and mild symptoms who later fall victims to urinary diseases, or to paralysis, or insanity, or who are responsible for bringing into the world infected children.

CANADIAN LETTER.

(From our Special Correspondent)

CANADIAN HOSPITALS COMMISSION—THE CONVALESCENT ARMY HOSPITAL IN COLLEGE STREET, TORONTO—OPENING OF A MILITARY HOSPITAL IN TORONTO—REORGANIZATION OF CANADIAN ARMY MEDICAL SERVICE—PROHIBITION IN ONTARIO—ANNUAL MEETING OF THE CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS—ABSENCE OF SMALLPOX IN ONTARIO AND INCREASE OF POLIOMYELITIS—DR. JOHN FERGUSON MADE PRESIDENT OF TORONTO ACADEMY OF MEDICINE—OBITUARY.

TORONTO, Oct. 18, 1916.

THE Canadian Hospitals Commission was formed by order-in-Council, dated June 30, 1915, for the purpose of providing convalescent homes and medical treatment for returned invalided and wounded members of the Canadian Expeditionary Force. It was decided later that the powers of the commission should be extended to cover the matter of the vocational re-education of those who through their disability might be unable to follow their previous occupations; also that the necessary machinery in the form of Provincial Commissions and local committees should be installed in order to provide employment, not only for disabled men, but at the close of the war, for the able-bodied men as well. As mentioned in a previous letter there is a large number of these convalescent hospitals and homes in various parts of Canada and the large one on College Street, Toronto, was referred to particularly and it was stated that further details would be given concerning it. The hospital is situated in a large old-fashioned roomy building in a central part of the city, placed in spacious grounds. It will accommodate more than one hundred inmates and when I paid a visit the other day appeared to be filled almost to its capacity.

The majority of the men were suffering from injuries of different kinds received at the front. A few were recovering or partially recovering from the effects of gas poisoning. A goodly proportion were suffering from shock to the nervous system in addition to injuries. The most depressed men among the inmates (as a rule, they were in excellent spirits) were those who had been poisoned by gas. It appears to have a peculiarly lowering effect and, of course, exerts the greater part of its evil effects upon the respiratory organs.

The equipment of this hospital for providing the patients with the means of mechanical treatment is singularly complete. All the apparatus was given privately and it is largely due to the efforts of Mr. F. Davies that so splendid an equipment was got together. Hydrotherapy is practised considerably by the agency of circular douches, needle douches, and rain douches for the relief of nerve troubles and rheumatism. Continuous leg baths are employed for treatment of stiffness of the joints and similar methods are used for the treatment of stiffness of the arms. Full bath bodily treatment is utilized for nervous cases and light mental cases. There is an electrical limb baker for joint stiffness; also an electric cabinet for the treatment of neuralgia, rheumatism, and neuritis; an electrical cradle for applying heat locally to feet, hands, or, in fact, to any part of the body where such treatment is thought to be required; an electrical wall plate by which faradic and galvanic currents in all forms can be applied; high frequency cabinet with full electrodes; a lamp to be used for the sun ray treat-

ment, and lastly a complete equipment of Zander apparatus for rotation and resistant movements. It goes without saying that massage is largely used in connection with one or another of the hydrotherapeutic electrical or mechanical modes of treatment. It remains to be said that the results, on the whole, have been eminently satisfactory and that many men who without these forms of therapeutic aid might have been seriously crippled are relatively sound and supple in limb.

Another military hospital was opened in Toronto a few days ago. The old Knox College, a fine spacious building on College Street, has been provided by the Ontario Provincial Government for the treatment and care of returned wounded Canadian soldiers. Numerous organizations, including the Ladies' Voluntary Aid Society of Toronto, the Masonic Order, the Orange Order, the St. Andrew's Society, the Daughters of the Empire, provided furnishings and comforts for the soldiers. At the opening ceremony Sir James Longheed, chairman of the Military Hospitals Commission, in his speech gave a detailed account of what the Government was doing and prepared to do for the returned soldier. He pointed out that in Canada 6000 men had already passed through the convalescent homes. These figures give some idea of the work being carried on and also of the work which would have to be done before the war is over.

In my former letter I called attention to the fact that Col. Herbert Bruce of Toronto, who has been appointed Inspector General of the Oversea Canadian hospitals, had criticised some features of the existing system of the Canadian Hospitals in Great Britain. The main stumbling block to Colonel Bruce and to the committee composed of several of the leading army medical corps officers from Canada to assist him in his investigations, was the mixing of the Canadian wounded and the other British wounded. Colonel Bruce and the committee have given it as their opinion that the Canadian wounded should be segregated in Canadian hospitals. Sir Sam Hughes, the Canadian Minister of Militia, is said to be in accord with these views. It is stated that in the report submitted by Colonel Bruce a complete reorganization of the Canadian Medical Service is recommended, with the suggestion that the medical arrangements in Canada, in Great Britain and overseas be co-ordinated. Among other recommendations are that Canadian casualties be as far as is possible treated in Canadian hospitals and that the care of Canadian sick and wounded be the first duty of the Canadian Army Medical Corps, that the Canadian hospitals be concentrated and voluntary hospitals for Canadians be abolished, hospitals now conducted or equipped by the Red Cross being taken over by the Medical Service for administration, that incapacitated Canadian soldiers be returned to Canada as soon as they are fit to travel, for further medical treatment and that the three Canadian hospitals now at Salonica be returned to England immediately if they can be spared by the Imperial authorities. Other recommendations affecting arrangements in Canada are made. Among these are, that immediate steps be taken to provide hospitals with 1000 beds each in Halifax, Montreal, Winnipeg, and Vancouver, with a smaller one in Ottawa, and that these provide accommodation for a limited number of officers; that for the purpose of assisting in the organization of these hospitals a number of Canadian medical officers who have had experience at the front be detailed for duty in Canada; that all ranks before leaving Canada be examined by an independent medical board, a number of these boards to be established in various parts of Canada, this to be done for the weeding out of the unfit; that no medical units be organized in Canada in future for oversea duties; that the officers of the Canadian Army Medical Corps in future be thoroughly trained at well-equipped depots to be established in Canada. It is understood that Colonel Bruce makes the statement that both in France and in England Canadian soldiers have been begging to be taken to Canadian hospitals and that no effective measures have been taken to bring this about, while Canadian medical officers who have gone to England at the sacrifice of their practise in order to care for Canadian soldiers, rarely have the opportunity for treating a Canadian patient. It is chiefly for this reason that the concentration of Canadian hospitals is suggested. It is believed that Colonel Bruce has been authorized by Sir Sam Hughes to carry out the reorganization of the Medical Service immediately according to the plan which he has proposed in his report.

It would be ill-becoming in a letter to a medical journal not to refer to prohibition in Ontario. It is now impossible to obtain alcohol in saloons or stores anywhere in this large province. The results of the enforced abstinence are good. The step is a radical one but is decidedly in the interests of health.

The fifteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis was held in the Parliament Buildings, Quebec City, on Sept. 12 and 13. The meeting was successful from all points of view. Dr. Peter Bryce of Ottawa read an excellent paper entitled "Why Notification of Tuberculosis is Necessary." The following officers were elected: Lieutenant-Governor of Quebec, Sir Evariste Leblanc was elected as honorary vice-president. Hon. J. W. Daniels, M.D., of St. John, N. B., was re-elected president. Dr. Alfred Thompson of Yukon and Hon. R. Turner of Quebec were also made vice-presidents. Dr. George Porter of Toronto was re-elected secretary treasurer.

For the first time in more than twenty years the monthly health returns to the Ontario Board of Health contained not a single case of smallpox. A good deal of the credit for this very satisfactory state of affairs must be given to Dr. J. McCullough, the chief of the Provincial Board of Health, who has been ably assisted in his campaign against the disease by the health officers in all parts of the Province. But a few years ago the malady was one of the most serious as regards both virulence and prevalence in Ontario and it says much for the work of public health medical men that they have been able practically to extinguish the disease. Poliomyelitis, however, shows few signs of decreasing, the September returns reading 76 cases and 7 deaths or 32 cases more than in August. The records point to the fact that the cases are rather sporadic than epidemic in character, the 76 cases being scattered over eighteen counties.

Col. H. A. Bruce, who was president of the Toronto Academy of Medicine, has resigned, owing to the likelihood that he will be in Europe for a prolonged period. Dr. John Ferguson, vice-president and editor of the *Canada Lancet*, has been elected president, and Dr. D. J. Gibb Wishart, vice-president.

Capt. W. O. McCarthy, M.D., of the Second

Rhodesian Regiment, son of the late Dr. McCarthy of Barrie, Ontario, was killed in action on Aug. 22, in German East Africa, in his thirty-seventh year.

Drs. A. A. Macdonald, H. T. Machell and C. R. Sneath, all of Toronto, have each had a son killed recently in action.

Capt. Dougald B. Maclean, M.D., R.A.M.C., a graduate of University of Winnipeg of 1911, has been killed in action.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 2, 1916.

1. Relation of the Deep Cul-De-Sac to Prolapse of the Rectum and Uterus, and to Rectocele. Daniel Fiske Jones.
2. The Effect of Alcohol on the Rate of Discharge from the Stomach. L. T. Wright.
3. Blood Transfusion in the Great War. William Reid Morrison.
4. Undescended Testicle in Children. C. G. Mixter.
5. The Mechanism of the Protection Afforded by the Drainage of Prostatics as a Preliminary to Operation. Hugh Cabot and E. Granville Crabtree.

2. The Effect of Alcohol on the Rate of Discharge from the Stomach.—L. T. Wright has used the method first devised by Cannon in conducting these experiments. The work was done in the Laboratory of Physiology in the Harvard Medical School and the procedure in part was as follows: Medium sized cats, deprived of food for twenty-four hours, were fastened to a holder and fed through a stomach tube attached to a syringe, 25 cc. of mushy potato to which had been added 5 grams of bismuth subcarbonate. This amount of food causes the stomach in most cats to cast about the same shadow. Peristalsis and the rate of discharge in these animals were normal. The consistency of the food was uniform —the potato was mashed fine and softened by water and also alcohol. After being fed the animal was immediately released. *X*-ray observations of the gastric and intestinal shadows were made at the end of a half hour, an hour, and thereafter hourly until four hours after the feeding, and aggregate lengths of the shadows in the successive records were utilized to indicate the rate of gastric discharge. Wright divided his experiments, feeding six cats with potato-bismuth mixture without the alcohol, and another set of cats with the potato-bismuth-alcohol mixture. In the experiments with alcohol the commercial 95 per cent. alcohol was employed, and also a 37 per cent. alcohol diluted with distilled water. This gave two sets of experiments with the alcohol mixtures—6 c.c. of 37 per cent. and 5 c.c. of 95 per cent. The weaker mixture produced no striking symptoms, while the stronger mixture rapidly produced extreme intoxication. In the three sets of observations made the results obtained, representing in centimeters the aggregate length of the food-masses in the small intestine at the times above indicated, were as follows: In the first or normal set without alcohol the average amount at the end of a half-hour was 14 cm., at the end of two hours 39.5 cm., and at the end of four hours 20 cm.; in the second set in which the weaker dilution of alcohol was used the average at the end of a half-hour was 21 cm., at the end of two hours 52.5 cm., and at the end of four hours 36 cm.; in the third set in which the 95 per cent. alcohol was used the average at the end of a half-hour was 2 cm., at the end of two hours 24 cm., and at the end of four hours 39.5 cm. The first two sets of experiments, including the normal feeding of potato-bismuth mixture, and the same mixture containing the weaker alcohol dilution show an increase of the food in the intestines at the end of a half-hour, and a maximal number of centimeters of food at the end of two hours; but the increase at the end of a half-hour is 50 per cent. higher in the second set where the weaker alcohol dilution was used than the average figure for normal conditions, and the percentage obtained was higher at the end of an hour. This relatively small amount of alcohol, therefore, has distinctly an accelerating effect on the rate of gastric discharge and produces a higher maximum than the normal. The gastric peristaltic waves were deep and vigorous, and in most cases at the end of three hours no residue remained in the stomach. Contrary to these results in the third set of experiments where the 95 per cent. alcohol was used there was a slow initial discharge and a gradual rise to a maximum at the end of three or four hours. When evident the peristaltic waves were shallow and feeble and in some of the animals there was present at the end of four hours a considerable amount of food. The more rapid expulsion of gastric contents when the weaker alcohol was used may have been due to both a more vigorous peristalsis and a more prompt acidulation of the contents produced by a stimulation of the secretion of gastric juice by the weaker alcohol; while the retardation of the output when the stronger alcohol was employed was due probably to effects on both peristalsis and secretion. The profound influence of the stronger alcohol on the central nervous system indicates that the nerves of the gastric wall and possibly the muscle fibres were similarly affected. On the basis of an acid control of the pylorus as well as on the assumption of an intoxication of the gastric neuromusculature Wright states that it is easy to understand how the stronger alcohol mixed with the food produced so marked a slowing of gastric discharge as shown by these experiments.

4. Undescended Testicle in Children.—C. G. Mixter states that in the past three years thirty operations have been performed for the relief of this malformation at the Children's Hospital, Boston. In seven cases the condition was bilateral, in nine the right, and in seven the left side was affected. In nineteen it lay within the inguinal canal, and in eight cases it was just outside the external inguinal ring. In two cases atrophy was noticed at the time of operation. In one the testicle was enlarged and thought to be tuberculous with an accompanying tuberculous peritonitis. The age at operation ranged from twenty months to twelve years. The late result of operation was ascertained in twenty-six cases —four cases failed to report. The two cases in which atrophy was noted at operation showed no improvement in the development of the testicle, although the organ remained in the scrotum. Atrophy occurred in eight cases following operation. The age at operation had no bearing on the occurrence of atrophy. The one factor present in every instance where atrophy occurred was an interference with the spermatic circulation at operation. Mixter outlines his technique of operation in which he endeavors as often as possible to avoid sacrificing the spermatic vessels. He supplies statistics and concludes that a plastic operation by which the undescended testicle is placed in the scrotum without impairment to the circulation will be followed by normal growth. Where partial resection of the spermatic vessels is necessary atrophy may or may not ensue, while complete section of the spermatic vessels has been invariably followed by atrophy in a given series of cases, the blood supply from the artery of the vas being insufficient to nourish the developing testicle; this operation should be resorted to in children only under exceptional circumstances.

5. The Mechanism of the Protection Afforded by the Drainage of Prostatics as a Preliminary to Operation.—Hugh Cabot and E. Granville Crabtree present a consideration of the production of immunity in these cases in which drainage before operation has been an

important factor in reducing the mortality. Drainage as a preliminary treatment is most essential in the class of cases with the largely over-distended bladder, sometimes stretched to the point of overflow, but in whom infection has not yet occurred. The extremes are represented by the over-distended uninfected bladder and the thoroughly infected but regularly emptied bladder enjoying a catheter life. The benefits accruing from drainage in these cases appear to be the result of two factors: 1. Relief of the so-called "back-pressure," with the equalization of the kidney circulation, and 2. Infection which is now generally regarded as a pyelonephritis. Phthalein test was employed for the purpose of studying the changes in kidney function. Three conditions in these cases operate to depress kidney function at substantially the same time, namely, decompression congestion, operation, and pyelonephritis. Drainage has had the effect in point of time of placing pyelonephritis second, and operation, if necessary, third. Cabot and Crabtree have especially studied the nature of the pyelonephritis—commonly called pyelitis—and its effect on function, and from their studies have concluded that this condition is practically always produced by the colon bacillus, and that it is an excretory type of infection in that the lesion occurs in the attempt by the kidney to get rid of colon bacilli circulating in the blood. Blood cultures in these patients with prostatic obstruction on constant drainage are positive for colon bacillus in a proportion of cases about equal to that occurring in typhoid fever, and positive cultures are much more likely to be obtained when the blood is taken at the onset of the attack, and negative when taken at a subsequent period. Both the bladder and the urethra may be sources of infection, and irritability of the prostate is often observed at the onset of kidney infection. Pyelonephritis in their opinion is the most important avoidable incident of the preliminary drainage in cases of prostatic obstruction, and decompression is rarely of first importance in its effect upon the kidney; but the infection deserves the most weighty consideration and the chief benefit resulting from preliminary drainage is the immunity to pyelonephritis as a complication of the operation, which immunity is conveyed by this condition resulting from drainage, giving the patient a security which it has not been possible to obtain in another way. For the past six months Cabot and Crabtree have been endeavoring to produce an artificial immunity in these cases by means of vaccination with tho colon bacillus, and they have been able in so far as agglutination can be regarded as a measure of immunity to produce it in their patients. If this infection can be established by the production of artificial immunity, a considerable advance will have been made toward eliminating an important factor in the mortality of operative procedures for the relief of prostatic obstruction.

New York Medical Journal.

November 4, 1916.

1. And the Patient Is Left Out. Robert T. Morris.
2. Impotence in the Male. Thomas C. Stellwagen.
3. Chronic Appendicitis and Chronic Intestinal Toxemia. G. Reese Satterlee.
4. Chronic Gonorrhea in the Male. Joseph Kaufman.
5. The Physics of the High Frequency Current. Albert C. Geyser.
6. Primary Syphilis of the Rectum. W. E. Jost and R. B. H. Gradwohl.
7. The Oral Administration of Adrenalin. Henry R. Harrower.
8. Anesthesia Reviewed (Concluded). James T. Gwathmey.
9. Tracheobronchitis Due to Nitric Acid Fumes. Chevalier Jackson.
10. Malocclusion of the Teeth. Henry C. Ferris.
11. Autotherapy in Ivy Poisoning. Charles H. Duncan.

7. **The Oral Administration of Adrenalin.**—Henry R. Harrower has collected in one paper the opinions of various medical men as to the efficacy of adrenalin when administered by mouth together with his own views, the consensus of opinion being that in suitable dosage of 1,000 solution a speedy and favorable action is obtained. If adrenalin is given by mouth and the stomach is evacuated ten minutes later, it is usually impossible to detect this substance by colorimetric chemical measures. According to the specified authorities it may be used as an analgesic remedy for gallstone and renal colic, as part of the treatment of severe infectious diseases in children producing increased blood pressure and an immediate response in the general mental and physical condition, while the pulse rate is reduced and diuresis favored; acute and chronic nephritis is benefited most decidedly in many cases by the administration of adrenalin by mouth. The active principle of the desiccated gland is naturally similar to that which is available in a pure state, and the favorable experiences with total adrenal gland therapy, by mouth, is additional proof that the position of those who have contended that the oral administration of adrenalin is useless, is fallacious.

9. **Tracheobronchitis Due to Nitric Acid Fumes.**—Chevalier Jackson reports a case of a pipe-fitter, previously in good health, who complained of burning in the throat following a two hours' exposure to nitric acid fumes. Half an hour after exposure his lips became blue and five hours later he fell, becoming unconscious for a few minutes. Then cough, difficulty in breathing, and blueness of lips and face were noticed. Fine râles were found all over both lungs anteriorly and posteriorly, while showers of fine crepitant râles were audible at end of inspiration. In left axilla and in front inspiration markedly increased. Whispered voice plus. By indirect laryngoscopy frothy mucopus could be seen bubbling up and down in the trachea, but there was no coughing effort to expel same and no glottic bechic placement. Bronchoscopy showed intense acute tracheitis and bronchitis; the trachea and bronchi showed frothy mucopurulent secretion, and on removing this patches of grayish furred mucosa with a surrounding areola of intensely engorged cyanotic mucosa were found. The patient was choked with his own secretions until he was apparently drowning. Tracheotomy was performed, and large quantities of the mucopus were continuously removed. The temperature on admission was 101.3° F., but never rose above 102°, and subsided to normal at the end of a week. Gentle swabbing was done through the wound, and at the end of the fourth day the patient could cough out the secretions through the cannula. Compound tincture of benzoin was vaporized from a croup kettle close to the cannula. Atropine and stimulants were given as needed The patient was discharged well at the end of three weeks.

11. **Autotherapy in Ivy Poisoning.**—Charles H. Duncan quotes from an article of his published in the *New York Medical Journal* for Dec. 14 and 21, 1912, under the title of Autotherapy, in which he says that disease may be said to be the proving of one or more toxins. Symptoms are the expression, or the language, of toxins. The cure of disease is brought about by placing the exact toxins that cause the symptoms in healthy tissues. He then goes on to state that this method of treating ivy poison is nothing more or less than treating the symptoms with the substance that caused them or an autotherapeutic procedure, a method long known and employed by the writer, as in other forms of anaphylaxis. In Fairmount Park, Philadelphia, a few years ago, and also in Bronx Park, it was the custom upon hiring park hands to instruct them to chew a few leaves of the poison ivy plant when clearing away the vines, as a preventive to the well known

cutaneous eruption. Homeopathic physicians have long employed this method of treating ivy poison, and considered the cures as homeopathic cures till the writer pointed out that it was not a similar remedy, but the exact or autotherapeutic remedy, for it treats the symptoms with the exact unmodified substance that caused them and not a substance that causes a similar set of symptoms. Their occasional failures may result from the use of the tincture of Rhus other than the one with which the patient was poisoned. The exact unmodified substance that caused the symptoms is employed as the curative remedy. This is the principle upon which autotherapy rests.

Journal of the American Medical Association.

November 4, 1916.

1. The Duty of the Medical Profession Toward the Council on Pharmacy and Chemistry. Robert A. Hatcher.
2. A Study of Two Hundred and Twenty-Six Cases of Chorea. Isaac Arthur Abt and A. Levinson.
3. Fever of Obscure Causation in Infancy and Early Childhood. Edgar P. Copeland.
4. The Recent Epidemic of Grip. Joseph A. Capps and A. M. Moody.
5. Acidosis of Gastrointestinal Origin: A Preliminary Study Based on Thirty-four Cases. Henry Dwight Chapin and Marshall Carleton Pease.
6. Myasthenia Gravis, with Thymoma. W. A. Jones.
7. Experimental Studies of Injection of the Gasserian Ganglion, Controlled by Fluoroscopy. Lewis J. Pollack and Hollis E. Potter.
8. A Further Note on the Diagnostic Value of Retrobulbar Neuritis in Expanding Lesions of the Frontal Lobes, with a Report of This Syndrome in a Case of Aneurysm of the Right Internal Carotid Artery. Foster Kennedy.
9. Appendicitis in Children. J. Coleman Motley.
10. Some Practical Aspects of Schistosomiasis as Found in the Orient; Preliminary Report. William L. Mann.
11. The Intestinal Parasites of Twenty Foreign Students in the University of Wisconsin. Edward J. Van Liere.
12. Studies of the Spinal Fluid During Iodide Medication by Mouth. Joseph H. Catton.

2. A Study of Two Hundred and Twenty-six Cases of Chorea.—Isaac Arthur Abt and A. Levinson. (See MEDICAL RECORD, June 24, 1916, page 1161.)

3. Fever of Obscure Causation in Infancy and Early Childhood.—Edgar P. Copeland. (See MEDICAL RECORD, June 24, 1916, page 1161.)

4. The Recent Epidemic of Grip.—Joseph A. Capps and A. M. Moody made a study of the epidemic of grip which swept over the United States last winter. Their observations were carried on in Chicago, but in close touch with the laboratories of the Departments of Health in all of the important cities. The epidemic began early in December, and while it had spent its force by the latter part of January, many cases developed long after. The chief complications were inflammation of the accessory sinuses of the head and bronchopneumonia, the latter being responsible for most of the fatalities. Capps and Moody found from a study of the blood that in the majority of patients leucocytosis was absent, although a temperature of from 1° to 3° above normal was the rule at the time of examination. They state that while physicians may agree on the existence of a grip epidemic, it is equally true that bacteriologists have failed to agree on the causative organism. The results of analyses made in the public laboratories in various cities of throat cultures showed the presence of the *Streptococcus viridans* and pneumococcus together with the hemolytic streptococcus in all cases tested in Chicago, while the influenza bacillus was found only twice. In New York streptococcus was found most frequently, accompanied by *Micrococcus catarrhalis*, with the influenza bacillus in nine cases. From a cultural standpoint the streptococcus deserves more serious consideration as the causative organism than the influenza bacillus. The work of Kruse, and more recently Foster, suggests the possibility of some ultramicroscopic germ as the cause of the disease. Capps and Moody ask if the influenza bacillus was responsible for earlier grip epidemics, and note that the streptococcus and pneumococcus were the two organisms most constantly described in the pandemic grip of 1889-1890, and that it was not until 1892 that Pfeiffer published his discovery of the influenza bacillus, and it is still unproved that this organism was a factor in the earlier pandemic. The theory that grip is contracted through personal contact seems to be borne out by practical evidence, and at present there is no evidence that food may be a medium of transmission. The writers suggest that, as we look back on this epidemic, it may well be asked what has been done to prevent its inception and its dissemination. Have any measures of defense been developed against this ancient foe? Not in any adequate measure. Nor is it possible to make any headway along preventive lines until the laboratory workers go out into the community and there obtain their material for study. Furthermore, there should be a better organization of team work, so that a group of men can attack the problem simultaneously from several directions and correlate their efforts.

5. Acidosis of Gastrointestinal Origin: A Preliminary Study Based on Thirty-four Cases.—Henry Dwight Chapin and Marshall Carleton Pease. (See MEDICAL RECORD, June 17, 1916, page 1117.)

8. A Further Note on the Diagnostic Value of Retrobulbar Neuritis in Expanding Lesions of the Frontal Lobes.—Foster Kennedy states that in the recognition of disease affecting the frontal lobes there is apt to be a misinterpretation of symptoms by even the most alert observers. He calls attention to a syndrome referable to the inferior frontal sinuses, the occurrence of a true retrobulbar neuritis, with the formation of a central scotoma and primary optic atrophy on the side of the lesion together with ipsolateral anosmia and papilledema in the opposite eye. He cites the case of a woman presenting all these conditions, who had undergone a decompression operation from which she recovered, but who a little later died. An examination of the brain revealed a ruptured aneurysm of the right internal carotid artery about the size of a small walnut and of a solid consistency, owing to contained fibrinous matter. This aneurysm caused marked pressure on the right optic nerve, just in front of the chiasma, and, to a lesser degree, on the left optic nerve also. Upward and to the right it had succeeded in compressing descending fibers from the right motor area with some deformation of the anterior part of the right caudate nucleus. The anterior horn of the right lateral ventricle was considerably larger than its fellow. The case presents two features: first, the remarkable rarity of aneurysms of a right internal carotid artery; and second, its symptomatology offers a very important clue to the diagnosis of expanding lesions in the subfrontal area. The diagnosis of aneurysm in this case cited was quite unsuspected during the patient's lifetime. Syphilis was entirely excluded, the cerebrospinal fluid was normal with the exception of an increased globulin content, which but tended to confirm belief in the presence of new growth. The signs given here were sufficient to indicate the exact situation of an expanding lesion within the skull cavity, and the recognition of this syndrome may elucidate diagnosis in certain obscure cases of frontal neoplasm and to separate a group of cases from the great generic class of toxic amblyopias.

9. Appendicitis in Children.—J. Coleman Motley as a result of his operative work during the last five years says that his chief object is to appeal to the general practitioner and through him to the parent, for a closer cooperation with the surgeons in an effort to give the child with a "belly ache" a better chance to live. Of 404 cases, 37 were in children with an operative mortality of 5.4 per cent. Of the 367 adult cases of appendicitis, there was also an operative mortality of two, or 0.54 per cent. The most constant symptom of

acute appendicitis in children is leucocytosis, which ranges between 9,000 to 34,000, with the polymorphonuclears between 72 and 92 per cent. The high mortality among children seems to be due to the fact that the early symptoms are not clear-cut and defined as in adults, and are to be considered atypical. This leads to a confusion in diagnosis and also to the association of dietary indiscretions as the chief cause of all abdominal pains in children. Early diagnosis and early operation are indicated. Motley considers purgation in cases of appendicitis in children as one of the chief causes of the frequency of perforative appendicitis, but he does approve of an enema of soapsuds for relief of either an overloaded bowel or the pain in appendicitis. He again begs for early diagnosis and operation as the only sure means of saving life.

12. **Studies of the Spinal Fluid During Iodide Medication by Mouth.**—Joseph H. Catton conducted examinations of the spinal fluid of persons under iodide medication to determine the presence of organic or inorganic compounds. of iodine. Study 1 included observations on five patients on routine iodide medication, and Study 2 observations on one person to whom very large doses of iodides were given. Two tappings were made, and at the first one as much fluid as possible was withdrawn; the second tapping being made some time later to ascertain whether or not the newly secreted fluid contained a greater amount of iodine, if any. As a result of the observations made Catton draws the following conclusions: 1. In the series of cases examined, regardless of the amount of iodine administered by mouth, no iodine or compounds of iodine were found in the spinal fluid. 2. Either iodine compounds do not pass the ependymal cells of the choroid plexus in any measurable quantity, or such iodine as does reach the spinal fluid is very rapidly fixed in the tissues.

The Lancet.

October 14, 1916.

1. An Address on John Ward and His Diary. D'Arcy Power.
2. Trench Fever: A Relapsing Fever Occurring Among the British Troops in France and Salonica. Arthur F. Hurst.
3. The Operation of Laryngo-Fissure. Irwin Moore.
4. The Late Sequelæ of Frambœsia. Philip Harper.
5. Wound of the Portal Vein; Operation; Death Nine Days Later. W. H. C. Romanis.
6. Case of Tonsillitis with Hemorrhagic Adenitis. C. Frederick Strange.

2. **Trench Fever.**—Arthur F. Hurst gives a report of "Trench Fever" as he found it while working among the British troops in France and Salonica. In France the disease was only observed among officers and men living near the trenches and in the personnel of hospitals in which there were patients suffering from the disease. No cases occurred among ammunition columns, ordnance and headquarters' troops. For this reason the condition received its name, though actual residence in the trenches was not an essential factor. The writer's attention was first drawn to the disease in Salonica, where it became extremely common. It was found that trench fever could be transmitted to healthy soldiers by the intramuscular or intravenous injection of the blood of men suffering from the disease. Injection of the washed red corpuscles had the same effect, but the plasma and serum were not infective. One attack does not seem to protect against reinfection. As yet no infective organisms have been found, but the evidence pointing to an intracorpuscular infection suggests a protozoal rather than a bacterial origin. Since the disease produces no nasal, pharyngeal, or bronchial catarrh, and seldom any gastro-intestinal symptoms, it is probable that it is conveyed through the intermediation of some insect, and the most common one at all seasons is the louse. Cold, wet and fatigue appear to be exciting causes in a man who has become infected. Hurst observed that the incubation period is between fifteen and twenty-five days. The symptoms resemble somewhat those of influenza, but without the nasal or bronchial catarrh. The onset is abrupt, and there is marked tenderness over the shins —one of the diagnostic features—with marked fever ranging from 102° to 104°. There are two forms of the disease, the short form, which lasts from five days to a week, and the long form, in which there is a periodic return of symptoms, and the temperature falls more gradually. In this last form the total duration of trench fever is generally between four and six weeks. Men suffering from this condition should be kept together when sleeping, but could work with other soldiers when able. The treatment is not extensive, acetylsalicylic acid being the most effective analgesic drug. The bihydrochloride of quinine given subcutaneously when the temperature rises above 99° appears to put an end to relapses in prolonged cases.

4. **The Late Sequelæ of Frambœsia.**—Philip Harper states that locomotor ataxy, general paralysis of the insane, and aneurysm, well recognized as sequelæ of syphilis, seem to have been generally overlooked as remote results of frambœsia. This disease is common among Fijians, while syphilis does not exist. We can be sure that the disease which is universal to Fijians is yaws, or frambœsia, and not syphilis, because (1) of its symptomatology and physical signs, which are different from syphilis; (2) the fact that the disease is not hereditary; (3) the therapeutic tests; and (4) that there is not a single absolutely certain case of primary syphilis in a Fijian nor of any hereditary syphilitic manifestations in Fijian infants. Harper cites a few cases of tabes and general paralysis of the insane occurring in one district medical officer's routine practice in a district of 6000 Fijians. Aneurysm is exceedingly common among these people. The cases given show in a small measure the high rate of such nervous disease among the Fijians, but since the entire Fijian population has been infected with yaws, probably the case-rate following this condition might not differ greatly from the same following syphilis.

5. **Wound of the Portal Vein.**—W. H. C. Romanis reports a case of shell wound of the abdomen, in which the fragment of shell passed through the abdomen from front to back without injuring any portion of the intestinal canal. An Australian soldier was wounded by high-explosive shell at 4 A.M. on July 5, the fragment entering just below the left costal margin, one inch to the left of the ensiform cartilage. Seen late the same evening, patient's condition was bad; vomiting, with rigid abdomen, tenderness marked over the epigastric region, pulse 120 and thready. Laparotomy performed under chloroform through the left rectus twenty-three hours after the wound, and the abdomen found to contain a large quantity of fresh blood. A track was traced to the right, through the left lobe of the liver, emerging on its under surface, through the lesser omentum and tearing a lateral hole about half an inch long in the portal vein from which blood was freely gushing. A plug was placed in the liver wound and two artery forceps were clamped on the side of the vein in a longitudinal direction, controlling the hemorrhage. The track of the missile passed on just to the outer side of the second part of the duodenum and pierced the peritoneum of the posterior abdominal wall here. The fragment was followed no farther on account of patient's condition. Stomach, small intestine and transverse colon showed no perforation. Wound was closed after mopping out blood from abdomen, with plug and forceps left *in situ* with handles emerging from upper end of the incision. Patient improved, and

plug removed on second, and forceps on third day. Improvement continued until eighth day, when patient was taking solid food. On evening of eighth day, he complained of severe hypogastric pain, vomited twice, and passed some urine containing much blood. His abdomen remained soft and mobile, but his pulse failed and he died in an hour. Postmortem showed good condition of tissues along the path already investigated, but a large retroperitoneal hemorrhage was present around the right kidney, and an ulcerated hole was found in the right renal artery on its posterior aspect, close to which lay a small jagged piece of shell-case, a little larger than a green pea. Death was apparently caused from secondary hemorrhage from the renal artery on the eighth day.

British Medical Journal.

October 14, 1916.

1. The Morphine-Hyoscine Method of Painless Childbirth, or So-called "Twilight Sleep." F. W. N. Haultain and Brian H. Swift.
2. Retraction of the Uterine Muscle Associated with Obstructed Labor. H. T. Hicks.
3. Breathlessness in Soldiers Suffering from Irritable Heart. Thomas Lewis, Captain Cotton, J. Barcroft, T. R. Milroy, D. Dufton, and T. R. Parsons.
4. The Estimation of Myocardial Efficiency. J. Strickland Goodall.
5. Bock's Stethoscope as an Aid to Determining the Efficiency of the Myocardium. Jeffrey Ramsay.
6. Epidemic Cerebrospinal Fever: the Place of the Meningococcus in its Etiology. Edward C. Hort and Captain Alfred H. Caulfeild.
7. On the Life-History of the Meningococcus and of Other Bacteria. J. G. Adami.

2. Retraction of the Uterine Muscle Associated with Obstructed Labor.—H. T. Hicks says that his reason for again bringing this subject forward—he first referred to it in 1906—is because he knows that this condition is not often recognized and that he has altered his views in the light of further experience. The patients are all primiparæ and with some pelvic bone deformity, such as rickets, etc. The patient has come to term and labor has just begun and the fetal head is felt just above the brim. The uterine contractions continue, but there is no attempt at bearing down, and patient complains of a continuous uneasiness about the abdomen. The fetal head is still above the brim and with the examining hand the retracting ring will be found just above the head. Cæsarean section is the only safe means of delivery. Hicks makes the following conclusions: 1. Be on your guard when dealing with a short, thick-set woman with a square head and short long bones. 2. A high position of the fetal head, occurring in a primipara, should at once denote serious trouble. 3. Measure the diameters of the pelvis, but do not place too much store upon your estimate. The brim may be obliquely distorted, and this will prevent the head from entering the brim and at the same time will not show up in your calculations. 4. Cut-and-dried rules on pelvimetry are useful only in severe contractions of the pelvis. 5. Remember that to apply forceps to a fetal head which is movable and high above the brim is an obstetric operation requiring the most careful consideration, and should only be undertaken after careful examination of the condition of the uterine muscle around the neck of the fetus. If the examining hand can be passed easily beyond the shoulders of the fetus, an attempt at delivery with instruments may be made. If there is the least evidence that the uterine muscle is retracting round the neck of the fetus, Cæsarean section should at once be performed. When once the retraction ring has formed around the neck of the fetus, it will grip it firmly until the patient is almost at the point of death.

3. Breathlessness in Soldiers Suffering from Irritable Heart.—Thomas Lewis, Captain Cotton, J. Barcroft, T. R. Milroy, D. Dufton, and T. R. Parsons contribute a full report to the Medical Research Committee in which they wish to call attention to another and more subtle cause of breathlessness than the ordinary causes. The cause of breathlessness to which they refer is the absence of an adequate supply of "buffer" salts in the blood; this condition is found among patients who are diagnosed as having "irritable hearts," or "trench hearts," that is, among soldiers invalided. They have no contant physical signs, but upon moderate exertion there are excessive fatigue, faintness, giddiness, increased pulse rate, and even while at rest, high respiratory rate. Now the blood is at all times receiving and parting with acid and alkali; buffer salts, Na_2HPO_4, and NaH_2PO_4, in the presence of CO_2 produce an increase in the acid reaction of the blood, and ease the shock to the reaction of the blood by the addition of acid or alkali. These observations seem to the writers important because they demonstrate an altered state of the blood which goes far to explain the otherwise inexplicable breathlessness in certain patients who suffer from the condition described as irritable heart.

4. **The Estimation of Myocardial Efficiency.**—J. Strickland Goodall bases his conclusions on the study of 2,000 observations made on healthy and diseased hearts during the past five years. The measure of a heart's efficiency is its capacity for doing work, whether one is dealing with a healthy or diseased heart. The physiological heart of a healthy young adult responds to increased work by increased contraction—increased rate, blood pressure, and respirations. In the diseased heart in which the myocardium is at all impaired the response to work is not by increased contraction, but by dilatation, so that, although the frequency is increased (often out of all proportion to the amount of exercise taken) the blood pressure fails to rise or actually falls, according to the amount of damage present in the heart and the amount of work done. The writer tested these statements by the following methods: the simple stair test, the exerciser test, the inclined plane test, and the progressive exercise reaction. These various exercises have all been found beneficial in many cases of myocardial disease and when carried out quietly, systematically, and over sufficient length of time protects the sick heart by estimating its limitation of power to work.

6. **Epidemic Cerebrospinal Fever: The Place of the Meningococcus in Its Etiology.**—Edward C. Hort and Alfred H. Caulfeild have devoted much time to the work, and Hort has shown that the cerebrospinal fluid in acute cases of this disease in man sometimes contains a filter-passing virus which is not the meningococcus, but which is nevertheless capable of producing continued fever and death when injected into monkeys. They draw the following conclusions based on intraperitoneal and subcutaneous injection 1. The pathogenicity to monkeys of cerebrospinal fluid from acute cases of cerebrospinal fever appears to tend to vary inversely as its meningococcal content. 2. The cerebrospinal fluid in this disease sometimes contains a filter-passing agent which is not the meningococcus, but which is nevertheless capable of producing in monkeys continued fever or death. 3. This filter-passing agent appears to be a living virus capable of cultivation in the laboratory, and of passage through monkeys. 4. None of the pathogenic results here recorded can be reasonably attributed to the action of living meningococci as such, or to the direct or indirect action of a meningococcal toxin. 5. The pathogenicity of cultures of the meningococcus appears to be due to the concomitant presence of the filter-passing virus described. 6. The pathogenic effects observed in the monkeys injected, whether with cultures of meningococci, with filtered or

unfiltered cerebrospinal fluid, or with cultures of X, did not include gross pathological changes in the cerebrospinal system.

Berliner klinische Wochenschrift.

October 2, 1916.

Diabetes Innocuus.—Rosenfeld delivered a lecture on on this subject as far back as May 15, 1914, yet it has just arrived at publication. The term was originally proposed as a substitute for diabetes innocuus, the latter being too ambiguous. These cases bear a certain relationship to renal diabetes, in which condition it had been shown that the amount of sugar excreted was not beyond the capacity of normal kidneys under functional testing, as indicated especially by blood tests for sugar. In all such cases carbohydrate tolerance could be excluded as a factor. Porges showed that the diabetes of pregnancy was as a rule of renal origin. It was shown that this so-called type of innocuous diabetes might have a familial incidence. Familial diabetes (excluding the pancreatic type which may also be familial) was especially studied by Solomon, who showed that while blood analyses in these cases were chiefly negative, exceptions occurred in which the normal sugar content of the blood was increased. The balance of Rosenfeld's article is devoted to a concurrence of twelve cases of diabetes in several families, increased considerably by including relatives not actually seen in person. In the older generations diabetes was present as a spontaneous phenomenon, lasting in certain cases for decades. In certain of the descendants the glycosuria was manifested only under a diet rich in carbohydrates. The patients were often relatively young when the disease first appeared, as is often the case with malignant (pancreatic) diabetes. But while in the latter malady the patients quickly succumb, in these so-called innocuous cases they may, as already stated, live for decades, while presenting at times clinical evidences of mild diabetes (furunculosis, etc.). However, these familial cases appear to have nothing in common with the renal form, aside from the fact that both are harmless. Renal diabetes may be due to increased permeability of the kidneys, while in the familial type the converse may be true, as is the case in adrenalin glycosuria. In fact, there is much to suggest that the diabetes innocuus of the author has a suprarenal origin (such as the relatively constant value of blood sugar). In this type carbohydrate tolerance is extreme. Women in these families may be allowed to marry. But great pains must be taken to exclude cases of pancreatic diabetes.

Therapy of So-called Acetone Vomiting. — Janssen cites Hecker's opinion that acetonuria is the result of certain metabolic crises in children, in which acetone is expelled by the stomach, lungs, and kidneys. In milder cases vomiting may be absent, the patient suffering from digestive disturbances, constipation, nausea, prostration and acetonuria. The affection attacks by preference children of the well-to-do and may be familial and hereditary. The first crisis of vomiting usually comes on suddenly and without prodromes, and the child seems very ill. It continues to vomit at intervals, and the slightest morsel of food is rejected. Thirst soon appears as a result of the dehydration, and constipation is another obvious consequence. The urine and breath are loaded with acetone. The attacks last for two or three days and are followed by complete recovery. In the opinion of the author a nervous component is present. Spasmophilia often coexists. A survey of case histories shows great diversity in type, the presence of acetonuria being the most constant phenomenon. Thus a child aged four had been nourished largely on milk and butter. A crisis of vomiting attacks suddenly appeared. The treatment consisted of an enema of warm tea, to be retained. The patient slept all night, waking in good condition. There was no second crisis. A nervous breast-fed child, aged nine months, had a brief attack of acetone vomiting and was given a little soup and warm mineral water. Other cases cited included infants and children with history of overeating of fat, or presence of spasmophilia or with no evident antecedents. Nearly all showed the presence of acute pharyngitis. The author does not seek to explain this phenomenon, and does not appear to connect it with irritation by the vomitus. The ideal treatment appears to be to distend the stomach mechanically by water or tea taken *per os*, or to fill the colon by enemas of the same. This fluid perhaps causes the poisonous material to escape by the kidneys. There seems no doubt that it can cut short the crisis. The article of food best tolerated is potato soup or mashed potato. The kind of water taken is immaterial, but it must be taken hot and sweetened with saccharin. There is further a psychic factor in the successful treatment of these cases—the personality of the medical man.

Persistent Lanugo as a Sign of Constitutional Inferiority.—Paulsen states that Freund and Hegar upheld this view twenty years ago. Sellheim believed persistent lanugo an indication of future tuberculosis. The contention of Paulsen is best shown in the numerous case histories appended. The first case cited in a girl of 6½ years is one of bronchial gland tuberculosis associated with lanugo on the trunk, running from head to sacrum on either side of the spine; also over the shoulder blades and upper arms. In a similar case a girl of 13 showed also defective dentition and hyperidrosis. There were several other cases of bronchial tuberculosis. Other patients showed actual or latent pulmonary tuberculosis, the phthisical thorax, visceral tuberculosis, etc. There was as a rule a bad family history suggesting hereditary inferiority, and various somatic stigmata were present aside from those already mentioned. The presence of lanugo in unaccustomed localities was sometimes associated with scantiness of hair in normal regions. This irregularity agrees well with defective development of the teeth as pointing to an aberrant development of the ectoderm. This association was seen in but one patient of the series and recalls the "dog faced" type of hypertrichosis in which dental defects are uniformly present. Thoracic anomalies of development are common — thorax asthenicus, funnel breast, etc. Persistent lanugo also suggests a form of infantilism, and the notable lack of pigment in some of the patients points in the same direction. Such problems must be left to the future for solution.

Münchener medizinische Wochenschrift.

September 19, 1916.

Etiology of Five-Day Fever.—Werner, Benzler, and Wiese add to an earlier communication the proof that five-day fever can be transmitted from man to man, thus showing that the causative agent is present in the blood. Werner sought to infect himself with the blood of a patient injected subcutaneously. The results were negative. Next both Werner and Benzler had themselves injected by the intramuscular route, and in both men the disease developed. The incubation period was twenty and twenty-three days respectively and the disease set in with general pains and fever. The curve of the latter was characteristic. Attempts were now made to grow anaerobes from the blood. After some

negative results they succeeded, with a culture of anaerobes one month old from the blood of infected men, in causing an infection in dogs and cats which in a high degree resembled five-day fever in man. It is not claimed that anaerobic bacteria are themselves the cause of the disease but cultures of the latter contain certain peculiar granules which may be pathogenic or not, according to circumstances. The real cause of the disease is probably an ultra visible virus.

Acne Necrotica and the Use of Tobacco.—Weinbrenner saw several years ago a patient with acne necrotica on the forehead and hairy scalp who gave a history of a stomach disturbance, as a result of which he abandoned smoking for the time being. During the period of five or six weeks his skin disease which had been refractory to treatment disappeared spontaneously, but returned promptly when smoking was resumed. Since this episode he has treated seven other cases of acne necrotica in patients who were all smokers save one who chewed tobacco, and who was the most seriously afflicted. But two of the seven had stomach disorder, which, as one knows, is very apt to be present in this disease. The author has searched literature in the vain hope of finding mention of some connection between the eruption and the tobacco habit. In every one of his patients the disease healed spontaneously when tobacco was given up, although the tobacco chewer who also suffered from gastric disorder proved to be far more refractory than any of the others. Trial breakfast in this case showed no disturbance of normal acidity. Acne necrotica seldom or never occurs in women (the author has never seen a case). In case reports by others there is no allusion whatever to the use or abuse of tobacco. That the amount of tobacco used plays a very small rôle is shown by the fact that one patient smoked but two or three very small and mild cigars daily.

Treatment of Furuncles in the Troops.—Kastan states in regard to furunculosis that efforts are devoted chiefly toward local extension and recurrent attacks. A boil or carbuncle is treated as follows: the surrounding skin is carefully shaved and ordinary grey ointment thinly but evenly applied. The lesion must not be covered and at the proper time should be lanced and allowed to discharge pus. A small, moist wick drain is then inserted with a moist dressing over all. This dressing may be medicated with very dilute solution of acetate of aluminium. The most that such treatment can do is to hasten the expulsion of the core. The author has tested many local applications and combinations of the same upon the troops and has arrived at certain conclusions, thus ointments should never be removed before adding others, since it is best to continue to add new ointment above the old. The moist dressings are changed daily at first, but in order not to interfere with the ointment, the interval is soon lengthened to three or four days. In order to explain the efficacy of grey ointment the author assumes that the metallic mercury is volatilized and diffused so that it thereby becomes able to destroy the pyogenic cocci of the lesions.

Le Progrès Médical.

September 20, 1916.

Recrudescence of Malaria in Ancient Foci in France.—Etienne refers first to the reappearance of malaria in certain small foci in Flanders, and then mentions that in Paris conditions are not only favorable for such an awakening, but that cases have occurred in small areas both within and without the city. In Paris are numerous sufferers from chronic malarial infection, while a form of anopheles mosquito is quite common in the city. Already numerous reports have been received of small group infections in various localities. The author has had personal knowledge since 1915 of paludism in the Seille valley, where the disease has prevailed in the past. The *Anopheles maculipennis* is known to inhabit this locality. The author, who has known this region since 1888, has never observed an inoculated case of paludism, although some of his colleagues have made positive claims which may perhaps have referred to cases of grippe. However this may be, the author in 1915 encountered a group of six cases of undoubted malaria, in three of which the hematozoon was found in the blood. Certain prodromes of the disease suggested rheumatism. As the cases progressed diagnosis became assured, the disease developing in typical fashion. In one patient only there was a marked history of mosquito biting. To explain the group of cases it is easiest to assume that the old infection had never died out. It had persisted for decades in a larvated form, having been screened by the occurrence of other infectious diseases like influenza and rheumatism. The recrudescence of the disease must have been due to the upturning of the soil in connection with trench work. Those with latent malaria now exhibited an active type which could readily be spread by the anopheles.

The Contractures of Late, Prolonged Tetanus in Comparison with Those of Organic Disease and Hysteria.—Claude and Lhormitte refer to the very great number of contractures in wounded soldiers. One muscle or a group may be attacked. The exact relationship between injury and contracture has from the first been obscure. In some cases a reflex mechanism, in others a neuritis has been invoked, while the neurologists believe in a reflex in association with hysterical fixation. Recently it has become apparent that another type of contracture exists which has little in common with the others, although there could be an association between them. In tetanus cases contractures supervene soon after injury, and the muscles affected show a peculiar rigidity before becoming contractural. Naturally the major manifestations of tetanus are not in evidence. The fingers may be flexed to the utmost and completely immobilized to the strongest attempts at reposition. A reflex component may be demonstrated. The central nervous system appears intact. Generally speaking, the mechanical and electrical excitability is greatly increased. The facial muscles show a sort of mask-like rigidity, and the masseters and nuchal muscles appear to be in a state of tonic contracture in but few cases. No real trismus is present, although the mouth cannot be fully opened. In a similar fashion one limb or only a segment of a limb may become contractured perhaps several months after the injury. In some of these late chronic cases of tetanus the symptoms persisting longest are trismus and rigid abdominal muscles. As a rule there should be no diagnostic confusion between these cases and contractures due to organic disease of the pyramidal tracts. The authors speak as if this abortive form of tetanus is quite common, but differentiation between it and functional types is often most difficult. Its relationship to typical tetanus is not made clear, for example, in reference to previous attempts at immunization. It is extremely persistent, but has thus far, in the author's experience, been without mortality.

Resistance of Spirochetal Foci to Salvarsan.—Wechselmann and Arnheim refer to foci of spirochetes in the region of chancres clinically cured by salvarsan. This can only mean that treatment was not intensive at the outset. Whenever the Wassermann reaction has become negative, the chancre should be completely cicatrized, free from spirochetes, and non-inoculable.— *Deutsche medizinische Wochenschrift.*

Society Reports.

Profilaxis del Tifus Exantemático. Por el Dr. D. Manuel Martin Salazar, Inspector-General de Sanidad. Madrid: Enrique Teodoro, 1916.

This pamphlet is issued by the National Department of Health, and is naturally a sound, conservative presentation of what we really know of the disease in question. The author appears to follow quite closely the teachings of Nicolle, director of the Tunis Pasteur Institute, who has had extensive experience with the disease at first hand. Of much interest is the apparently well-founded claim of Cortezo for priority in antilouse campaigns against the disease. Such a campaign was waged in Madrid in March, 1903, and was promptly reported to the International Conference for Public Health in Paris. Cortezo's measures are said to differ in no wise from those in use at present, although no mention is made of the great advance of such sanitation among the warring armies during the past two years. About 2,000 cases have been reported in Spain since 1911, with deaths amounting to 311.

Infections of the Hand. A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand, and Forearm. By Allen B. Kanavel, M.D., Assistant Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley and Cook County Hospitals, Chicago. Third edition. Thoroughly revised. Illustrated with 161 engravings. Price, $3.75. Philadelphia and New York: Lea & Febiger, 1916.

This work has passed so rapidly through two editions, that there is little more to be said in commendation of it than has been said already. The present edition has been thoroughly revised and two chapters have been added, one dealing with the "Relation of Acute Infective Processes to Industrial Pursuits," and the other with "Plastic Procedures Instituted for the Correction of Deformities." The work is valuable mainly, perhaps, on account of its practical character, and for this reason in particular, should prove of great use to the practitioner.

Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By Thomas Lewis, M.D., D.Sc., F.R.C.P., Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital; Physician to Out-Patients, City of London Hospital for Diseases of the Chest. Third edition. Price, $2. New York: Paul H. Hoeber, 1916.

This is a thoroughly revised edition, to which, although a few additions have been made, the teachings of the earlier editions are preserved in their original form. In order to keep in touch with the most recent advances in the study of the heart beat it is almost essential to possess Lewis's Handbook for reference.

The Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose. By Ross Hall Skillern, M.D., Professor of Laryngology, Medico-Chirurgical College; Laryngologist to the Rush Hospital; Fellow of the American Laryngological, Rhinological and Otological Society; Fellow of the New York Academy of Medicine; Member of the Society of German Laryngologists, etc., etc. 287 illustrations. Second edition, thoroughly revised. Price, $5. Philadelphia and London: J. B. Lippincott Company, 1916.

Dr. Skillern made a somewhat new departure when he wrote in English a work treating in minute detail of nasal accessory sinus diseases and their treatment. The only work in the English language in which an attempt has been made to do this is that of Logan Turner, the Edinburgh specialist, and his work is hardly adaptable as a general text book. Consequently the only available sources of information in the direction are German and French books. However, Dr. Skillern has removed the cause of reproach from English nose and throat specialists, as the work which he has produced and which has quickly run into a second edition, equals in all essential features any work of a similar nature. The present edition has been amplified, and these amplifications include the treatment of sinus disease in children; the use of the nasopharyngoscope in diagnoses of obscure conditions in the posterior ethmoid and sphenoid region. Canfield's operation on the maxillary sinus compared with the preturbinal method with instructions for and illustrations of both the immediate and ultimate effects of operation on the sinuses. The work has undergone a complete and systematic revision. A hitherto almost neglected subject, that of the after treatment of sinuses upon which an operation has been performed, is thoroughly discussed and, indeed, the whole work provides an exhaustive and analytical résumé of the matter in question. The illustrations are excellent.

Burdett's Hospitals and Charities, 1916, being the Year Book of Philanthropy and the Hospital Annual, Containing a Review of the Position and Requirements and Chapters on the Management, Revenue and Cost of the Charities, an Exhaustive Record of Hospital Work for the Year. By Sir Henry Burdett, R.C.B., K.C.U.O. Author of "Hospitals and Asylums of the World," "Hospitals and the State," "Pay Hospitals of the World," "Cottage Hospitals," etc. Editor of the *Hospital*. Twenty-seventh Year. Price, 10 shillings. London: The Scientific Press, Limited, 1916.

Burdett's is so well known that it would be superfluous to review it at length. It may be said, however, that the present issue reaches the high standard of former ones, and the result has been attained in the face of the difficulties created for the printers and editorial staff by the war. A new feature of the book is a complete list of the whole of the territorial hospitals, their exact locality, and the name of the principal nation in each case. It may be mentioned that Sir Henry Burdett initiated the work of which he has been editor since its introduction; that he is now seventy years of age, fifty of which have been spent in laboring continuously for the voluntary hospitals of Great Britain. He has raised to himself *monumentum ære perennius*. and has earned the lasting gratitude of his fellow countrymen.

Diseases of the Skin. By Richard L. Sutton, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association; Member American Dermatological Association, etc. With six hundred and ninety-three illustrations and eight colored plates. Price, $6.50. St. Louis: C. V. Mosby Company, 1916.

It requires courage, optimism, and enthusiasm to write a new book on the skin when twenty competitors, including late editions, are accessible in the English language alone. The work comprises about 900 pages and is hence a treatise. It seems in no sense a personal book and the author has derived much of his material on rare and exotic diseases from the best authorities. He has surprisingly little to say of physical measures of treatment, and is by no means up to date in this province. We do not find in his index any reference to the Kromayer lamp, to ionization, to the electrotherapy of skin diseases or to the new gasless *x*-ray tubes. There is not much over a page of text on the body louse, despite all that we have learned about the parasite during the war. The discovery that the Ducrey bacillus may act as a saprophyte in the female genitals without infecting the host is not mentioned. We see nothing of the salvarsan substitutes made necessary by the war, nor of substitutes for certain other German drugs, the price of which is now prohibitive. Any author who writes a treatise owes it to his patronage to make a final attempt to incorporate all very recent discoveries, even if he has to use foot-notes. The excellencies of the book are many, and since nearly all good text-books on dermatology have later editions, the author will have plenty of opportunity to rectify the omissions in the present work.

Roentgenographic Diagnosis of Dental Infection in Systemic Diseases. By Sinclair Tousey, A.M., M.D., Consulting Surgeon, St. Bartholomew's Clinic, New York. Price, $1.50. New York: Paul B. Hoeber, 1916.

The relative importance of dental infection will gradually be established. At present almost every disease is being laid to an alveolar abscess. The necessity of investigating the teeth and sinuses cannot be too strongly emphasized, but an alveolar abscess may exist and yet not be the cause of the disease which is being studied. Dr. Tousey himself quotes two estimates that "10 and 60 per cent. of all artificially filled roots are abscessed," as shown by *x*-ray. The *x*-ray must for some time to come be one of the later aids in most diagnoses, because of its expense. It is, however, a recognized and important adjunct. Dr. Tousey's book will be suggestive to many.

Society Reports.

FIRST DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Tenth Annual Meeting, Held in Poughkeepsie, October 14, 1916.

THE PRESIDENT, DR. JAMES E. SADLIER OF POUGHKEEPSIE, IN THE CHAIR.

Election of Officers.—The following officers were elected to serve for two years: *President*, Dr. Richard A. Giles of Cold Spring; *First Vice-President*, Dr. Joseph B. Hulett of Middletown; *Second Vice-president*, Dr. George A. Leitner of Piermont; *Secretary*, Dr. Charles Ellery Denison of New York City; *Treasurer*, Dr. John A. McCord of Poughkeepsie.

President's Address. — Dr. JAMES E. SADLIER of Poughkeepsie said that in view of the excellent program that had been provided he had considered it advisable to dispense with a formal address. However, there were a few matters worthy of attention. The First District Branch had been supposed to include eight counties; only seven of these had been active hitherto, owing to the fact that Putnam County had no county society. This was because of the geography of Putnam County and lack of transportation facilities making it inconvenient for physicians from the different sections of the county to find an easily accessible and central meeting place. This difficulty had not been overcome by the organization of the Dutchess and Putnam County physicians into one society; this would prove a distinct acquisition, not only to the First District Branch but to the State Society. Another point of importance which should be mentioned was that it was imperative that the county societies should be careful in the selection of their legislative committees. Legislation of significance to the medical profession would be brought up at the approaching session of the Legislature, particularly in reference to Workingmen's Compensation; it was highly important that physicians should acquaint themselves with such legislation before it came before the Legislature. The medical profession had always stood ready to do its part to further any cause for the betterment of humanity, and they should be prepared to do their part intelligently in respect to Workingmen's Compensation legislation, so that justice might be done both to the public and to the medical profession.

The Crucial Age of Man.—Dr. W. STANTON GLEASON of Newburgh presented this communication. (See page 881.)

Dr. HENRY LYLE WINTER of Cornwall related his own experience with the crucial age. He said the excellent paper which Dr. Gleason had presented opened up a wide field to their view. In a general way, it might be said that the several clinical pictures of decline of power which one saw between the ages of forty-five and fifty-five years were the result of autointoxication. He said this bearing in mind that the definition of autointoxication was a very loose one. He supposed autointoxication meant self-intoxication. There were four very distinct varieties of intoxication which were often wrongly classed together, only one of which was a true autointoxication. The other three were (1) toxemia by infection, (2) toxemia by absorption, and (3) toxemia by alimentary intoxication. The first group, which might be called autointoxication by microbes, because they are due to the toxins formed in the organism through microbes which have entered accidentally; they were not produced under the influence of a vital process. This condition was found in any of the acute fevers or chronic germ diseases. These were not forms of autointoxication, but were poisoning by specific toxins. The second group of toxemias by absorption were just as distinct. These occurred, for example, from any chronic suppurative process. Recently they had been hearing a great deal about the disorders arising from the teeth and gums. Any of these might give rise to toxic products accompanied by indols and phenols. Their absorption gave rise to more or less accentuated symptoms. The decomposition of retained urine in the bladder, for example, might give rise to symptoms of autointoxication by absorption. A third group which must be excluded from a definition of autointoxication were the alimentary intoxications. These arose from the ingestion of foods, tainted meat, fish, canned goods, etc. In this same group one must place the milk intoxications seen in infants. This group showed itself in three classical forms: First, the pseudotyphoid form, with scarlatinal or rubriform eruption; the botulic form, a true ptomaine toxemia with negligible intestinal symptoms, but with grave nervous manifestations, such as nuclear paralysis with dystrophy, strabismus, or peripheral paralysis with aphonia, etc.; and a mucodysenteric form, which was the most common form, and with which all were familiar. In the fourth group were the true intoxications. These were caused by the toxins produced under the influence of the vital processes of the organs. These were the factors that were most likely to be at work during what Dr. Gleason had aptly called the crucial age. These toxins were derived from two sources, from the disturbance of the functions of the tissues and organs of the body, or from a disturbance of the function of digestion. For practical purposes, Combe had divided the latter into two groups: (1) The dycrasic autointoxications. (2) The gastrointestinal autointoxications. The toxic substances produced by the functions of the different organs of the body were not found at their points of origin; they were either diffused through the blood or appeared only in the different secretions or excretions, and it was often difficult to trace them to their source. A certain number of these substances were not, strictly speaking, toxic. Instead of producing true qualitative changes in the blood they produced quantitative changes affecting the isotonicity, but these changes might be severe enough to even produce death. There were two varieties of these changes, a histogenic and an organopathic. The histogenic variety occurred under varying conditions. When the nucleins were destroyed and transformed into uric acid, purin bodies, xanthin, hypoxanthin, and pxalic acid, and these substances were formed in excess into the blood, one found the uric-acid diathesis. The same state of the blood might be found in leucemia from destruction of the nuclei of the leucocytes. This group was known as the nucleolytic autointoxications. Whenever the albumin was destroyed too rapidly fatty volatile acids and large quantities of ammonia were formed and acetone was also produced. This form of intoxication was the one that occurred in the condition known as acidosis, and was known as the hypotrophic autointoxication. It was essentially the condition which the writer had seen repeatedly in nervous exhaustion. The organopathic intoxications were numerous, and varied greatly. The first group dealt with the glands of external secretion. When these glands were not equal to the task imposed upon them, one had, for instance, in the case of the kidneys, uremia; when it was the liver, cholemia. The glands of internal secretion might also be responsible for autointoxication, as mylodema due to insufficiency of the thyroid, acromegaly from insufficiency of the pituitary body, etc. Then, again, there was gastrointestinal autointoxication, which must not be confounded with alimentary intoxication. There were true autointoxications caused by quantitative or qualitative alterations in a normal digestion. These were too numerous to discuss. It was obvious that the crucial age of man began at a time when, by reason of changes in his metabolic activity, his powers of resistance began to diminish and these autointoxications appeared. The practical clinical application of all this was that every man who reached the age of forty-five years should place himself under the observation of a competent physician, and should report for examination from two to four times a year. In making an examination of the urine, one should be particularly careful to look after the nitrogen output, not only the total nitrogens, but the nitrogen of urea, of ammonia, of the purin bodies, and of the extractives. These bore a reasonably fixed quantitative relation to each other in the normal individual. A disturbance of this relation meant trouble. This information would also assist them in regulating dietary errors with reasonable accuracy.

Dr. WILLIAM SEAMAN BAINBRIDGE, New York City, said if true autointoxication were limited, as had been suggested, to disturbances of the endocrine organs, and self-poisoning as the result of lack of elimination, excluding all absorption from the respiratory, the gastrointestinal, and the urinary tracts, the vital question still remained, "*What causes these disturbances?*"

Dr. GLEASON, in closing the discussion, said that in reply to Dr. Bainbridge he would say that as a general practitioner he felt that he was on the border line. He used, as far as possible, the knowledge furnished by laboratory investigators, but in their reports from the laboratory they were so enthusiastic that the labo-

ratory did not always convince the clinician; and when it came to a break, as it were, the clinician had to use his judgment. As to the production of the conditions which they were discussing, his deductions had come to about this point: The toxins came from the intestines, or from a focus of infection, and induced changes in the metabolism and in elimination. Then there were toxins about which they knew nothing. Again, they knew that some toxins came from a focus, and that often such a focus was a closed test tube. The action of such a toxin might be different in a closed focus from what it would be if exposed to the air. This fact might have its effect on a vaccine made from a culture taken from such a closed cavity. Furthermore, a vaccine must be prepared under strict antiseptic precautions. As to the toxins, there were toxins that were not known clinically that were at work, especially in gouty conditions, as it was well known that the blood was filled with uric acid in this condition. While they had gotten as far as the uric acid in the blood, there was evidently a vista lying beyond of which they knew nothing. The laboratory had thus far touched only on the outer edge.

Address by President of the Medical Society of the State of New York.—Dr. MARTIN B. TINKER of Ithaca made a brief address, in which he spoke of his visit to the various district meetings. He said that on the whole they were very interesting and a credit to the State Society. He said he would only speak informally as to the ideals and what he wished to accomplish in the State Society. In order to do this he would take as his text the Articles of the Constitution of the State Society and would preach from them. He said the first purpose of the State Society, as set forth in these articles, was "to bring into compact organization the medical profession of the State." The membership of the Society now numbered about 8,000, and there were in the State about 15,000 physicians. Allowing for those who were irregular practitioners, there were left several thousand who were not members of the State Society. This was doing about as well as the other State societies in the United States, but not as well as they would like to do. Every qualified practitioner should be made welcome in the Society and personal likes and dislikes should have no influence. The second ideal of the Society, as expressed in the Constitution, was the "extension of medical science." Undoubtedly, every doctor had cases that would be of value if he would report them to his local society. With this idea in view, and for his own advance in knowledge, he should take careful histories and keep accurate records of his cases. The third purpose of the Society was to "secure the enactment of just medical laws." There were a number of medical societies whose only purpose was the advancement of scientific knowledge, but which had no concern with medical legislation, so that it remained to the National and State Societies to secure the enactment of proper medical laws. They would have to keep an eye on the laws affecting medical practice, and they should be familiar with medical compensation laws in connection with the Workingmen's Compensation. If physicians did not protect their own interests in these matters no one else was going to do so. The physician who had among his patients the family of a member of a legislative committee could exert more influence with such a man than some official of the State Society with whom the man was not acquainted. Here was a great opportunity for the country practitioner to show what he could do, for the time to stop objectionable legislation was not after it had reached a legislative committee; such legislation should be killed, before it reached any committee, by the local medical societies. These results could not be attained without personal sacrifice, but it was the plain duty of all to take up their responsibilities in this matter and not to leave everything to their officials. The fourth purpose, as expressed in the Constitution, was to "promote friendly intercourse among physicians." There was a tendency to pettiness and jealousy in small communities; the best way out of this was for physicians to get together and all take an active interest in the local and State societies. The fifth purpose of the Society was "to guard the material interests of its members, and this was especially a question of medical defense against malpractice suits. There seemed to be a large number of unscrupulous people who thought they saw an easy way of getting money by suing the doctor, and the best assurance against this danger was to be found in membership in the Medical Society of the State of New York, whose attorney had been more successful protecting its members against malpractice suits than any other in this country. The sixth purpose of the Society was the "enlightenment of the public as to the state of medical science." The medical profession had always been a great deal in advance of actual practice in its scientific knowledge. For instance, twenty years ago physicians knew the cause of typhoid fever and how to prevent it, yet it was only five or six years ago that a city like Philadelphia could be made to see the necessity of pure water supply. The public has found considerable fault with the profession because they did not know the cause of poliomyelitis, and when any one assumed this attitude it was well to call his attention to the fact that the public did not to-day take advantage of one-half the knowledge that the medical profession had given it in regard to sanitation and preventive medicine. Individually, and as a profession, our support should be given to public health work.

Experiences in Serbia During the War.—Dr. ETHAN FLAGG BUTLER of Yonkers presented this paper, in which, in order that the factors involved in the outbreak of the epidemic of typhus might be understood, he described the nature of the country, its peoples, and the progress of the war up to that time. He said the country was essentially agricultural, and facilities for transportation were very limited, it being necessary in order to reach certain places to travel by oxcart or to walk. The climate approximated that of northern New York or New Jersey. There were few towns of appreciable size, and but one city worthy of the name—Belgrade. With the exception of Belgrade, all the towns, in their architecture and lack of sanitation, showed the Turkish influence. The people, as a whole, were ignorant, slow to learn, and wholly devoid of the least conception of hygiene or sanitation. Their sense of honor was not overkeen, but they were brave and patriotic. Every physician was a medical officer in the army or on the reserve list. However, the organization and efficiency of the medical department of their army could not be rated very high. The strong offensive launched against Serbia by the Austrians in the early part had the effect of driving a large proportion of the noncombatant population to the central and southern part of the country. Overcrowding resulted, and the increasing number of wounded made the establishment of reserve hospital points necessary here and there throughout the land, and patients were rushed to these points even before staffs had been secured to take charge of the hospitals. The American Red Cross responded to the call for doctors and nurses, and sent out three units, the second of which was in charge of the writer. When their party reached Serbia they found themselves cut off from the other units, one of which had fallen into the hands of the enemy. They were sent to a primitive little village on the Greek border to take charge of the Reserve Hospital there located. This hospital proved to be a large warehouse with great bare lofts and unpartitioned spaces, with no running water, and no provision for the disposal of sewage or waste. Bedding of all kinds was insufficient, and laundry facilities nil. There were 850 filthy patients, most of them with infected compound fractures, and within twenty-four hours 450 were added. They had come primarily to render surgical assistance, but there was greater need of sanitation. It was under such conditions as these that typhus, which was always endemic in the Balkans, broke out. The method of handling the soldiers was largely responsible for the rapid spread of the disease at this time. In January, 1915, it became apparent that a serious epidemic existed, and from that time until the middle of April, 1915, there was a very rapid increase in the number of cases and the virulence of the disease. After that it gradually declined. While their party was in no position to investigate scientifically the etiology of the disease, there was nothing in their experience that would tend to contradict the theory that it was louse borne, and only louse borne, and particularly borne by the body or clothing louse. Lice were everywhere, and no one escaped them, but those having found few lice seemed to have been the ones to escape the disease. There was no evidence to show that infection occurred through handling the skin lesions, by dust, droplet, or from excreta. In support of the louse theory it might be stated that delousing of the patients prevented the spread of the disease, no case occurring in louse-free wards, unless they were being incubated at the time of admission. One small pavilion was kept entirely free from typhus for two months while the epidemic

was at its height solely by insisting that no patient should be admitted unless he were thoroughly deloused to the satisfaction of the authorities in charge of the hospital. At Belgrade the same thing was demonstrated. Constant vigilance was assential at all times, and none but Americans could be trusted with the important features of this work. They had had the opportunity of observing a large number of cases of typhus fever, there being 922 cases within the military hospital at Belgrade, whither they were sent after completing their service on the Greek frontier. That was the high figure for one day. The total number of cases seen was well into the thousands. There was also a series of cases occurring among Americans, Serbs, British, Italians, and other nationalities, which came under their care. A small group of patients, comprising their own staff invalids and persons of authority brought to them that they might secure the advantages of their nursing staff, afforded an opportunity to keep records and to follow the course of the disease minutely. The incubation period was from seven to fourteen days. In the majority of cases the onset was sudden, characterized by high fever and headache. The temperature remained high and the pulse rapid throughout the acute course. On the fourth or fifth day the typical skin rash appeared, petechiae, 2 mm. in diameter, increasing in number from day to day, and not fading on pressure. Throughout the course of the disease there was much headache, and pain in the extremities. A profound toxemia occurred, affecting the central nervous system, heart, and blood vessels. During the acute course there was tremor, incoordination, involuntary passages of urine and feces, and delirium. The pulse became irregular in rate and force, and diminished in volume. The acute cases lasted from three to seventeen days, and were terminated by lysis. As the epidemic progressed the cases became more virulent and the mortality increased. Convalescence was slow, and complicated by peripheral neuritis, psychoses, gangrene of the extremities, and abscesses in most any part of the body. The true mortality would never be known. The primary rate approximated 50 per cent. and with the secondary rate, from complications and sequelae, brought the total mortality to about 65 per cent. With good nursing and special care the mortality of the cases received into the series receiving special care was 10.7 per cent. Preventive measures consisted in the thorough delousing of all patients within the hospital and prior to admission. Where there were no lice there could be no typhus. The acute cases were treated much the same as typhoid fever was treated in this country, the bulk of reliance being placed on good nursing, keeping the patient quiet and free from worry. A fairly liberal soft diet was allowed, and fluids were forced upon the patient. Toward the end of the second week, when the heart muscle began to weaken, various preparations of digitalis were used, most frequently digalen, hypodermically. In closing, Dr. Butler spoke of the lessons of the war, and commented more particularly on medical preparedness, stating that preparedness meant not only the accumulation of arms and munitions, but chiefly in the thorough training of the maximum number of able-bodied males in the military duties that they were logically qualified to perform in times of war. This applied with peculiar force to the doctors. From personal experience at home and abroad it was evident that it was no more feasible to take doctors from civil life and place them on active duty as medical officers of the army than it was to recruit a regiment and then send it, without further training, to the front. It rested with each member of the medical profession to decide how far he was willing to devote himself to his country and to secure the necessary training for a medical officer's duties.

Experiments in the Use of Moving Pictures in Teaching the Technique of Surgery.—Dr. JOHN A. WYETH of New York presented this communication. He said that in the teaching of clinical surgery some general idea of the technic might be obtained by observation from points more or less removed in the amphitheatre, the practical knowledge which was absolutely essential could only be acquired by immediate personal contact with the operator. With the advent of motion picture photography they began and were still carrying on experiments in order to satisfy themselves of the value of this means of demonstrating operative technic to their classes. Operations on the cadaver and on the living subject had proved fairly satisfactory, and they inclined strongly to the opinion that with improved apparatus and wider experience on their part and on the part of the mechanician, still better results might be obtained. A gratifying feature of this work was that it was possible to send these films to medical societies all over the country, thus enabling many practitioners who could not find time to visit central clinics to profit by these demonstrations. Dr. Wyeth gave an exhibition of these pictures, showing a bloodless amputation at the hip joint, a ligation of the external carotid, operation for an inguinal hernia, and his method of injecting boiling water in exophthalmic goitre. In describing the ligation of the external carotid, Dr. Wyeth said that until 1878 this procedure was forbidden by the textbooks on the ground that the external carotid was an exception to the general rule in that it did not give off its branches in a regular manner. He felt convinced that this statement was not true and in order to prove his contention made 121 dissections and careful measurements which demonstrated that the external carotid was no exception to the laws of development. In 1878 he read a paper before the American Medical Association in Buffalo setting forth these facts and describing his method of ligating the external carotid. This procedure bore his name for a time, but the fact that he had originated it seemed to have been forgotten.

Early Diagnosis of Cancer.—Dr. PARKER SYMS of New York made this presentation, giving a lantern slide demonstration of the microscopical changes that had been observed in the precancerous stage and the early stages of cancer. He confined himself to facts concerning cancer as distinctive from epitheliomata. He emphasized the fact that cancer in its early stage was a purely local disease. The first change which manifested itself microscopically was in the nuclei of the cells; these became hyperchromatic. The next step was a slight fibrosis; then an increasing fibrosis, plugging of the acini, and infiltration and cell proliferation. Dr. Park spoke somewhat at length of the difficulties surrounding the early diagnosis of cancer and emphasized the fact that it was only the early recognition of the condition and early operation that offered any hope for the cancer patient. He reviewed the symptoms of cancer of the breast, laying stress on the fact that pain was not a prominent symptom, but the "non-restful" breast was likely to be an indication of the precancerous stage. Dr. Syms also spoke somewhat at length of the significance of gastric ulcer as a precursor of cancer.

Dr. S. W. S. TOMS of Nyack said he felt that Dr. Syms had covered the subject very thoroughly so he would only emphasize a few points. The first of these was that we should not look for physical signs of cancer as much as we did for a disturbance of function. A disturbance of function that did not clear up in a reasonable time should be regarded with suspicion. A cancer had practically the same relation to the body of the individual as a case of contagious disease had to the community. In order to protect the community the case of contagious disease must be isolated; in order to protect the individual the cancer must be extirpated in its early stage. The fact that cancer occurred in both husband and wife in a number of instances might only be a coincidence; however, it was a rather striking fact that merited consideration. Statistics seemed to reveal the rather disquieting fact that cancer was on the increase in all parts of the civilized world; the census of 1900 showed an incidence of 63 deaths from cancer per 1000 population while that of 1913 gave 75 per 1000 population. The records of Bloodgood showed that 60 per cent. of the cases could be saved by early operation. An important point which we should recognize and which we should do our part to correct was that among the laiety there was a misconception in regard to the early signs of cancer. They looked for pain, and did not recognize the fact that pain was practically a symptom of the last stages of cancer. The correction of this misconception was a missionary work which should be undertaken by the physician. Our patient should be taught that every lump was suspicious and that irritation and misplaced organs provided a basis for cancer. They had no specific rules for the early diagnosis of cancer.

Dr. WILLIAM SEAMAN BAINBRIDGE said he wished to take exception to the last statement. They had one cardinal rule and that was that they should never manipulate a tumor. He cited authoritative evidence showing that the handling of a tumor reduced the patient's chances of life 40 per cent. Many a patient who had a good chance for life lost it either before or at the time of operation through disregard of this cardinal principle.

Dr. Edward C. Thompson of Newburgh called attention to the fact that the Mayos had followed up a large series of cases in which the pathological findings had been negative and cancer developed later.

Dr. Eliza M. Mosher of Brooklyn said she wanted to make a plea for the women themselves. When a woman came to a doctor thinking she had a condition that was perhaps suspicious of cancer, she was frequently dismissed with the statement that she was only nervous and there was nothing wrong with her. This made her feel foolish, and she would decide never to consult a doctor again unless she was absolutely certain there was something wrong. When a woman came to consult a physician because her fears have been aroused that she might have a malignant condition she should be made to feel that she had done the right thing and that it was much wiser than to have neglected a suspicious condition.

Chronic Intestinal Stasis. — Dr. William Seaman Bainbridge of New York City presented this communication, which was liberally illustrated by lantern-slide pictures showing different types of stasis and methods of treatment. In a preliminary historical sketch of man's efforts to find the causes and the cure of disease, Dr. Bainbridge recalled some of the theories which, from time to time, had held sway. Among the present-day theories might be mentioned, along with the germ theory, the view that disturbances of the internal secretions bore a causal relation to disease; also that disease was dependent upon the nutrition of the tissues and the tissue-cells. The treatment of disease, therefore, was not only a question of the elimination of the toxic products of bacterial activity, but of the toxins elaborated by the tissues themselves. This had been abundantly proved by Carrel's experiments with the maintenance of life, *in vitro*, of tissue removed from the body of which it had formed a part. Failure to remove the toxins which resulted from cellular activity, invariably resulted in the death of the tissue. It was evident, then, that the faulty elimination of the products of physiological activity was a fundamental factor in the production of disease. Just what part the internal secretions played in this connection had not as yet been definitely determined, but the importance of the gastrointestinal tract in the general maintenance of proper elimination and the preservation of health, was a matter of common knowledge. The question of the prevention of disease was largely a matter of body-plumbing, which might involve any part of the human house. Dr. Bainbridge here briefly described the chief types of defective body-plumbing which lead to the condition now generally known as chronic intestinal stasis. This condition was a persistent retention or retardation of the contents in some part of the gastrointestinal canal, at certain points of predilection, where kinks or angulations of the canal resulted from undue pull or constriction by bands of adhesion or resistance. The fixation of any point in the length of the tube, with a dropping of the tube on either side of this fixed point, produced a kink or an angulation, and this, in turn, interfered with the onflow of the contents of the canal. This stasis of effete material was followed by absorption, autointoxication, and a long chain of symptoms varying in degree with the degree of interference with drainage. The toxic symptoms were thus secondary to the mechanical changes. Chronic intestinal stasis was to be differentiated from chronic constipation, which was confined to the lower bowel. Either constipation or diarrhea might accompany stasis. Cases of stasis were classified, according to the degree of stasis and the severity of the symptoms, into: (1) Beginning cases, in which a definite condition of stasis might be prevented by proper dietary and hygienic conditions; (2) mild cases, in which, in addition to the preventive measures, it might be necessary to resort to moderate surgical interventions, such as the cutting of bands, replacing hollow organs, changing angles, and otherwise restoring normal relations; (3) advanced cases, in which radical surgical measures were demanded, such as ileo-colostomy (short-circuiting), or ileocolostomy with colectomy. After surgical treatment, by conservative or radical measures, the cases were then replaced in the first group, and were to be kept under the surveillance of the family physician or gastroenterologist, for the purpose of continuing, as long as necessary, the prophylactic measures employed in the beginning cases. If this post-operative treatment were neglected, recurrence of the severer condition would be imminent. Dr. Bainbridge emphasized the fact that the first and second groups were by far the larger, and that the radical measures employed in the third group should be resorted to only when absolutely obligatory, and after the simpler measures had been ineffectually utilized, or had been ruled out by careful examination by the various diagnostic measures now available.

Dr. Eliza M. Mosher of Brooklyn said that there were many of these cases that should not reach the surgeon, and it behooved medical men to ask themselves what they were going to do about these patients. The first thing to do was to make a correct diagnosis. They could not hope to gain the dexterity and acute sense of touch that Dr. Bainbridge and Dr. Lane had attained, that was beyond the average man, but they could be a little more careful in their observations. When a patient came into the office with bad posture, stooping shoulders, narrow chest, and the symptoms that went with enteroptosis, he should be able to recognize the fundamental cause of that patient's ill health. A great deal could be learned in these cases by the use of the stethoscope, applying it successively over the different parts of the stomach and abdomen. The patients which Dr. Bainbridge had designated as belonging to the first group could be cured or greatly improved by proper treatment. In addition to the regulation of the dietetic and hygienic habits of these patients a properly fitting abdominal belt would do much toward the restoration of the viscera to their normal position. Dr. Mosher showed the belt which she had devised and which she had employed in some 324 cases during the past few years. The belt was so constructed that it held up the recti muscles, and if these were held up the side muscles would stay in their proper position. Yawning and deep breathing were to be recommended, as they restored the viscera to their normal positions. During a yawn the abdominal muscles were flattened and drawn up, and throwing back the head raised the diaphragm and restored the viscera to a more normal position. Dr. Mosher cited an instance in which a subsequent operation showed a most remarkable development of the abdominal muscles which had been secured by these exercises, and in closing emphasized the fact that many physicians were culpable of allowing enteroptosis to pass unrecognized and not properly treated.

Dr. Edward C. Thompson of Newburgh said what they had just listened to was valuable not only in that it pointed the surgeon to big endeavor, but because of the fact that it pointed the general practitioner to the need of more careful diagnosis. It brought out the idea that the ability to make a careful diagnosis was of as much or more importance than the mechanics of surgery. The ideas which Lane had brought out really meant fewer operations, fewer sewings up of kidneys, fewer appendectomies, and fewer major operations, and it was to be hoped that when the surgeon did operate he would have the intelligence to lift up the ileum.

Dr. James E. Sadlier of Poughkeepsie said he expressed his appreciation of what Dr. Bainbridge and Sir Arbuthnot Lane had done for the profession in bringing out the importance of the condition which they had designated colonic stasis. He also accentuated the importance of post-operative care. Proper post-operative care was a most important factor; many of these cases returned to a sedentary life, and unless their diet and hygiene was properly regulated they could not be put back into the well class.

Diagnosis and Treatment of Acute Infections of the Nasal Accessory Sinuses.—Dr. Milton A. McQuade of Poughkeepsie read this paper. He said he had chosen this subject because these infections in the great majority of cases followed influenza and acute coryza, or occurred as a complication or sequela of some infectious disease, and it was the family physician whose advice and treatment were sought. He outlined the anatomical and physiological points which helped to an understanding of the process of acute infection, calling special attention to the fact that the nasal accessory sinuses were rudimentary in childhood and not fully developed until the age of fifteen to eighteen years. This accounted for the fact that there was little sinus involvement in the acute coryzas and infectious fevers of early years. Lindenthal had shown that the influenza bacillus was the most common cause of acute sinus involvement. Diphtheria and croupous pneumonia were frequently complicated by acute sinusitis due to direct invasion. The other infectious fevers might be an etiological factor from lowered vitality. Dental caries was responsible for about 20 per cent. of antrum suppuration. Tuberculosis, syphilis, malignancy, and osteomyelitis were infrequent causative factors. The primary infec-

tive organism might disappear, allowing the germ of secondary infection to continue the disease; these were most frequently members of the streptococcic and staphylococcic groups. The symptoms of infection of the nasal accessory sinuses were fever and circulatory disturbance, usually facial congestion, occluded nares, nasal discharge, general irritability, depression, restless sleep, and often visual disturbances. Headache was nearly always present, but very variable as to location, duration, and intensity. As a rule there was more or less neuralgic pain in and about the affected cavity; referred pain might occur along the branches of the trigeminus. Yankhauer had noted that if steam inhalations relieved the headache, one could believe the cause to be in the nasal chambers or sinuses. Tenderness under the floor of the frontal sinus, directly above the inner canthus was pathognomonic of inflammation of this sinus. Antral tenderness was occasionally present but was variable. Purulent secretion from the nasal chambers to be pathognomonic of sinus disease must constantly reappear in the vicinity of the sinus opening. Cacosmia, or an offensive odor in the nose, was most pathognomonic of sinus disease. Transillumination as an aid to diagnosis was of comparative value only, due to irregularities in the thickness of the bony walls and septa, and the difference in the size of sinuses. The *x*-ray was also of little value in the early stage of the inflammation, but later it might enable one to determine the condition of the sinus and its size and position in case operative interference became necessary. Suction was occasionally of value in purulent cases. In the antrum, puncture and washing was the surest way to demonstrate secretion. When the maxillary antrum was involved pain was usually referred over the orbit and around the upper teeth and jaw. There was a feeling of distention and pressure, which might not necessarily be due to pent-up secretion but might be due to swelling of the mucosa. The anterior antrum wall might be sensitive to pressure. Transillumination might show a darkened area as compared with the opposite side. This might be confirmed by *x*-ray, by suction, and by washing. In involvement of the frontal sinus there was referred pain along the supra- and infra-orbital branches of the fifth cranial nerve and pain referred directly to the sinus dull, expanding, and throbbing rather than neuralgic. The morning exacerbation was common and often precipitated by some slight exertion, such as stooping, coughing, etc. Ethmoid involvement occurred to a greater or lesser degree with every acute coryza. The symptoms were those of a severe cold in the head, with neuralgic outshoot to the deeper structures of the eye, resulting in ocular symptoms. The diagnosis of acute spenoidal involvement was seldom made on account of the difficulty attending the examination. Here the headache was often localized in the parietal or temporal regions, radiating to one or both ears. There was a feeling as though the eustacian tubes were closed. Ocular symptoms were more marked and there was more fever and general prostration than in ethmoid involvement alone. The complications that might occur were better understood by keeping in mind the anatomy of the parts and their close interrelation. One could then understand why one might expect to find among the complication such conditions as inflammation of the retina and optic nerve, muscular esthenopia and loss of accommodation, the various forms of meningitis, and thrombosis of the venous sinuses. In the treatment of nasal accessory sinus conditions the patient should be put to bed, given a purge, mustard foot baths, and Dover's powder. Local depletion should be effected by cocaine or adrenalin only if necessary, as frequently they were inefficient and had a tendency to aggravate the symptoms. Hot alcoholic drinks should be avoided. Ice bags over the forehead and eyes were indicated if the headache was severe. After purgation had been established, aromatic spirits of ammonia should be administered, half a drachm every hour for eight to ten hours. A formula which had been used with satisfaction for years consisted of sodium salicylate and quinine, each two grains, and Dover's powder, one grain, giving a capsule every two hours. About 95 per cent. of acute inflammations would respond favorably to this treatment. In acute fulminating forms of sinus involvement operative measures might be necessary to provide drainage.

Some Clinical Experiences in Heart Disease.—Dr. J. H. M. A. VON TILING of Poughkeepsie reviewed some personal experiences with patients suffering from heart disease and allied affections and presented deductions from these. He said they should not forget that the heart was not simply a mechanism which acted according to certain definite inflexible rules, but was a very delicately adjusted living organism with great individual differences in different people. It seemed absolutely wrong to approach a patient with any preconceived fixed idea as to how high the blood pressure should be, what his heart sounds should be, etc. There was no such thing as an absolutely normal blood pressure, nor an absolute normal heart. The all-important question rather was whether that heart was able to fulfill its function satisfactorily—could the circulation be properly maintained? This question obviously resolved itself into the question, "Was the reserve force of the heart muscle intact, or was it failing?" They must realize that it was in the last instance not a defective valve nor a contracted artery which caused the failure to maintain an efficient circulation but the heart muscle which was unable to overcome the obstacles, and they must judge the strength of the heart muscle and its ability to promptly and sufficiently answer to all reasonable demands if they wished to come to a clear understanding of their patients. In that respect it did not help merely to find that the patient had a certain kind of heart murmur or a certain pulse rate while he was at rest, but it was more important to know if the patient was becoming breathless after slight exertion and it was also very important to learn how often the heart acted when called upon to perform different kinds of extra work, such as at the time of extra-physical exertion, at the time of pregnancy and parturition, during times of sickness, or times of mental strain, worry, or sorrow. The proper adjustment of heart valves and the whole mechanism of the arteries and veins made it easier for the heart muscle to maintain the circulation, and, if anything went wrong with this adjustment, the heart muscle was called upon to do more work; as long as the reserve force of the heart muscle was intact it could perform this extra work. A heart with damaged valves meant that the heart muscle had to do more work than if the valves were perfect; such a heart muscle would fail easier than if the valves were intact; but that same fact was true in different people with healthy hearts. The heart of a man weighing 300 pounds had always more work to do than the heart of a man who weighed only 150 pounds, and it seemed wrong to subject a patient to treatment, or to consider him as ineligible for life insurance just because he had a heart murmur, as long as the reserve force of his heart muscle was sufficient for ordinary circumstances. The first symptoms of a gradually beginning failure of the heart muscle were not definite dilatation of the heart, enlarged liver, ascites, or general edema; if they waited for these symptoms before beginning treatment they would not do justice to their patients. The first symptoms were rather often quite insignificant and they were almost always subjective and with no physical signs. There might be palpitation, breathlessness, distress, feeling of weakness, etc. Therefore, it seemed of the utmost importance to take painstaking histories of these patients; a good history was often of more importance and value than the physical examination to determine the condition of the heart muscle. He believed that even the electrocardiograph was of less value than an exact history with proper valuation of the subjective symptoms. Besides, he did not believe a general practitioner would ever carry an electrocardiograph in his pocket—certainly not in their lifetime. It was often very difficult to place the proper valuation on the subjective symptoms complained of by the patient. Many patients would become quite angry and perhaps leave you if you wanted straight answers to the questions; for instance, if you did not allow them to state that they had a pain in the heart, or in the kidneys, when they did not know where their heart or kidneys were, and when the pain was simply somewhere in the left side or somewhere in the back—or if you did not let the patient get by with the statement that he was unable to walk because he was paralyzed, without making him state definitely if it was merely a weakness of the muscles or stiffness of the joints, or pain, or breathlessness, or dizziness, etc., which prevented him from walking. Very often they would find that the patient had forgotten, or did not notice, that the first slight symptoms of the failing heart until his attention was drawn to it; for instance, he might not have noticed that his heart beat much faster when he walked up a slight hill, or that he had to open his mouth to get sufficient air as soon as he walked a little faster than usual, yet those slight symptoms were of great importance and

the earlier the weakened heart could be placed under a proper régime the more chance for a cure. The heart might be only secondarily affected and the case for the apparent heart symptoms might be somewhere else or, on the other hand, one might get complaints attributed by the patient to other organs which really were caused by a deficient circulation in those organs for which again the heart muscle was responsible. One of the first subjective signs of a failing heart that many patients complained of was a general feeling of weakness or exhaustion; but this was by means always of cardiac origin; it was often of a vasomotor origin. The extreme of this same condition might be fainting spells, which meant, of course, a temporary failure of the heart to sustain a sufficient circulation in the brain, but they should not forget that some fainting spells might be of purely mental origin. Mental exertion certainly had an influence on the heart, and it was true that the weakened heart could cause mental and general nervous symptoms before there was any physical evidence of organic heart lesion. It would be of extreme value if they had a definite method of measuring the reserve force and getting a definite idea of the functional capacity of the heart muscle. Unfortunately they had no absolute standard for this reserve force of the heart muscle. Each person had his own personal standard and test for the functional capacity of his heart. The object of all treatment was to prevent the exhaustion of the reserve force and to restore the more or less exhausted reserve force of the heart muscle. Rest, of course, was of the utmost importance in those cases in which the heart muscle had been weakened by overwork, but one should not forget that rest for these patients meant mental rest as well as physical rest. It was well known that many poisons would cause degeneraive changes in the heart muscle.

Dr. S. NEUHOF of New York said that aside from Dr. von Tiling's remarks regarding the assumed value of laxatives in reducing cardiac dilatations, he agreed in the main with the many excellent points that he has made. He has, for example, emphasized the great importance of careful history taking, an almost lost art. He has correctly stated that cardiac murmurs did not necessarily spell heart disease. He has quite properly remarked that most cases of so-called weak hearts were due not to organic disease but to vasomotor instability. Though it was quite true, as Dr. von Tiling stated, that an electrocardiographic apparatus could not be "carried around in one's pocket," he possibly had forgotten that the lessons to be learned from it should be carried around in one's mind and thus if not otherwise available it was of use at the bedside. By just this process of translating instrumental into clinical knowledge they have learned to readily recognize such arrythmias as auricular fibrillation and extrasystoles at the bedside. Speaking broadly, in decompensated cardiovascular cases in whom the factor of infection was either quiescent or non-existent, he attempted for therapeutic and prognostic purposes, to group the patients as follows: (1) Mitral lesions with rhythmic heart. These patients improved only slowly or sometimes not at all upon digitalis. Rest with them was an extremely important factor. (2) Mitral lesions with auricular fibrillation. Unless decompensation was extreme or long continued, these patients improved very rapidly under digitalis. The irregular cardiac activity was quickly controlled. The digitalis acted here apparently by blocking many of the discordant auricular impulses passing through the conduction system. (3) Aortic lesions with slight or moderate ventricular hypertrophy. These cases usually reacted well to rest. Digitalis was not of much value. The bromides were occasionally followed by good results. (4) Aortic lesions with extreme ventricular hypertrophy. These patients did not react well to digitalis possibly because there was not sufficient healthy cardiac muscle upon which the medication might act. Even if auricular fibrillation were present, digitalis medication was not apt to be followed by beneficial results. (5) Cardiosclerosis with decompensation. By the term cardiosclerosis, the speaker said he meant a pathological condition in which there was a varying mixture of aortic, coronary, valvular, and myocardial disease. Those with cardiac failure and with edema, with or without hypertension, were apt to react well to the Karrel diet, and digitalis and theobromine sodium salicylate on alternate days. He had modified the Karrel 1,000 c c. milk day by giving only 500 c.c. of water, tea or coffee on the theobromine days with excellent results, especially upon the diuresis and the disappearance of dropsical effusions. In cardiosclerosis, hypertension, and uremia, without myocardial insufficiency, the symptoms were mainly uremic. The therapy lay chiefly in the administration of alkaloids and the giving of purely carbohydrate diet or one low in protein and rich in carbohydrates.

Report of a Possibly Milk-Borne Epidemic of Infantile Paralysis.—Dr. JOHN C. DINGMAN of Spring Valley presented this report in which he related the circumstances in connection with a series of cases of poliomyelitis that directed attention to a small milk dairy as the source of infection. On July 23 Dr. Dingman said he had been called to attend sick children in three different and widely separated summer boarding houses. In one, called the Levine House, he found four children ill with what had been diagnosed and treated by another physician as malarial fever. They all became ill on July 20 and 22 and all presented the same clinical picture, namely, fever, vomiting, obstinate constipation, and a drowsy, soporous mental condition. Two of these cases went on to frank paralysis of the lower extremities, while the other two recovered without showing muscular weakness or paralysis. These four children had all used raw milk from a dairyman, whom he would refer to as X. Three other children in the same house who used milk from another source all remained well. The diagnosis of poliomyelitis in these children was verified by Dr. Le Grand Kerr of Brooklyn. In another boarding house called "Locust Court" was a 3½-year-old girl suffering with a similar illness, although more severe. She developed paralysis of the muscles of deglutition and speech with a slight affection of the muscles on one side of the face. She also showed meningeal symptoms. The diagnosis in this instance was confirmed by Dr. Koplik of New York. The rest of the children in this boarding house, four or five in number, escaped. Upon learning that this child also had used milk from dairyman X, Dr. Dingman said he became suspicious and on July 27 visited the premises of this man. Only two cows were kept in a very filthy barn which had never been inspected by the health authorities and the proprietor had no permit to sell milk. The house occupied by a tenant was very dirty, unscreened, and swarming with flies. All sanitary arrangements were primitive and unclean. A four-year-old boy had been ill five days and showed a beginning paralysis of the right leg. By patient questioning of the tenants it was discovered that a four-year-old son of the Russian landlord had been acutely ill with fever and vomiting on July 4, and had been in bed and unable to walk for some time. The parents had not called a doctor and the child was up and about. This boy on inspection was found to walk with some difficulty and to drag one foot. On the same day, July 23, on which the writer was called to the Levine house, he had been called to another boarding house, High View House. Here he saw a four-year-old boy who had become ill the day before with fever and vomiting. This case ran a moderate course with only slight paralysis of the right leg. The diagnosis of poliomyelitis was confirmed at the Willard Parker Hospital. This boy also had been using X's milk. There were no other cases at High View House and had been none all season and this house had its own dairy. In addition to the houses already mentioned three others were supplied by this same dairy. In one of these there were no children and the milk was not used raw. In a second house there were two families who had used X's milk but boiled it before giving it to the children. In the third house there were three children who had used this milk but the parents were emphatic in the statement that the milk had been boiled before being given to the children. The eight cases here described were the only cases which developed in or about Spring Valley up to this time and for some time afterward. The few scattering cases which did occur later in the summer apparently had no connection with this group of cases. In order to determine whether these children, all of whom came from Brooklyn, might have received the infection before coming to Spring Valley, the writer reviewed the cases more thoroughly and stated that they had been followed up at their homes in Brooklyn, and so far as a thorough investigation showed that they had not been exposed to the disease before coming to Spring Valley. Three of these children began using the milk on July 10 and in ten or twelve days showed the first symptoms of the disease. It was clear that all the children coming down with the disease were

using the milk from July 6 to 16, at the time that the Russian boy, the son of the dairyman, was in bed with the disease. Under the conditions of gross filth existing on the premises of the dairyman it seemed reasonable to believe that one or more messes of milk had become contaminated by the discharges or vomitus of the Russian boy, who became ill on July 4. The infective material was probably conveyed by flies, which had access to the sick boy and to the milk, and thus the disease was carried to the other seven cases. Strong corroborative evidence of this might be found in the following facts: (1) All of the cases had their onset either on July 20 or 22. (2) They all used the raw milk, while the families that used the same milk during the same period boiled it. (3) The milk was not chilled but delivered warm, which made it an excellent culture medium for the virus. (4) At that time all the cases of this disease reported within four or five miles of Spring Valley were among the customers of this dairyman.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

KENTUCKY STATE MEDICAL BOARD.

June 13, 14, *and* 15, 1916.

(*Concluded from page* 838.)

ETIOLOGY AND PHYSICAL DIAGNOSIS.

1. Give the etiology of vertigo.
2. What are most common causes of varicose ulcers of the leg?
3. Give the etiology of rachitis.
4. Give the etiology of lung abscess.
5. Give the most probable etiological factors in the causation of cholelithiasis.
6. Give the diagnosis of Grave's disease.
7. Give the diagnosis of psoriasis.
8. Give the diagnosis of spontaneous intracerebral hemorrhage (apoplexy).
9. Describe the various kinds of pulmonary rales and give the significance of each.
10. Give diagnosis of aortic regurgitation.

PRACTICE AND MATERIA MEDICA.

1. (*a*) Give etiology of acute lobar pneumonia in the adult, with physical signs of the different stages. (*b*) How many stages of the disease, in order of occurrence? (*c*) Give treatment for all. (*d*) What remedy is considered a specific by some authors?
2. (*a*) Name different kinds of pneumonia in children. (*b*) Give diagnosis and treatment of each kind.
3. (*a*) Define hookworm disease. (*b*) Give causation. (*c*) Mode of infection. (*d*) Treatment. (*e*) What new remedy have we, and how is it used? (*f*) Does hookworm ever simulate other diseases, and of so, what?
4. (*a*) Diagnose and treat acute indigestion. (*b*) If at all, when would you administer opiates? (*c*) By what method would you use them?
5. (*a*) Differentiate between acute and chronic nephritis. (*b*) Differentiate between chronic interstitial and parenchymatous nephritis. (*c*) Give treatment for acute and chronic nephritis, both medical and dietetic.
6. (*a*) Discuss the use of radium as a therapeutic agent. (*b*) In what diseases would you prescribe digitalis, and what precautions, if any, would you take in its use?
7. (*a*) Do you know of any specifics in medicine? (*b*) If any, name three of them, giving dose and indications for their use.
8. (*a*) How would you avoid salivation after giving calomel? (*b*) What is the usual dose of calomel? (*c*) Would you give the entire dose at once or divide it?
9. (*a*) How would you prepare a tasteless dose of castor oil? (*b*) How best give turpentine in typhoid fever, if used for some time?
10. Would you recommend any drug or drugs to differentiate between typhoid and malarial fever? If so, name them, and how would you use them?

OBSTETRICS AND GENECOLOGY.

1. Name (*a*) the female internal organs of generation, (*b*) giving function of each.
2. (*a*) What is podalic version? (*b*) Cephalic version?
3. (*a*) Give etiology of adherent placenta. (*b*) What precautions would you use in delivering one?
4. Give symptoms of pregnancy at fifth month.
5. What changes take place in the female economy at puberty?
6. How would you manage a case of antepartum hemorrhage?
7. (*a*) Give symptoms of ovarian cyst. (*b*) What treatment would you advise and (*c*) why?
8. (*a*) What is the most frequent cause of cervical ulceration? (*b*) What are the symptoms?
9. Define (*a*) menopause, (*b*) metritis, (*c*) salpingitis, (*d*) mastitis and (*e*) menstrual cycle.
10. (*a*) What antiseptic precaution would you use in the eyes of the new born, and (*b*) why?

ANSWERS.

ETIOLOGY AND PHYSICAL DIAGNOSIS.

1. *Etiology of vertigo.*—Eyestrain or paresis of one or more of the muscles of the eye, disease of the semicircular canals, dyspepsia, constipation, disordered hepatic function, migraine, excesses (in the way of exercise, alcohol, tobacco, tea, coffee), organic diseases of the brain and disturbances of the cerebral circulation.

2. *Varicose ulcers of the leg are caused* by some injury to a varicose vein; the tissues are edematous, poorly nourished, and have diminished resisting power. The injury may be very slight, but the poorly nourished tissues break down and an ulcer results. Bad hygienic surroundings and neglect are predisposing factors.

3. *Etiology of rachitis.*—Improper food, want of sunlight, improper hygienic conditions; generally, insufficient food, with the diet deficient in fats and proteins; recently, lack of mineral constituents and vitamines has been advocated as a cause of rickets.

4. *Etiology of lung abscess.*—Lobar pneumonia; lobular pneumonia; pyemia; trauma; rupture into the lung of suppuration in neighboring tissues, such as empyema, subphrenic acid, gastric ulcer, cancer of esophagus.

5. *The most probable factors in the causation of gallstones* are: Bacteria; inflammation of gall-bladder and ducts; stagnation of bile. The predisposing factors are age, sedentary occupations, and some specific fevers, such as typhoid.

6. *The diagnosis of Graves' disease* is made by the tachycardia, exophthalmos, goiter, and intentional tremor; in addition there may be widening of the palpebral fissure and failure of the upper lid to follow the eyeball when it is rolled downward.

7. *Diagnosis of psoriasis.*—The patches are chiefly on the extensor aspect of the limbs, especially on the elbows and knees; the borders of the patches are well defined; the scales are white and adherent to the crusts; there is no inflammatory exudation; on removal of the crusts red, bleeding points are visible.

8. *In spontaneous intracerebral hemorrhage (apoplexy).*—"Usually the onset is sudden, the patient becoming unconscious and deeply cyanosed. After the irritation stage, which occurs during the bleeding, has subsided paralysis of the opposite side of the body sets in with conjugate deviation, and often hemianesthesia. The muscles of the affected side lose tone, as is shown by raising the limbs. The reflexes are lost, but return with consciousness; Babinski's sign is present. The pupils vary; they may be contracted, dilated, or unequal, in which case the larger pupil is on the affected side. Various localizing signs may be present, according to the position of the hemorrhage. The temperature is normal or subnormal. Urine and feces are passed involuntarily. The pulse is full and slow and the breathing is stertorous. A lumbar puncture yields a fluid containing blood or altered blood. Within forty-eight hours of the onset the stage of reaction sets in. The temperature rises, the sphincters become normal and the reflexes return. Early rigidity, in which the muscles resist flexion and extension, may sometimes develop."—(Woodwark's *Manual of Medicine.*)

9. Râles may be dry or moist. *Dry râles* occur in bronchitis and asthma and may be low pitched snoring sounds (sonorous râles) or high pitched whistling sounds (sibilant râles). *Moist râles* are produced by the passage of the air through liquid and may be crepitant, subcrepitant, or gurgling in character. *Crepitant râles* are extremely fine and occur at the end of inspiration; they are heard in the first stage of pneumonia and in engorgement and edema of the lungs. *Subcrepi-*

tant râles are comparatively few in number and are heard during inspiration and expiration, in capillary bronchitis, pulmonary edema, hypostatic pulmonary congestion and incipient phthisis. *Gurgling râles* may be large or small and are heard during inspiration and expiration in phthisical cavities, bronchial hemorrhage, in the stage of secretion in bronchitis and over the trachea.

10. *Aortic regurgitation is diagnosed by:* A diastolic murmur heard best over the aortic area; the pulse is peculiar, being the Corrigan or water hammer pulse; the heart beat is strong and the precordium may bulge; the carotid, bronchial, and femoral arteries may pulsate violently; the apex beat is displaced outward, owing to the hypertrophy of the left ventricle.

PRACTICE AND MATERIA MEDICA.

1. (*a*) Lobar pneumonia is caused by the *Micrococcus lanceolatus* (or *Diplococcus pneumoniæ*); Friedlander's pneumobacillus is often found. Predisposing causes are exposure to draughts or inclement weather, intemperance and winter weather.

Physical signs of lobar pneumonia.—"*Inspection* reveals during the first stage deficient movement of the affected side, due to pain. The apex beat is normal in situation and the interspaces do not bulge. In the second stage the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal respiration). *Palpation* during the first stage shows the vocal fremitus to be more distinct than normal, especially over the diseased portions. In the second stage, the vocal fremitus is markedly exaggerated, except in those rare instances of occlusion of the bronchi by secretion. The cardiac impulse is felt in the normal position. *Percussion:* In the first stage, the percussion note is slightly impaired at times, having a hollow or tympanitic quality. In the second stage there is dullness over the affected parts, with an increased sense of resistance. Over unaffected adjoining areas the resonance is increased (Skoda's resonance). *Auscultation:* In the first stage there is heard over the affected part a feeble vesicular murmur, associated with the true vesicular or crepitant (crackling) râle, heard at the end of inspiration only. In the second stage there is harsh, high pitched, bronchial respiration, at times resembling a to-and-fro metallic sound, except in those rare instances in which the bronchi are more or less filled with secretion. Bronchophony, or distinctly transmitted voice, is present and at times pectoriloquy, or distinct transmission of articulated sounds, may be heard. In the third stage, the breathing changes from bronchial to bronchovesicular and the crepitant râle (crepitatio redux) returns. As resolution proceeds the breath sounds are associated with large and small moist and bubbling râles.—(Hughes' *Practice of Medicine.*)

(*b*) There are three stages: (1) Hyperenia or engorgement; (2) red hepatization or exudation; and (3) resolution or gray hepatization.

(*c*) *Treatment.*—Consists in rest in bed, milk diet and the administration of fractional doses of calomel followed by a saline in the early stage. The nervous symptoms and temperature may be controlled by applying ice bags or compresses wrung out of cold water (60°-70° F.) to the chest or by the use of the warm or cold wet pack. The heart and pulse should be sustained by the administration of alcohol, strychnine (gr. 1/60-1/20), atropine, caffeine, strophanthus, and nitroglycerin. Digitalis may also be employed. Inhalations of oxygen afford temporary relief when the dyspnea and cyanosis are extreme. In young, vigorous and plethoric adults, with hyperpyrexia and a high tension pulse, bleeding may be beneficial in the first 48 hours. Convalescence should be guarded, and tonics, stimulants, etc., will be found very useful in this period of the disease.—(*Pocket Cyclopedia.*)

(*d*) Serum or vaccine treatment is considered a specific by some authors.

2. (*a*) Children may suffer from lobar pneumonia, lobular or bronchopneumonia and hypostatic pneumonia.

(*b*)

LOBAR PNEUMONIA.	BRONCHOPNEUMONIA.
Generally a primary disease.	Generally secondary (to bronchitis or an infectious disease).
Age has little influence.	Generally found in very young or very old.
Sudden onset.	Gradual onset.
Fever is high and regular.	Fever is not so high, and is irregular.
Ends by crisis between sixth and tenth day.	Ends by lysis, at no particular date.
Generally only one lung affected.	Generally both lungs affected.
The physical signs are distinct, and there is a large area of consolidation.	Physical signs indistinct, and the evidences of consolidation are indefinite.
Sputum is rusty.	Sputum is rather streaked with blood.

The symptoms of *hypostatic pneumonia* are those of a low grade lobar pneumonia.

For *treatment of lobar pneumonia* see question 1.

Treatment of bronchopneumonia.—Absolute rest in bed and a nutritious diet; the chest should be enveloped in a thick cotton jacket; the temperature of the room should be equable—about 65° or 70° F. If the bowels are inclined to be constipated, fractional doses (gr. 1/6) of calomel are advisable every hour until six or seven doses have been taken. In the earliest stages the tincture of aconite is of service. Its action should be *cautiously* watched, and as soon as the pulse becomes soft the drug may be omitted. Usually six or seven doses are sufficient. After the second or third day its action is too depressing and is not recommended. If the temperature rises above 102.4° F. it should be reduced by means of a cold bath. Phenacetin may be given to control the temperature, but should not be used routinely. After the third or fourth day a flaxseed poultice containing mustard (ʒ 1½) may be applied to the chest and renewed every hour. After the poultice has remained on the chest about two hours give the syrup of ipecacuanha (℥ 15) every ten minutes until emesis is produced. Both these procedures should be repeated on the following day. When the poultice is removed replace it by a cotton jacket. If the heart is weak give cardiac stimulants.—(*Pocket Cyclopedia.*)

The *treatment of hypostatic pneumonia* is that of the original condition, with the addition of stimulants (such as nitroglycerin or strychnine); their position in bed is to be frequently changed.

3. (*a*) *Hookworm disease* is a severe malady in the South, characterized by profound anemia, protruding abdomen, dropsy, weakness, lack of energy, shortness of breath, and maldevelopment.

(*b*) It is caused by the Ankylostoma duodenale or the Necator Americanus.

(*c*) The ova are voided in the feces; the latter are scattered on the ground, and the ova then come in contact with the feet and hands of the poorer inhabitants, and are then conveyed to the month.

(*d*) and (*e*) Thymol is the new remedy. *Treatment (Prophylactic)*—Shoes should be worn, and proper toilet facilities should be provided. Indiscriminate scattering of fecal matter is responsible for the prevalence of the disease, and the most stringent rules should be adopted to correct this unhygienic nuisance. Flies should be excluded. *Treatment (Active)*—On the day before the treatment is to be begun the patient is advised to eat little dinner and no supper at all. Late in the afternoon he is given a full dose of calomel (2 to 10 grains, depending upon the age and strength of the patient). If the calomel does not act freely during the night a full dose of Epsom salt in hot water should be given as soon as the patient wakes up the next morning. After the bowels have thoroughly acted, finely powdered thymol in capsule is given. The dose of thymol should be divided into two equal parts, the first half being given at once and the second at the expiration of an hour. Following the administration of the medicine the patient should be instructed to remain in bed. Harris suggests that the drug should be given in the following quantities:

Up to 5 years of age,	10 to 15 grains.
From 5 to 10 years,	15 to 30 grains.
Ten to 15 years,	30 to 60 grains.
Fifteen and over,	60 to 120 grains.

In advanced age the quantity should be somewhat less than during middle life. The patient should be allowed no breakfast and no dinner on the day of treatment, a cup of coffee once or more during the day is permissible, but nothing in the nature of food. If the patient experiences no ill effects from the thymol, it is well to put off the administration of a laxative until four or five

o'clock in the afternoon, at which time some saline should be administered in hot water. After the bowels have acted well the patient may be allowed to have food. When the treatment is carried out faithfully it is rarely necessary to repeat it. It is well after a couple of weeks to again make a thorough examination of the feces, and should the microscope reveal the presence of eggs the treatment should be repeated, and this should be done over and over again until exhaustive examinations of the feces show by absence of the eggs of the parasite that all have been expelled. The public should be especially warned against patent and proprietary medicines for hookworm disease, as they all have as a basis thymol, or some other poisonous drug, and are therefore unsafe in the hands of those unacquainted with their proper use.—(*Pocket Cyclopedia.*)

(*f*) Hookworm may simulate pernicious anemia.

4. (*a*) *Acute indigestion* is characterized by: Nausea; vomiting of undigested, or partly digested, sour-smelling matter, which later assumes a bilious character; pain and tenderness in epigastrium; anorexia; sometimes severe cramps or burning pain in abdomen; temperature normal; pulse accelerated; sometimes prostration and cold perspiration. It is to be differentiated from *Appendicitis*, in which the greatest tenderness is in the right iliac fossa, and right-rectus muscle is often rigid, and a leucocytosis may be present. *Cholelithiasis*, in which the pain is paroxysmal, and is referred to the region of the right shoulder, emaciation and jaundice may be present, and there may be a history of such attacks. *Intestinal obstruction*, in which the prostration is more marked, there is absolute obstipation, tympanites, and uncontrollable vomiting which becomes stercoraceous. *Uremia*, in which a uranalysis shows albumin, and diminished urea, and the blood pressure is high.

Treatment—Evacuate stomach and bowels; give an emetic (a hypodermic of apomorphine hydrochloride) or use a stomach tube. Then give divided doses of calomel followed by castor oil or a saline. Apply heat externally to the abdomen. The stomach must be kept at rest and no food given for from 12 to 24 hours; during this time small sips of very hot water may be allowed. Later, light diet for a few days. For the vomiting, bismuth subnitrate, or creosote, or phenol may be administered.

(*b*) *Opiates* may be administered for severe pain which is uncontrolled by the foregoing remedies; but one must be sure that the case is not one of appendicitis, intestinal obstruction, or uremia. Codeine sulphate, or morphine sulphate with atropine sulphate may be given. (*c*) By hypodermic injection.

5.

ACUTE PARENCHYMATOUS NEPHRITIS.	CHRONIC PARENCHYMATOUS NEPHRITIS	CHRONIC INTERSTITIAL NEPHRITIS.
1. Most common in children, from exposure or infectious fevers.	1. Later life; often the consequence of acute attack.	1. Late life; often results from alcoholism, gout, lead-poisoning.
2. Edema of lower eyelids; then of upper extremities, trunk, and, lastly, lower extremities.	2. In early stage same as acute form; later, dropsy may diminish.	2. Dropsy slight or entirely absent.
3. Urine scanty, dark or smoky color, high specific gravity, 1025 or over.	3. Urine normal or increased amount; specific gravity may fall to 1010; urine pale.	3. Urine greatly increased; specific gravity low, 1005; urine pale in color.
4. Large amount of albumin.	4. Late in attack, greatly diminished; occasionally absent.	4. Albumin greatly diminished, often absent.
5. Variety of casts, such as hyaline, blood, epithelial, and waxy casts, also free red blood globules, and epithelial cells.	5. Large and small granular casts; compound granule cells, and fatty epithelium.	5. Hyaline or finely granular casts, occasionally dark in color: infrequently blood casts and oil droplets.
6. Urea diminished.	6. Urea diminished.	6. Urea diminished.
7. Recoveries frequent.	7. Recoveries rare.	7. Indefinite duration, but never cured.

The treatment of acute nephritis consists largely in rest in bed, warmth, milk diet, and attempts at elimination of waste products. Free purgation should be secured by means of the salines, calomel, or compound jalap powder. Diaphoresis may be favored by the administration of sweet spirits of niter, and in severe cases, pilocarpine, and by the use of warm baths, warm applications, or the vapor bath. Tincture of digitalis (♏ 5-20 every 4 hours), tincture of strophanthus, or sparteine (gr. ¼-½) may be given as diuretics. Infusion of cream of tartar and juniper berries may be employed. The occurrence of uremia will require prompt and energetic measures.

The treatment of chronic parenchymatous nephritis consists in rest, regulated diet, and the administration of tonics. The diet should be made up of milk, vegetables, rice, and a small amount of meat, fish, and eggs. Iron, quinine, and strychnine are indicated. Constipation should be avoided by the administration of the salines. Bathing and massage are important items in the treatment. Uremia may occur in this affection.

The treatment of chronic interstitial nephritis should be directed to the cause, and in addition the diet and hygiene should receive attention. The food should be largely of milk, vegetables, and fruit. High arterial tension should be controlled by nitroglycerin and aconite. The bowels should be always kept free. Diuretics are not indicated so long as secretion is free. The recurrence of uremia will require special treatment. (*Pocket Cyclopedia.*)

6. (*a*) Whatever therapeutic value radium may possess is due to its radioactivity. It has been claimed that radium emanation is of value in all kinds of non-suppurative arthritis (except luetic and tuberculous), in chronic muscular and joint rheumatism, in arthritis deformans, in acute and chronic gout, in neuralgia, sciatica, lumbago, and in tabes dorsalis for the relief of pain. Its chief value is in the relief of pain. In certain new growths, both benign and malignant, a favorable influence is exerted; so, too, in epithelioma, birthmarks, and scars. (From *New and Nonofficial Remedies.*)

(*b*) *Digitalis* is indicated in diseases of the heart: (1) When the heart action is rapid and feeble, with low arterial tension; (2) in mitral lesions when compensation has begun to fail; (3) in nonvalvular cardiac affections; (4) in irritable heart, due to nerve exhaustion. Digitalis is *contraindicated* in diseases of the heart: (1) in aortic lesions when uncombined with mitral lesions; (2) when the heart action is strong, and arterial tension high. Digitalis is also a diuretic; and it is also used in some forms of nephritis, exophthalmic goiter, pneumonia, chronic bronchitis, etc. *Dangers: Overdose or constant use* will cause irregularity of the heart, headache, vomiting; and hobbling dicrotic pulse, particularly when the patient changes from the recumbent to a sitting posture.

7. *Specifics:* (1) *Mercury* is said to be specific for syphilis; it is said to exterminate the treponema; the administration of mercury should begin early in the disease and be continued for two or three years. It may be administered by intramuscular injection, by inunction, or in combination with potassium iodide.

(2) *Quinine* is specific for malaria; a ten grain dose of sulphate of quinine should be given in the sweating stage, and again five hours before the next paroxysm is expected.

(3) *Diphtheria antitoxin* is specific for diphtheria; the prophylactic dose for children is 500 to 1,000 units, by hypodermic injection; the therapeutic dose is 2,000 to 4,000 units.

8. (*a*) To avoid salivation, give small doses of calomel, carefully watch the effect, and let the patient use a mouth-wash of a saturated solution of potassium chlorate with a little tincture of myrrh.

(*b*) The usual dose of calomel is about one grain as an alterative, or two grains as a laxative.

(*c*) Divided doses are recommended.

9. (*a*) *Castor oil* may be rendered *tasteless* by being administered in capsules; or by being floated on orange juice or strong coffee, and covered with the same vehicle.

(*b*) In typhoid, *turpentine* stupes may be placed on the abdomen, or a few drops may be given on a lump of sugar, or it may be given by enema, in emulsion.

10. The administration of quinine would differentiate typhoid from malaria. See question 7, above.

OBSTETRICS AND GYNECOLOGY.

1. (*a*) The *female internal organs of generation* are: The ovaries, Fallopian tubes, uterus, and vagina.

(*b*) *Function of ovaries:* To develop ova, and an internal secretion.

Function of Fallopian tubes: To carry ova to the uterine cavity.

Function of uterus: To receive and lodge the fecundated ovum; to retain the fetus till it is mature, then to expel it.

Function of vagina: During coitus it receives the penis; during parturition it becomes part of the birth canal; it also serves as a channel for the escape of the menstrual and other uterine secretions.

2. (*a*) *Podalic version* is that form of version in which the breech or foot of the fetus is made to present.

(*b*) *Cephalic version* is that form of version in which the head of the fetus is made to present.

3. (*a*) *Adherent placenta* is probably due to some diseased condition of the endometrium, resulting in inflammation of the decidua or placenta. The diseased condition probably antedates pregnancy. There may be partial absence of the decidua serotina, so that the chorionic villi are in direct contact with the uterine muscle.

(*b*) *Treatment of adherent placenta:* "A finger—one or two—must be insinuated between the uterus and placenta at some point already partially separated, or, if no partial separation exist, at a point where the placental border is thick, and then passed to and fro transversely through the uteroplacental junction, acting like a sort of blunt paper knife, until separation be complete. Another mode is to find or make a margin of separation as before, and then peel up the placenta with the finger-ends, rolling the separated portion toward the palm of the hand upon the surface of the still adherent part. Great care is necessary to avoid peeling up an oblique layer of uterine muscular fiber, which might split deeper and deeper until leading the finger-ends through the uterine wall into the peritoneal cavity. Should such a splitting begin, leave it alone and recommence the separation at some other point on the placental margin. It is sometimes only possible to get the placenta away in pieces. These should be afterward put together and examined to indicate what remnants are left behind. It may be quite impracticable to get out every bit, but small remnants or thin layers too firmly adherent for removal do not distend the womb enough to create hemorrhage from their bulk, and the subsequent danger of septicemia from their decomposition may be obviated by injecting warm (2 per cent.) creolin water into the uterus twice daily until everything has come away." (King's *Obstetrics.*)

4. *Symptoms of pregnancy at the fifth month:* Cessation of menstruation, quickening, mammary signs with secondary areolæ, enlarged and pigmented abdomen, intermittent uterine contractions, active fetal movements, uterine souffle, and (possibly) the fetal heart sound.

5. *Changes that take place in the female at puberty:* Development of the reproductive organs, enlargement of the breasts, hair on pubis and axilla; the form becomes rounded, the hips widen, menstruation occurs; there are certain mental and emotional changes; and "the development of those womanly beauties physiologically designed to attract the male."

6. *Severe ante partum hemorrhage* is most likely to be due to (1) accidental hemorrhage, due to premature separation of the placenta; (2) to placenta prævia.

The treatment is practically the same in each case, namely, to check the hemorrhage and promote delivery. In *accidental hemorrhage* the membranes should be ruptured and the vagina packed, or *accouchement forcé* performed; vaginal cesarean section has been employed. In *placenta prævia:* (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about 3 inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation turn the child and make the breech engage in the os; or if the head presents, forceps may be used if speedy delivery is necessary. The strength of the woman is then the main point to be cared for, and if in a reasonable time the uterus seems to be incompetent, the child may be delivered by art. In some cases of central placenta prævia, where rapid delivery is required, cesarean section may give good results for mother and child.

7. (*a*) An ovarian cyst is generally accompanied by menorrhagia or metrorrhagia, sterility, bearing-down pain in the pelvis, which may radiate to the back or thighs, hemorrhoids or constipation, frequent micturition, and various other pressure symptoms of the digestive or respiratory apparatus if the cyst becomes sufficiently large. Later on there may be the *facies ovariana*, general impairment of health, and ascites. There are no pathognomonic symptoms. The diagnosis is made by bimanual palpation and (sometimes) exploratory incision. The condition is to be particularly differentiated from pregnancy and ascites.

(*b*) The *treatment* is ovariotomy.

(*c*) No other method of treatment produces any beneficial effect.

8. An *ulcer of the cervix* presents a clear-cut border, sometimes raised and indurated, and the base of the ulcer is formed by granulation tissue; the cervix has lost some of its epithelial covering. It may be caused by irritation from pessary or discharge, chancroid infection, syphilis, tuberculosis, or malignant disease. The chief symptoms are pain, discharge, and hemorrhage. By many ulcer of the cervix is regarded as the precursor of epithelioma or carcinoma.

9. (*a*) *Menopause* is the period of a woman's life when menstrual activity ceases.

(*b*) *Metritis* is inflammation of the uterus.

(*c*) *Salpingitis* is inflammation of the oviduct, or Fallopian tube.

(*d*) *Mastitis* is inflammation of the mammary gland.

(*e*) *Menstrual cycle* is the series of changes occurring in the uterus during the interval between the commencement of one menstrual period and that of the next following.

10. (*a*) Immediately after birth the eyelids of the newborn child should be washed with clean warm water and onto the cornea of each eye should be dropped one or two drops of a 1 or 2 per cent. solution of nitrate of silver.

(*b*) This procedure will prevent ophthalmia neonatorum in doubtful cases; it will do no harm in innocent cases; and it is the first stage in treatment if gonorrheal infection is present.

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	Jan. 9
Arizona*	J. W. Thomas, Phoenix	Phoenix	Oct. 3
Arkansas	T. J. Stout, Brinkley	Little Rock	
California	C. B. Pinkham, Sacramento	Los Angeles	
Colorado	David A. Strickler, Empire Building, Denver	Denver	Jan. 2
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	
Delaware	J. H. Wilson, Dover	Dover	Dec. 12
Dist. of Col'ba.	E. P. Copeland, Washington	Washington	Jan. 9
Florida*	E. W. Warren, Palatka	Palatka	Dec. 5
Georgia	C. T. Nolan, Marietta	Atlanta	
Idaho*	Charles A. Dettman, Burke		
Illinois	C. S. Drake, Springfield	Chicago	Jan —
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 9
Iowa	G. H. Sumner, Des Moines	Des Moines	Oct. 17
Kansas	H. A. Dykes, Lebanon	Lebanon	Feb. 13
Kentucky	J. N. McCormack, Bowling Green	Louisville	Dec. 11
Louisiana	E. L. Leckert, New Orleans	New Orleans	Nov. 30
Maine	F. W. Searle, Portland	Portland	
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 12
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	Nov. 1
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor	June 12
Minnesota	T. McDavitt, St. Paul	Minneapolis	Jan. 2
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	J. A. B. Adcock, Jefferson City	St. Louis	Dec. 11
Montana*	Wm. C. Riddell, Helena	Helena	April 3
Nebraska	H. B. Cummins, Seward	Lincoln	
Nevada	S. L. Lee, Carson City	Carson City	
N. Hampshire	Walter T. Crosby, Manchester	Concord	Dec. 18
New Jersey	A. MacAlister, Trenton	Trenton	June 19
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe	Oct. 9
New York	H. H. Horner, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo	Jan. 30
N. Carolina	H. A. Royster, Raleigh	Raleigh	June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 1
Ohio	Geo. H. Matson, Columbus	Columbus	Dec.
Oklahoma	R. Y. Smith, Tulsa	Oklahoma City	Jan. 9
Oregon	B. E. Miller, Portland	Portland	Jan. 2
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia / Pittsburgh	Jan.
Rhode Island	G. T. Swarts, Providence	Providence	
S. Carolina	H. E. Boozer, Columbia	Columbia	
S. Dakota	P. B. Jenkins, Waubay	Pierre	Jan. 9
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville	June —
Texas	M. P. McElhannon, Belton	Fort Worth	Nov.
Utah	G. F. Harding, Salt Lake City	Salt Lake City	Jan. 1
Vermont	W. Scott Nay, Underhill	Burlington	Feb. 13
Virginia	J. N. Barney, Fredericksburg	Richmond	Dec. 12
Washington*	C. N. Suttner, Walla Walla	Spokane	Jan. 2
W. Virginia	S. L. Jepson, Charleston	Clarksburg	Nov.
Wisconsin	J. M. Dodd, Ashland	Madison	Jan. 9
Wyoming	H. E. McCollum, Laramie	Laramie	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

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LATIN AND ANCIENT GREEK FOR MODERN DOCTORS.*

BY A. JACOBI, M.D.,

NEW YORK.

COMPLETE education means different things in different periods of history. The instruction of the Hellenic youth meant reading, writing and the acquaintance with the poets, also gymnastics, singing, music and swimming. The teaching of the sophists, such as Protagoras, Hippias and Prodikas added the necessity of the acquaintance with subjects required in daily life. That is why many teachers taught dialectics and rhetoric. Indeed, that proves that individualism is no modern innovation.

It is true Isokrates preached general culture both theoretical and practical. But the knowledge of facts was limited. That is why Lucius Ampelius, when in the fourth century, A. D., he wrote his "liber memorialis," required 31 pages only for history, geography, mythology, and astronomy.

Between the accomplishments mentioned above there was no connection such as we should call scientific. That is why writings on Greek antiquities are fascinating like the best children's books, but not scientific. The only author of those times whose history is full of philosophic thought is Thukydides, the historian of the Peloponnesian war. The only real scientist is Aristotle. Plato, charming and thoughtful, does not belong to that class. His individualism which was combated by Sokrates (as represented in Gorgias by Kallickles and in the Republic by Thrasymachos) explains the absence of intellectual and moral force required by a state which wants nerve and energy to resist the frequent invasion of enemies. In modern times the spirit of poor Nietzsche, the idol of the hysterical of both sexes in America and Europe, who was unbalanced all his life-time and finished his vacillating mind in a lunatic asylum, has often been compared with the powerless philosophy of the ancients who shone like meteors, and like meteors proved evanescent.

The scantiness of subjects taught in ancient times corresponds with the lack of connection between them. The greatest thinkers do not impress us with any multitude of known facts. Like the pupils of our own Latin schools, or the monks of our mediaeval times, they were strangers in the world they inhabited. Even the great historian Herodotus whom we all love and admire for his honesty, observation, industry, and also credulity, traced in the naiveté of his talks no philosophic connection between the stories he tells. There was no scientific link, nor a scientific plan. That is what surely and almost abruptly aided in destroying both ancient culture and political existence.

Aristotle and Galen, with a few successors, controlled the practice of doctors more than fifteen centuries. Their language either in translation or in original, was Latin. Even Bacon said he translated his essays into Latin to have them read and understood. German, English and French books written in the language of their own countries were exceptions. That is why students and scientists were drilled in Latin to be acceptable and intelligible to their peers. Particularly was that so in Germany, which at an early time controlled the opinions and teachings of scientific men. It has impressed other nations to such an extent as gradually to enforce the imitation of whatever methods were followed or said to be followed in that country. In more than its last half century that country has created the actual progress of medicine. The recognition of that fact has been the cause of our not only accepting the genuine blessings of German medicine, but also the methods of inculcating it into the schools and the preparation for them of the young men intended for its study. That has been so in America more than anywhere else. For a long time in our country learning was not common. Until late years the study in our medical schools was imperfect. We acknowledged that fact, and felt we might improve both matter and methods. The question I want you to consider is whether all our methods as long as they have been foreign imitations, are praiseworthy, and worthy, or practical.

Many of us see no progress except in the adoption of what is "made in Germany." Meanwhile, the very Germans have long become dissatisfied with what we envy them, while they acknowledge the necessity of changing or developing it. The German schools of learning had for centuries a single method of preparing the boy for the university and its professional studies. He had to run the full course of their gymnasium and its humanization preparation.

Humanistic was Latin and Greek. It was impossible to be deemed a cultured German adolescent without them. With them, and almost exclusively with them, he was declared mature. That was done when he had passed his nine classes and his examinations, about the age of 18 or 20 years. My passing them when I was much younger, was by accident, and deemed abnormal. The worst feature of that kind of instruction was the frequent absence of enthusiasm in most young men. It looks almost impossible for a dry-as-dust soul to rise to a feeling like enthusiasm for a uniform diet on Latin and Greek grammars. Of living languages nothing was taught but French, and that scantily, nothing but grammar again. Of sciences I obtained a fair amount of mathematics. Of nature history I learned by heart a few Latin names of plants, and the number of upper and lower teeth of monkeys. I hated

*Read at a meeting of the American Medical Editors' Association, New York, October 26, 1916.

monkeys and nature history. About 1870 when after a successful war the German military robbed France of 5,000 million francs, the German people threw off their agricultural habits and poverty, and delved into industry, speculation, invention, and commerce. Then lo and behold, it took only 40 years to make of Germany that wonderfully compact country of systematic progress and resourceful aggressiveness which in our era is equaled by the Japanese only, or not at all. And what has been the change on the educational fields? There is no other country but Germany in which the invasion of practical tendencies has been immediately followed by the founding of institutions of practical and useful learning. In this country of ours we are full of pride, however, with our Massachusetts, Stevens, Pittsburgh, and Chicago technical schools. Germany has scores of them. Their pupils always invaded this country of ours and our Schenectadys are glad to employ them. These young men know more engineering than Latin and Greek. Nor have the Germans, and it seems we do not appreciate that, been slow in applying their experience in other fields. While no boy of 20 could be matriculated in a university without his fill of ancient languages, in the revision of the university regulations of the 2nd of June, 1883, after the 28th of May, 1901, and the 31st of January, 1907, the Realistic Gymnasium ("real gymnasium"), with no Greek and very little Latin, but more French and English, and some knowledge of physics and chemistry, became sufficient for a young man—and lately woman also—for the matriculation amongst medical faculties.

The Secretary of the University of Rostock (Otto Schroeder) has published a book on the study of medicine in German universities, and the rules concerning examinations. On page 7 there is one, according to which a young man who has passed the upper realistic school ("ober real schule"), may begin the study of medicine without Latin on condition of his preparing during the next 2½ years a very modest knowledge of that language.

These Germans have had their eyes open for a long time and adapted themselves to their present necessities and future advantages. That makes them so efficient and preposterously successful. Other nations are slow and sluggish. We Americans have been negligent because we have been spoiled by self-esteem and by luck. The English are beginning to learn by their present ill luck. That is why at the annual meeting of the Court of Governors of Sheffield University, it was agreed in view of the great demand for physicians to give effect at once to a resolution that a knowledge of Latin should be no longer required as a condition of admission to the medical faculty. (*Journal A. M. A.*, Jan. 1, 1916, p. 47.)

Great German teachers, such as Friedrich Mueller, are not even satisfied with the sufficiency of this modification of ancient requirements, which has been acknowledged to be a progress. It is time for us that our legitimate gratitude for our old German teaching may not render us *laudatores temporis acti*, the medieval past.

Still there has been no conformity for some time in the valuation of Latin and Greek. Latin has no longer been utilized as the language of scientific writing and of clinical lecturing in England since 1765, and in German universities these 75 or 80 years. Christian Thomasius, 1655, praised French and British as a model for his German countrymen, but he dared to write in German and had the courage in 1688 of announcing a German lecture. That was in Leipzig a *crimen laesae majestatis* and became a source of much annoyance. That is why when Halle was founded, he emigrated to Halle. It was one of their greatest physicians who abolished Latin in his clinical and other lectures. That was in 1840, and the reformer was Johann Lucas Schoenlein. Still Latin and Greek were long considered the *ne plus ultra* means of methodical mind culture.

An entertaining bit of history referring to that belief you may find in the January number, 1914, of the Bulletin of the Johns Hopkins University, in which Dr. C. W. G. Rohrer, of Baltimore, published a sketch of the life and work of John Hunter. He never was a zealous student at any of his schools. His brother William wanted him to study medicine and give up surgery, that is why he wanted him to have a sound knowledge of Greek and Latin, which were considered positively required for a complete medical education, but not for surgery, which was considered handicraft, and with the exception of superior minds is at present nothing else. When I mean to flatter a mere operator I call him a doctor. At that time John Hunter was 25 years old. He refused to give up the idea of becoming a great surgeon and, as he expressed himself to Sir Anthony Carlisle, "to be made an old woman of and to stuff Latin and Greek at the university."

It is true, however, Dr. Rohrer ventures the opinion, that "such stuffing would have been of vast benefit to him, in preventing those errors of style and literary composition which so greatly disfigure and obscure his writings." To a great extent, however, we have changed all that. Most of us are of the opinion that with every decade there are coming to the fore additional mind sharpeners and style improvers which render Latin and Greek rather back numbers, or surely not first and only teachers of culture.

That general culture is what you look for, or should look for in a physician. No general practitioner should be without it. In our time the doctor has no need to be a prescription peddler or a handy mechanic; the claims of public sanitation and preventive medicine are of universal importance. I wish everybody could have listened to this year's presidential address of Dr. Vaughan and be taught or converted.

Now there are some of us, and mainly also the Council of Education of the A. M. A., who study the best methods of preparing the student of medicine for his task. In our admiration for German erudition, such as it was, we still see many of us leaning towards older German methods. To-day I meant to do nothing but to express my own doubts and hesitations. They are mine. Perhaps they are those of the young men who are preparing for their future. Perhaps the most conservative, that means reactionary, are converted. Aye, even the English! For in this society of superior physicians and teachers I felt I should meet with those whose privilege and duty it would be to pay close attention to the demands of practical medicine and the consideration of the best intellectual food for those who mean to prepare for the study of medicine.

The *New York Times* of August 3rd has the following headlines: "Education Reform Urged in England, more chemistry and engineering, besides Latin and Greek, wanted after the war. Lords consider problem. Swiss and American systems better than British, Haldane believes; German defects pointed out." If Haldane, at whom they per-

sistently sneer because he once called Germany his spiritual home, had not sneered at German defects, he would have been hissed from the stage, though he be a "member of the house of lords," which as Galton and Karl Pearson mean to prove would, if not relieved by some intermarriage, be hopelessly idiotic, at least inferior. And it is these lords who are urging reform in education. Those of us who know English history, understand perfectly why the few names of those who speak of education, are Haldane, Cromer and Bryce, just as we appreciate the persistent enmity of British politics against America from 1812 to 1861, and 1916. As usual we repay it with Wilsonian patience if not anglomania. Our present record tells us "the Oxford and Cambridge tradition of instilling a little old school learning in the way of Latin and Greek, hand in hand with a really expert knowledge of cricket and judgment of the vintage of port, are to be scrapped to make room for chemists and engineers, if the reformers have their way!" Now Latin and Greek have always been the mainstay of the education of the British who, as Haldane says, have never been ready to take up new ideas. That is why in Great Britain there are only 1,500 trained chemists, while four German chemical firms employ as many as full 1,000.

Cromer has evidently tried to console himself by pointing to the moral collapse of Germany which he says is one of the most extraordinary and most tragic events recorded in history, and to the apparent materialization of the whole national mind of Germany! He also fears lest the same deterioration would take place in England, unless sufficient attention were paid to humanistic, particularly classical, education. I may say what Cromer does not know, that this was in part the very feature of the one-sided education which was the destruction a hundred years ago of Germany which led to Jena and Austerlitz, and finally the origin of the German revolution in 1848 which was controlled by German professors. Unfortunately German evolution of the last few decades, both civic and military, which has replaced ancient by modern languages and metaphysics by chemistry, has succeeded in making a desert of Europe. Cromer adds, which is doubtful, that he learned in America that our American universities are year by year turning out an increasing store of invaluable works on classical literature. If such were true we should perhaps not be obliged to write long semi-apologetic epistles to the semi-Indian "first-chief" of Mexico.

Bryce points to the German habit of obedience as the cause of their efficiency. Let him say the English and American lack of citizenship which has cost the English hundreds of hecatombs of human victims during two years and many billions of pounds sterling, and the lack of application of science to business both in England and America.

We have no particular reason to boast of ours. The haphazardness of our politics and diplomacy and our wastefulness has not improved our people and politics. Meanwhile, Latin and Greek, little as there was, have not helped us, the absence amongst us of modern languages has been an obstacle to our American commerce, and benefited the industry and greed of Germany. We have been slow. Columbia University is slowly coming to her senses.

The *Columbia Alumni News* of May 5, 1916, confirms the filching of required Latin and Greek, as a blow to individualism, from the old Degree of Bachelor of Arts. It is spoken of as an incident in a large policy, and should not be mentioned in an apologetic vein, but as a matter of course and a proof of progressive policy.

According to R. S. Woodworth, of Columbia, in *Science* of August 28, 1914, "while discussion has been raging over the relative values of natural sciences and the classics, the student body, where free, has attached itself to modern literature, and especially to the humanistic sciences. In Harvard, according to Dean Ferry of Amherst, 3 per cent of the student registration goes to the ancient languages, 25 per cent to mathematics and science, 28 per cent to modern literature, and 44 per cent to other subjects." And Professor Hervey has found almost exactly the same proportions among elective subjects in Columbia College! It is not probable that the annual report of 1914 published by the President of Columbia University is entirely correct when he says: "The asphyxiation of Greek and Latin as school and college subjects which began a generation ago was in no small degree due to the industrious but misguided efforts of school and college teachers of these subjects." It is not the teachers and their individual influence that make history but their system. He is more correct when he adds: "It would be in the highest degree deplorable if the modern European languages were to suffer a similar fate and for a like reason."

I do not intend to make you believe that I know everything better than my peers, but I began to teach medicine in American schools much more than half a century ago and believe I know both the demands of the better part of our public and the responsibilities of those who are to be taught to prevent or to cure the ailments of the individuals and of the communities. Maybe some of you are also acquainted with my share in trying to improve our methods of medical teaching in different schools with which I have been connected. In my own time I have also participated in our many endeavors to lengthen and deepen the medical curricula, and to add to the requirements for the matriculation and the enforcement of state examinations, and whatever has added to the opportunities of giving the public such medical advisers as benefit the commonwealth, and enhancing the standard and utility of the medical profession. That is what has stimulated me to study the ways in which these two aims might best be reached. Now, I have met with very incompetent doctors who knew Latin and Greek, and superior practitioners without them. That, however, is no sound way of comparing. You do not measure the profession by individuals. The question is not one of individual superiorities, but of the influence preliminary studies may exert on the average of a useful and eminent profession. Our physicians must be better than individual prescribers or diagnosticians.

You are asked for the best method of preparing for their work all the men in the best and most efficient and most altruistic of all professions, and the questions which I hesitate to answer but propose for your consideration is whether the study of ancient languages is a *conditio sine qua non* for the study of medicine, or whether there are other means of equal or superior value in both the acquisition of a general culture and superior professional accomplishments. In spite of the routine instruction in high schools, lyceums, gymnasiums, or colleges, which was rarely interfered with, there have always been in all countries men whose opinions differed greatly from the habits of centuries.

As early as 1580 Michael de Montaigne insisted upon the use of the vernacular language as the principal study of the young student. He states in the preface to his book (March 1, 1580), that if Greek and Roman culture are the objects of the study of ancient languages they cannot be reached on account of the difficulties connected with the learning of them. For that reason, appreciating that difficulty, his father did not permit him the use of his own French language before the boy was six years old. His only language was Latin. He was taught by that experience, and also by his books, that a child may learn his mother tongue and at the same time the language or languages of his neighboring countries. In that way it would not be deemed difficult to finish one's education with the twentieth year. Montaigne is very emphatic about that. To him the time from the twentieth to the thirtieth year is the period of intellectual and moral initiative and the creative time in a man's life. It is true that the short duration of human life three centuries ago may have influenced his opinions. But in our own time a great educator, Huxley, in his lectures delivered at the Johns Hopkins University 30 years ago expressed his views as to the subjects and methods of a young student's education from a similar point of view. He complained bitterly of the inefficiency of the education of a boy in the usual curriculum of the medical schools. He was to be prepared up to his 15th or 16th year for his university courses. These ought to be the direct continuation of his previous teaching. His own language, the history of his own country and its social life, natural history, including the main types of animals and plants, and the groundwork of biology, some arithmetic and geometry would be an ample preparation for university life. In that way the medical student will save time which now has been spent on laboriously learning how to learn, and on the temptations to which the young man is exposed in his attempt at searching for a method of study.

Maybe you remember a paper of Councilman's which he published a few months ago in the *Journal of the A. M. A.* in which he compared the results of the present German with our own American method of education of the school boy; the former being more active and time saving and vastly more successful than the latter.

In this, our own country, there is a tendency to add to the subjects to be examined on and to teach in every kind of school. It is always the pupil who is examined, or to be examined, never the teacher. The system remains the same. In college, beginning courses are found in French Greek, German, and Latin, elementary courses in every science; mathematics one-half the course offered in every first-class high school; and in history a repetition of most all the work of the high school. The practice of admitting to college with conditions which enforce the delay necessitated by working up during a year or more, and losing time and systematic endeavor is bad. The *Popular Science Monthly* admits all of that in an article which emphasized the waste of time acknowledged by all the participants in a symposium quoted, viz., Harper, West, Brown, Eliot, Baker, etc. There is very little in which these experts agree. They prove their expertness to be very one-sided. A four years' course of college is claimed too long by most of them in the case of students who mean to prepare for a profession. Some, like Harper, insist upon four years, some on two before matriculating for a profession. Harper at the same time proposes the age of 16 or 17 as proper for entering college. That gives you 20 or 21 to begin a professional study which will be finished at 25 or 26 for medicine. Butler says: "Pedagogs suppose that the more time a boy spends in school and college the better. Educators know the contrary."

As I said, Huxley proposed to crowd physics and physiological chemistry into the ordinary schools. He wants the study of medicine to begin at the age of sixteen. That is the time in which memory is very active, and reflection active enough. After the thirtieth year knowledge may grow and experience increase, but the quickness of learning and imagination does not grow. Unless the principles of biology be acquired at these early years, the first university year is mostly spent in learning how to learn.

In this our country the best part of his young years is spent on preparing a young man for his life work. The very exertions of the A. M. A. are directed to prevent a medical student from entering upon practice before his twenty-seventh year. I know of no greater mistake, no graver waste of one-half of a man's life. In grafting politics we are in the habit of searching for the man higher up. Pity it should be so. But a greater pity is that we must necessarily look for the system lower down. It is the faulty system of our children's education by incompetent teachers and methods in our primary and high schools that throws away time, opportunity, and results. They do better, with all their faults, in the other hemisphere. At all events a young man with average gifts should not spend one-half of his life, the rising and ambitious and energetic half, in preparing for its second half, even if he lives up to and through it, with its duties and difficulties and obstacles.

A few historical examples of great medical or other educators may be briefly mentioned. The recommendations of their methods are not uniform or equivalent. What I am interested in is their relation to the ancient languages as part of medical education.

A few years after the Huxley lectures in Baltimore, Billroth wrote a book in 1886 on the teaching and learning of medicine. In his opinion the knowledge of Greek and Latin is indispensable, but he speaks of the grammars only. He advises the reading of Nepos, Ovid, Cæsar and Cicero, Xenophon and Homer. These are sufficient. It is remarkable to find this highly cultured man and teacher emphasizing grammar and grammar only, that time killer and a possible gate only of culture, surely not its essence.

S. Squire Sprigge (Medicine and the Public, 1905, p. 170), refers to the schedule of preliminary education as provided for by the English General Medical Council as follows:

1. English language, including grammar and composition.

2. Latin, inclusive of grammar, translation from undescribed Latin books, and translation of English passages into Latin.

3. Mathematics, comprising arithmetic, algebra, Greek or a modern language be, as advised con- Euclid, books 1, 2, 3, with easy deductions.

4. Greek, *or* a modern language.

I beg to suggest that in all probability that if Greek or a modern language be, as suggested, considered equivalent in their influence or general cul-

ture, the modern language should be preferred on account of its practical value. Moreover, every new language, ancient or modern, adds to the intellectual possession of the boy who knows it. The refinement afforded by its acquisition, though he forget it, remains a central fund with which he may work in his future life.

Now listen to Charles Darwin. He says of himself: "Nothing could be worse for the development of my mind than Dr. Butler's school which was exclusively classical and taught nothing else, besides a little ancient geography and history." Elsewhere he says: "Nobody can despise more than I do the former stereotype silly classical training." Wilhelm Ostwald emphasized the fact that our exclusively classical training takes it for granted that those so trained are taught the superiority of the culture which moved within the narrowness of the ancient languages. That culture, however, was uniform and non-progressive. That is why it reached its acme speedily and degenerated rapidly without establishing any persistent vigor in the nation so educated and trained. Natural science and the knowledge of the progress of mankind—that means history—is often liable to cause immobility.

Ostwald (Grosse Maenner, 1900, p. 88) quotes Humphrey Davey as a boy who learned little Latin, and expressed gratitude to his teachers who did not push him; and Faraday who knew no Latin at all; Robert Mayer, who was a good swimmer and runner, but one of the worst Latinists at school; Justus Liebig, who was the lowest in his class and had to be expelled; and Helmholtz who, though the son of a teacher of philology, reports that because Cicero and Virgil tired him, he clandestinely worked at optical problems during the Latin lessons. Besides he had no social gifts, was rather slow and clumsy in society, worked slowly and only while writing, his ideas came to him rather sluggishly, and frequently in sudden starts only. And still they lived to be Humphrey Davy, Faraday, Robert Mayer, Justus Liebig, and Helmholtz. On the 2d of November, 1891, his seventieth birthday was celebrated at Berlin. On that occasion he spoke of a peculiar lack of his intellect which consisted, according to his report, of an insufficient memory for unconnected subjects. This defect caused singular results which made him appear of limited comprehension in his younger years. On page 59 of Adolf Kussmaul's book of "Aus meiner Dozenten Zeit in Heidelberg," 2d Ed., 1908, the report of one of Helmholtz's lectures which proved a failure is one of the proofs of that peculiar shortcoming.

Berzelius, who was credited by his teachers with a good mind, bad behavior, and no interest in ancient languages, was the one who discovered cerium, thorium, and selenium, and found the elemental nature of calcium, barium, strontium, tantalium, silicium, and circonium.

I venture to ask: Is it advisable to believe that the scholastic narrowness of classrooms directed by teachers with narrow minds is a cause, or frequent accompaniment of genius?

One of the great financial and judicial minds of Germany about the end of the last century, Johannes Miquel, my roommate during my Goettingen year in 1849 and 1850, was as he told me the lowest boy in his class until he was 11 years old, and reputed and called an idiot, was intellectually superior to such an extent as to tempt me to tell him "you will be either hung or a minister." Forty years after, in 1890, during the Medical Congress week of Berlin, he reminded me of my own prophecies. He was then Prussian Minister of Finance. It is true, he replied at that early time: "You will finish in a state prison." He was correct; I had been in a Prussian state prison.

Alexander von Humboldt was a slow learner until he advanced to late years of boyhood.

Woehler, the first chemist to change into organic matter an inorganic substance (ammonium carbonate into urea), was a poor pupil except in chemistry. When I worked in his laboratory in 1849 he tempted me to stop medicine and continue in chemistry.

Carl Vogt, the zoologist and anthropologist, and in 1849 one of the three temporary regents of revolutionary Germany, was a bad boy and no Latinist.

Werner Siemens (Lebenserinnerungen, 9 Aufl., 1912, p. 13), the great electrician, dropped Greek and took to mathematics.

Alfred Krupp was unusually advanced in age before he scaled beyond the lowest classes of a gymnasium.

Herbert Spencer was considered bright but hated authority and rules and had no love for Latin.

Bismarck was by no means advanced in ancient studies.

Adolph Kussmaul ("Aus meiner Dozenten Zeit in Heidelberg," 2 ed. Stuttgart, 1908, by Czerny, p. 88) reports of himself: "In my worst dreams I again sit at the school desk and perspire in my vain efforts to conjugate Greek verbs."

Andrew D. White, who was educated in a classical college, when he governed his own Cornell, treated his scientific department on an equal footing with the classical. Thus there are many examples which demonstrate that ancient languages are losing their absolute predominance in the evolution of great minds.

It is characteristic of this tendency that in the University of Illinois the movement to suppress the Latin names on prescriptions is gaining ground.

In the first volume, p. 76, of the new *Scientific Monthly*, the history of Edward Jenner, by Professor D. Fraser, Harris, Ind., M.D., D.Sc., Dalhousie University, Halifax, N. S., you find the following lines: "Addresses and diplomas were showered on him, and in 1813 the University of Oxford conferred on him the degree of M.D., *honoris causa*. As he refused point-blank to pass the examinations in Latin and Greek required by the Royal College of Physicians of London, he could never obtain admission into that learned body. When someone recommended him to revise his classics so that he might become an F.R.C.P. he replied: "I would not do it for a diadem;" and then, thinking of a far better reward, added: "I would not do it for John Hunter's museum."*

W. A. Freund, as great a linguist, ancient and modern, who in his eightieth year returned to the

*When I read that I was reminded of the occurrence in the life of a smaller man. It is about thirty years ago when I was requested to apply in writing for admission to the Academy of Medicine of Paris. I replied I never applied for an honor of the kind. The answer was that Dr. M. M. of New York had done so and was a member, and my reply was that the homeopathic gentleman had no other membership or honor in America. Perhaps he was known to be seen in the waiting rooms of French colleagues of Paris; that I, however, had a great many memberships in Europe —aye, in America—but was never known to have applied for any. That is, perhaps, why I never was a member of the Academy of Paris.

anatomical studies of the upper aperture of the thorax in its relation to tuberculosis and emphysema which he had dropped on account of his professional special obligations in a German university fifty-three years before, is of the same opinion. The study of sciences, according to him, must be commenced in the high schools, so that medicine may be begun to advantage at an early age. One or more modern languages must be known, Latin and Greek swallow up time which should be spent on studies more useful which are connected with the duties of human endeavors, and furnish the same opportunities, perhaps more so, for the training of the general faculties of the brain.

Now, gentlemen, let me say, if that be necessary, why I discussed with you one of the subjects connected with the preliminary education of medical students. Fifty-six years ago, when I began my career as a teacher, the demands asked from the young man who meant to become a doctor were very few, if any. Two years were sufficient to enable him to receive his diploma and license. Before my time, the two years' curriculum was only a repetition of one, that means, in the second year the medical lectures of the first were merely repeated.

We are now taught and told that 27 years at least must be passed before the young doctor can be declared mature. A great many subjects are taught the existence of which we did not even know, and the conditions of admission to the study of medicine are more numerous and various. Whether Latin and Greek must be counted amongst them is for you to decide. For you? Surely.

You represent for me the profession of the United States. The profession has manfully fought for the progress of medical study, the improvement of the medical schools in opposition to the alleged—mostly financial—interests and ambitions of the schools, and the interests of the public at large that either suffers or is benefited by the standards of medical practice, low or high. While so doing you have not earned thanks from your beneficiaries, it is true, but are honored by the enmities of every quack and hysterical woman of both sexes and still rendered dutiful service to the sick, no matter whether it was appreciated or not. In all these matters our conscience was clear, our eyes wide open and learning expanding. That is what they are to continue. You must have noticed the tendency in the councils of the A. M. A. to purify and elevate our medical schools in that line, but it has appeared to me that the methods are not all correct. For scores of years we have learned medicine from the Germans, but we are not bound to follow the road every German student had to follow in bygone times.

You heard my statement according to which the roads that lead into the gates of medicine have been widened by the very Germans whom we are called upon by our own teachers to follow. We had better follow their afterthoughts, not the methods they have themselves given up.

The question of Latin and Greek is finally not all. As professional citizens the other question is before us all, whether we are not wasteful with our time. Huxley and Freund tell us we are. If we shall continue to waste two years or three of every studying child's life, we owe, it appears, a better system of training to our population and every profession, and every medical man and teacher such as you should enlist with those who know that easier and better and more profitable schooling will make more efficient physicians and American citizens.

NOTES ON THE DIAGNOSIS OF ABDOMINAL DISTENTION IN CHILDREN.*

By LOUIS FISCHER, M.D.,

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ABDOMINAL distention as met with in infancy and childhood is not always of grave concern. In many cases, however, the underlying causes are so varied that great skill will be required in making a clear diagnosis.

Abdominal distention is met with in chronic conditions, such, for example, as is seen in Hirschsprung's disease (the chronic megacolon); in tuberculous peritonitis; in malignant neoplasms involving the kidney (chiefly sarcomata), or in hepatic cirrhosis. Abdominal distention due to cirrhosis of the liver is usually accompanied by serous effusion. The distention is uniform and not localized. Large superficial tortuous veins, due to the internal abdominal pressure, are visible. The abdomen is so tense that it is next to impossible to palpate the viscera.

Occasionally an abdominal distention due to an enlarged spleen, in which there is also enlargement of the liver and profound anemia with ascites, is noted in Banti's disease. In tuberculosis involving the mesenteric glands, the child may suffer a slight rise in temperature, in addition to faulty metabolism, and still show but slight disturbance in the abdomen. It is in this class of obscure cases that the von Pirquet skin-test may aid in solving the problem, and when in doubt I always employ the test.

When digestive disturbance exists in spite of the fact that the food requirements have been carefully prescribed, and there are no dietetic errors, such as overfeeding, other causes must be looked for. If the child does not gain in weight the stool should be examined for the presence of tubercle bacilli.

In severe rickets, where marked lordosis exists, the usual pendulous belly will be noted. It is obvious, therefore, that the spine should always be carefully examined. In Pott's disease, where there is an enlargment of the liver and spleen, marked abdominal distention will be noted.

Other manifestations of abdominal distention, of a mild or severe form, are seen in conjunction with hydronephrosis. During inflammatory conditions of the kidney we do not encounter marked abdominal distention, but later in the disease when we have ascites, the diagnosis may be more difficult. Sometimes disease of the ovaries and the uterine adnexa may be the cause of abdominal distention. But, all of these conditions are not of an immediate fatal termination.

What concerns us mostly is the distention associated with acute abdominal conditions, or with diseases adjacent to the abdomen, in which distention is a very prominent as well as a very serious symptom.

The theme for this paper has been suggested by a consideration of the following cases:

CASE I.—A female child, six years old, had a sudden attack of fever and vomiting. The temperature rose to 105°, pulse 140, and respirations 60; there was no

*Read before the Medical Society of the County of New York, October 23, 1916.

cough. There was marked abdominal distention. The attending physician diagnosed appendicitis. The marked dyspnea was attributed to pressure on the diaphgram. When seen by me there was distinct evidence of lobar pneumonia of the lower lobe. Later, on the same day, a surgeon called in consultation corroborated the diagnosis of appendicitis. An operation was performed, and a normal appendix removed. No inflammatory lesions or adhesions were found in the abdomen. The consolidation of the lower lobe continued for five days. The child passed through the crisis, had a slow convalescence and recovered. In this case the abdominal symptom of distention was so misleading that attention was directed to the abdomen and nothing else was suspected.

Among the obscurer conditions met in children with abdominal distention is typhoid fever. We do not have the classic symptoms so well noted in the adult, but we must watch for the eruption (roseola) and the enlarged spleen. We can frequently rely on the blood count as a diagnostic aid. A marked leucopenia of 4,000, 5,000, or 6,000, with a distended abdomen and swollen spleen, should be looked upon as suspicious of typhoid fever, even though we do not have a positive Widal, or a positive diazo reaction in the urine.

Swelling of the mesenteric glands is occasionally noted with distention of the abdomen. Such glandular swelling is usually caused by serous or seropurulent effusion. A case of this kind was seen by me sometime ago, in a child three years old.

In all cases of abdominal distention a rectal examination is imperative. By means of this bimanual examination we can determine many, if not all, abdominal lesions in children. Recurring vomiting, with visible antiperistaltic waves, after the ingestion of food or liquids, and irregular or deficient evacuation of the bowels, should always be a warning of an overaction of the pyloric sphincter due to hypertrophy, or it may also be the symptom of a pyloric stenosis. When suspicion points to the presence of a pyloric obstruction, an *x*-ray examination should be made. For this purpose the usual bismuth meal should be given and the case carefully studied from a radiographic point of view.

It is a difficult matter to differentiate mild or benign symptoms from those that are serious. This is so because we cannot always trust to subjective symptoms in children, and are, therefore, forced to depend on objective manifestations. The clinical expert must rally to his assistance all diagnostic aids, clinical and pathological, remembering that the prognosis is always endangered by delay.

Abdominal pains resembling colic are met with daily. If they are due to an acute intestinal indigestion the child is not in danger. This is not the class of cases that I desire to discuss with you tonight, but the "acute abdomen" with its very significant symptoms in which "watchful waiting" frequently results in death.

An occasional cause of abdominal distention, and one ending fatally unless surgical relief is afforded, is intussusception. The diagnosis is not difficult to make, but if one is in doubt the surgeon should be called in consultation. Intussusception is by no means confined to children. I have met it in early infancy, in breast-fed as well as in bottle-fed infants. The following case is instructive:

Case II.—An infant, four months old, was seen with Dr. Levinson. It had been breast-fed, but received several feedings of modified cows' milk each day. The infant seemed to thrive until it had a sudden attack of vomiting, marked abdominal distention, and a glairy, mucous discharge from the bowel. This discharge was slightly tinged with bright scarlet blood. No feces were passed for fifteen hours. Temperature was 101°, pulse 120. On rectal examination an obstruction, which was diagnosed as an intussusception, was felt. An immediate operation was advised. The family was greatly alarmed and begged to have the operation postponed until the following day. Sixteen hours later I again saw the infant and found the symptoms more pronounced. Vomiting, distended abdomen and a tumor still palpable. I again advised operation. The child was taken to the Mt. Sinai Hospital and operated upon by Dr. A. A. Berg. In this case "the watchful waiting" proved fatal for the child. I warned the parents as to the gravity of the prognosis, but they did not realize the true condition.

Tympany is found in both inflammatory and obstructed conditions. In children it appears earlier, and is much more marked than in the adult. Distention is usually absent in intussusception, but there are exceptional instances in which distention does exist. There are several symptoms which have an important bearing on the diagnosis. One should not be misguided by the statement of the mother or nurse that a distended abdomen with fever is due to a simple colic. Many a case erroneously diagnosed as simple colic has proven to be one of a strangulated gut. A thorough examination is imperative in each and every case in which vomiting, abdominal distention, and especially pain are noted. In the early stages of acute abdominal inflammatory conditions fever may or may not be present. The presence or absence of stool during the preceding twenty-four hours will aid in determining the existence of an obstructed gut. Colicky pains with tenesmus, without expelling flatus or stool, but with a jelly-like blood-tinged mucous evacuation, should always arouse the suspicion of an intussusception.

Moribund patients will sometimes recover, as the following case will prove:

Case III.—Dorothy R., seven and one-half months old, was seen by me Jan. 17, 1916, in consultation with Dr. S. Hermann. The child had received mixed feeding, breast and bottle. She was a well-nourished infant and had good hygienic care. When seen by me the infant had been ill several days, had vomiting, tenesmus and evacuations of bloody, glairy mucus without faecal particles. There was marked abdominal distention. A horseshoe-shaped tumor, extending from the cecum to the colon, was palpable. Tympanites was present, the pulse was barely perceptible, and cyanosis extreme. The child was moribund. I concurred in the diagnosis of intussusception made by Dr. Hermann. The prognosis was grave. The child was sent to the Mt. Sinai Hospital for immediate operation. The following surgical history was given to me by Dr. A. A. Berg, who performed the operation: "Abdomen opened in upper median. Exploration revealed an intussuscepted mass extending from cecum to splenic curvature of colon, which was easily reduced. The gut was entirely visible; cecum somewhat thickened and congested." The child made a complete recovery.

Case IV.—L. M., fourteen weeks old, was seen with Dr. Weinstein of this city. The infant had been breast fed for three months and was suddenly weaned. He was given a bottle of the following formula: fat, 3:50, sugar, 6:50; protein, 1:75. After the second feeding the infant showed distinct signs of colic; screamed, drew up his legs, vomited and seemed to vomit more food than he had taken. There was slight distention of the abdomen, and very active peristaltic waves were visible. Diagnosis: Pyloric spasm, possibly pyloric stenosis. No stool passed. It was decided to wash the stomach with an alkaline solution of warm water and bicarbonate of soda. The stomach was given absolute rest for one day. Later maternal feeding was resorted to. In this case the sudden change from the maternal feeding to the cows' milk feeding seemed to offend the stomach and pylorus, for the symptoms appeared after the second bottle was taken. The symptoms gradually improved and disappeared in three days. The child recovered.

Blood Examination.—Unless we are dealing with a positive condition, such as an acute intussusception, in which time should not be lost, we can always profit by having the blood examined with especial reference to its leucocyte count. A leucocytosis of

20,000 or more is always indicative of good resistance. We, therefore, gain the knowledge of the prognosis as the following case will illustrate:

CASE V.—I was called to see a child, M. W., seven years old, with a history of having been perfectly well the previous day, but complained of abdominal pains during the night. The mother took the temperature and found it normal. The child had vomited—a yellowish fluid. When seen by me the abdomen was distended, there was marked tympanites, a slight discharge of mucus from the bowel and continued nausea and vomiting. The temperature was normal, the pulse 108. The diet was restricted, the colon flushed, and warmth applied to the abdomen. In the evening the child was comfortable, the temperature and pulse did not vary, the blood count showed 32,000 leucocytes, and a polynuclear percentage of 85 per cent. The absence of stool, the persistent vomiting, abdominal distention, and the discharge of glairy mucus from the bowel, although not bloody mucus, lead to a suspicion of intestinal obstruction or intussusception. The high leucocyte count, however, suggested an appendicitis. On the second day, after a history of colicky pains during the night, I decided to have the child operated. She was removed to the Mt. Sinai Hospital and operated on by Dr. A. A. Berg. A gangrenous appendix, with a large perforated abscess, was found.

A similar case, in a child seven years old, is reported by Elliott. The blood count showed 22,600 white cells, with 91 per cent. polynuclears.

The Pulse.—An accelerated pulse should be regarded as an indication of a progressive poison emanating from some inflamed or septic focus. Thus a pulse of 100, steadily rising to 120 or 130 while the child is asleep, should be regarded as a grave prognostic symptom. A pulse rate of 100 rising progressively, in from six to twelve hours to 110 or 120, will indicate a progressive septic infection.

It is safer not to rely on the pulse and temperature alone but to have a blood examination made. If a leucocytosis is noted, then an increasing leucocytosis with an increasing pulse rate is an indication that the inflammation is spreading, or that it is more intensified, and regardless of the temperature we have an indication for an immediate operation.

The temperature is an important aid in making a diagnosis. There are many instances, however, in which a severe inflammatory condition exists and still the temperature be found normal. This is especially true in many septic conditions.

It is hardly possible to cover all the conditions, such as subphrenic abscess, hernia, affections of the bladder, ureters, kidney, liver, and peritoneum in the short space of time allotted to a paper, so I beg your indulgence if we consider only the most usual and frequent causes of abdominal distention as met with in children.

In every case of abdominal distention clinical observations must be carefully made. An acute abdominal inflammation in a child runs a very rapid course. An inflammation running a course of a few days in adults may spread as rapidly in a few hours in children. Many cases have few promonitory symptoms. We are usually told that the child had been in good health the day before, and took sick suddenly. A *sudden illness, therefore, in which abdominal symptoms appear should always be looked upon with gravity.* Careful consideration should be given to such symptoms as persistent vomiting, singultus, and abdominal distention. The presence or absence of stool is very important in arriving at a diagnosis.

Although we have marked abdominal distention with symptoms pointing to an acute abdominal inflammation we should always inspect the lungs, more especially the lower lobe on both sides, not only for consolidation but also for effusion. Abdominal distention very frequently accompanies lobar pneumonia, also pleuropneumonia. The distention disappears with the subsidence of the acute pulmonary infection. It is quite possible to have both conditions at one and the same time.

155 WEST EIGHTY-FIFTH STREET.

THE MANAGEMENT OF THE RECENT EPIDEMIC OF POLIOMYELITIS IN NEW YORK CITY, FROM THE NEUROLOGIST'S VIEWPOINT.*

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PRESIDENT OF THE NEW YORK NEUROLOGICAL SOCIETY.

A MEETING of the Council of the New York Neurological Society was held on October 12, 1916, for the purpose of discussing the management of the recent epidemic of poliomyelitis. Subsequently, a committee consisting of Drs. F. Tilney, B. Sachs, C. L. Dana, W. Timme, and W. M. Leszynsky was appointed to make a general survey of the field. The various clinics at which these patients are receiving treatment were visited in order to ascertain the general plan and scope of the work.

At the three large orthopedic institutions conditions varied. One, receiving over 200 patients, had a special department. But the facilities and equipment were absolutely inadequate. This was said to be due to insufficient funds. The physician in charge had few if any medical assistants, and the large number of poliomyelitis cases interfered with the customary routine. The treatment was apparently limited to braces and massage and no neurological observations were made. At another, where over 300 patients were recorded, there was no special equipment and no separate department. All were treated in the general clinic. The treatment was Social Service, braces, and massage. Although it was considered a surgical disease, the aid of neurologists was welcomed. At another over 200 children were treated daily. A special department had been organized with elaborate equipment. All received electrical examination, baking, massage, electrical treatment, and braces when required. In the older children muscle training. With all of these facilities there was no neurological supervision.

At Bellevue Hospital and Cornell Medical School they were under the cooperative care of the neurologist and orthopedic surgeon.

At Mt. Sinai Hospital and the Neurological Institute they were under the direct supervision of the neurologist.

At all of the other dispensaries where these patients are received they were sent to the orthopedic department.

As a result of these inquiries, and for the purpose of expressing our views as to the best management, observation, and treatment of this type of disease affecting the nervous system, the meeting this evening will be devoted to the subject as announced. Let me add that there should be no misconception as to its object, for it has been conceived and developed in a purely scientific and philanthropic spirit.

It is interesting to note that the poliomyelitis epi-

*Introductory remarks at a meeting of the New York Neurological Society, Nov. 14, 1916.

demic of 1907 in New York City numbering about 2,500 cases, ran its course without being discovered, until an unusual number of children with paralyzed extremities appearing at the various dispensaries occasioned sufficient comment to excite investigation. At that time the New York City Health Department being unaware of its prevalence, no official measures were instituted.

Recognizing the importance of the subject, the New York Neurological Society appointed in October, 1907, a committee to study the epidemic of that year. Its membership consisted of seven members of the New York Neurological Society, Dr. B. Sachs, chairman; Drs. L. P. Clark, J. F. Terriberry, J. R. Hunt, S. E. Jelliffe, I. Strauss, and E. G. Zabriskie, secretary; in association with Drs. L. E. La Fetra, H. Schwarz, and L. C. Ager, for the Pediatric Section of the New York Academy of Medicine; Dr. Simon Flexner for the Rockefeller Institute of Medical Research; Dr. Charles Bolduan for the Department of Health of the City of New York, and Dr. H. L. Taylor as a representative of orthopedic surgery.

Seven hundred and fifty-two cases were carefully analyzed. Their results and conclusions are embodied in a volume of 120 pages entitled "Epidemic Poliomyelitis; Report of the Collective Investigation Committee on the New York Epidemic of 1907."

This was published only six years ago and should still be fresh in the minds of the profession. It is quite evident, therefore, that the neurologist has manifested more than a passing interest in this topic.

Since then the New York City Health Department has been on the alert, and the affection was promptly classed among the "Reportable Infectious Diseases," thus resulting in widespread publicity during the epidemic of 1916, and the quarantining and control up to October 11, 1916, of 8,927 cases. It is indeed remarkable that since the advent of the recent epidemic no reference has been made to the above-mentioned elaborate report. This valuable work of the poliomyelitis committee of the New York Neurological Society seems to have been utterly disregarded or forgotten by the medical profession, and also, curiously enough, by the New York City Health Department, who materially aided in the investigation and whose representative was an active member of the committee.

Through the lack of foresight in the management of the recent epidemic an unprecedented opportunity for clinical nuerological observation has been irretrievably lost. This was, of course, a deplorable incident, for in the excitement and public hysteria during its prevalence, through the unaccountable neglect of those in official medical control of these patients, the value of cooperative neurological study was entirely forgotten or ignored. This has been shown unquestionably by the absence of any official invitation by the New York City Health Department suggesting or requesting the cooperation of neurologists, and by the omission of the names of neurologists from the lists of committees appointed either by the city administration or among those announced as the "Committee on the After-Care of Infantile Paralysis Cases."

On this "After-Care Committee," which was formed last August and is composed of 53 members, there are 25 physicians. The names of three neurologists recently appeared on the list. One, now a member of the executive committee of 15 members (seven of whom are physicians), was appointed within the last four weeks. Of the two others, one is not aware of his membership, while the other merely has the privilege of attending its meetings.

Furthermore, the New York City Health Department has given printed instructions, with lists of hospitals and dispensaries where orthopedic treatment may be obtained, to the parents of children with poliomyelitis upon their discharge from the hospitals, probably under the influence of the prevailing idea that their only requirement is the adjustment of braces. Hence, the entire medical supervision and control of these patients have been officially relegated to the orthopedic institutions, thus establishing a precedent which must not be left unchallenged. For, if the promulgation of such a doctrine be tacitly accepted without qualification or modification by the medical profession, it must inevitably lead to confusion. These remarks, however, are not made in any spirit of rivalry, nor do I wish to attempt to belittle or discredit the value of orthopedic methods in suitable cases.

It is universally admitted that poliomyelitis is a disease practically confined to the central nervous system, and that its symptomatology, such as paralysis, atrophy, and trophic changes are due to a spinal cord lesion and that its infectious origin has no direct bearing upon the subsequent developments. Therefore, in consideration of the fact that in the modern classification of diseases, poliomyelitis has heretofore been assigned to the province of neurology, such an anomalous state of affairs as above described, is indeed surprising. To say the least, it is an extraordinary procedure. But the scientific interest of neurologists in this disease of the nervous system has not abated and cannot be so easily eliminated.

In thus pointing out certain sins of omission and the unwise encouragement of a popular fallacy, it is not my purpose to assume an antagonistic attitude. That the orthopedic institutions have been placed in exclusive charge of the "after care" of these patients, seems to have been more a matter of expediency, perhaps, than of medical selection or preference. But, as this plan of organization is now well under way, there should be no serious objection to this arrangement, if it can be satisfactorily shown that these children are adequately cared for, and that their condition will be properly studied through suitable scientific observation and medical cooperation. Unfortunately, at the present time, our hospital facilities for the special care of patients with nervous disease is extremely limited. We fully realize the importance of preventive measures, immunization, and the value of laboratory research in this emergency.

In the solution of a therapeutic proposition of this magnitude, a standardization of treatment should be instituted adapted to individual requirements, and the best interests of these patients will be conserved and scientific progress be promoted by the harmonious cooperation of the orthopedic surgeon with the neurologist and pediatrist. I shall not attempt to define their respective duties in this field as that matter no doubt will be mentioned by the readers of the papers.

These disabled children should not be deprived of any advantages that may be developed from such associated service, and all available means should be utilized for their benefit.

As a sociological problem, this may be safely left to the various social service organizations whose work is recognized as of the greatest value and is admittedly indispensable.

For the last forty-four years the New York Neurological Society has stood for the advancement of the science and art of medicine in all its relations to the nervous system. To-day it is still on the active list.

The subject of "poliomyelitis" having appeared during the past month on the program of many other medical societies in this city, an expression of our views is now in order.

145 West Seventy-seventh Street.

A THEORY AS TO THE CAUSATION OF POLIOMYELITIS.

By D. W. WYNKOOP, M.D.,
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Has the medical profession measured up to standard during the epidemic of poliomyelitis recently passed? How many doctors have been asked by their patients as to the causation and mode of infection of this fearsome disease, and have but shrugged their shoulders in reply?

From my experience as health officer in a community which had one of the severest attacks of poliomyelitis for the size of its population, I have formulated a theory of the disease that I believe can be accepted.

The Theory.—We know that our bodies are given immunity to certain diseases if sufficient time is allowed for the manufacture of the antibody to combat the disease. In pneumonia the crisis comes only when this has been formed. In diphtheria immunity is furnished by the antitoxin serum. In typhoid fever artificial immunity is also rendered by serum. In yellow fever there are those who enjoy natural immunity to the disease. The reason why many diseases never occur a second time is that the antibody once established for this particular disease does not wear out.

In anterior poliomyelitis our own bodies furnish this immunity if sufficient time is allowed for the manufacture of its immune body. As proof of this contention, I offer the age statistics of the State of New York (exclusive of the city) for the recent epidemic. Most of the cases have occurred in children under five years of age. The average was two years. Why should not the rest of the children of a family come down with the same disease if it is contagious (as the word is ordinarily understood) unless they have already manufactured their antibodies for immunity? We know that they are not made immune from any outside source. If immunity is manufactured within our bodies at an early age of youth where is its manufacturing plant? Poliomyelitis attacks only the spinal cord and brings about pathological changes in the anterior horns. The spinal cord is nourished entirely by the spinal fluid that surrounds it, and it should be a study from this source on which the theory of the disease must be founded.

The Cerebrospinal Fluid.—The secretion of this fluid is by the choroid plexus in the ventricles or inner cavities of the brain. The inside lining of the ventricles is composed of ciliated cells of epithelium. They help secret the fluid that is present in the ventricles and also surrounds the spinal cord in its sheath. All the lymph glands in the body undoubtedly aid in augmenting this fluid. According to the side chain theory of Ehrlich, *i.e.* that living protoplasm can be regarded as a central atom group related to which are secondary groups or 'side chains' which have unsatisfied chemical affinities, and that toxic molecules attached to these side chains produce antitoxin in the central atom group, it is quite conceivable that these ciliated cells often in youth have not developed to a point where they can make their antibody against poliomyelitis or else the lymph secretion is deficient in certain qualities. It is conceivable and likely that some will never make this immunity, and may be stricken with the disease even in advanced age.

In natural immunity against disease we have the vivid picture of phagocytosis, the lymph cells surrounding the enemy and devouring him, chemically accompanied by the alexin (undoubtedly a product of glandular secretion) or fluid which renders germ life impossible when surrounded in this medium.

At best, our knowledge of glands and their secretion is most imperfect. Certain diseases are strongly connected with the absence of certain glands; *e.g.* the thyroid in cretinism and the absence of certain properties of this gland in myxedema. A certain part of the seminal fluid of the tests is for home consumption and certain closely allied symptoms of brain and spinal cord disorder are noted when this required amount is taken away from the body by excess. It is probable that all immune substances of the body are made in the glands of the body. It is in the glands that the fluid lymph is made. It is from this lymph that we have the pointing finger of poliomyelitis. This brings us to this statement: *Poliomyelitis is a disease caused by a negation of glandular efficiency.*

Under normal conditions the cerebrospinal fluid looks like water. In composition it resembles blood minus its corpuscles and albuminous qualities. There is no protein matter found and the count of lymph cells is small.

All nerve cells are bathed in lymph. They take from the lymph what they need as nourishment and give back to it the excretions they wish removed. The lymph becomes the middleman connecting the nerve cells with the arterial blood beyond.

In poliomyelitis this function is disturbed. This is shown under the microscope by a vastly increased number of lymphocytes. There is increased pressure in the cerebrospinal fluid which is noted on lumbar puncture. The increased number of lymphocytes is accounted for by the presence of toxic germs in the secretion it is fighting against.

There are two abnormal conditions that affect the cerebrospinal fluid in a pathological way. The first is the *quantity* of the blood supply and the second is the *quality*. Our interest is only in the latter in arriving at conclusions in connection with poliomyelitis.

We find that the quality of the blood supply is altered by insufficiency of oxygen. As examples of this condition we have anemia, cretinism and myxedema (diseases that affect growth to a greater or lesser extent).

Another feature which affects the cerebrospinal fluid is an excess of normal constituents. As an example of this we have the excess of carbonic acid found in asphyxia, uremia and Graves' disease, conditions that profoundly affect the cord and brain.

As a third and most important change in the

quality of the cerebrospinal fluid we have the presence of abnormal constituents. This should be our working point in finding the causation of poliomyelitis. There are three things to be considered under this head: (*a*) Poisons produced within the body by perverted functions of organs or tissues; (*b*) Action of bacteria upon living fluids and tissue; (*c*) Poisons introduced within the body from without by food, drink or inhalation.

As examples of (*a*) we have autointoxication by albumoses, fatigue produced by muscular over-exertion producing an excess of sarcolactic acid, excess of uric acid, cholemia shown by bile in blood, phosphoruria, glycosuria, yellow atrophy of liver, and oxaluria.

As examples of (b) we have the infectious diseases typhoid, typhus, smallpox, measles, scarlet fever, *influenza* and *poliomyelitis*. I have grouped the last two together, as I believe it will be shown they are closely related in both mode of infection and epidemic tendency. In all the above infectious diseases the central nervous changes, such as coma, delirium, stupor and motor irritations, may be brought about by high fever stimulated by toxic conditions in the blood or lymph. All tissues of the body depend upon each other for health. If one suffers they all suffer.

In only one of the above infectious diseases is there a definite selective influence shown in attacking a definite site of the nervous system; this is in poliomyelitis. In this disease the cord alone is attacked and yet the site may vary, only affecting a small group of muscles of the foot or a large group of muscles higher up. Why should the toxic germ of poliomyelitis find suitable media to grow in certain interstitial spaces of the cord and not in others? According to the clinical aspect of the disease the period from real onset to symptoms of paralysis supervening is from five to seven days. This means that by the seventh day the ordinary patient has finished making his own immunity and any further extension of the toxic degeneration of nerve cells ceases altogether. Those rapid cases, in which paralysis intervenes within forty-eight hours from the presumable onset, are nearly always fatal and the groups of muscles involved most extensive. In these cases the self-immunity manufacture of alexin was absolutely overwhelmed.

Agreeing upon the selective influence found in poliomyelitis, let us consider the other known diseases that attack the spinal cord or other specialized parts of the nervous system. They are: Syphilis, *i.e.* locomotor ataxia; rabies, in the medulla oblongata; tetanus, in the fifth motor nucleus; sleeping sickness, *i.e.* stupor and paralysis; cerebrospinal meningitis; pellagra, and beriberi.

Some of these move slowly and others with incredible swiftness. In rabies, a protozoon is supposed to be the cause of the disease, and in the earliest period of its development it is so infinitesimal in size that it can go through a Berkefeldt filter. The failure to isolate the germ of poliomyelitis or have it clearly demonstrated to all under the microscope is probably due to its infinitesimal size. Its very method of infection, being borne along the highways of travel by the gentlest winds, should prepare one for what to expect in size.

In likening an epidemic of poliomyelitis to influenza, the history of the latter in 1889-1890 should be remembered. It sprang up in one of the distant provinces of Russia in October. In November it had reached Moscow. In two weeks Berlin was attacked. Paris and London had it in the middle of December and by the end of this month it was present in New York and was spreading throughout the country. Osler, writing on the types of this disease, mentions the nervous forms: "Without any catarrhal symptoms there may be severe headache, pain in back and joints, with profound prostration. Many remarkable nervous manifestations were noted during the last epidemic. Among the more serious may be mentioned meningitis and encephalitis, the latter leading to hemiplegia and monoplegia. Abscess of the brain has followed in acute cases. All forms of neuritis are not uncommon, and in some cases are characterized by marked disturbance of motion and sensation. Judging from the accounts in the literature almost every form of disease of the nervous system may follow influenza. . . . Gastrointestinal form: With the outset of the fever there may be nausea and vomiting or the attack may set in with abdominal pain, profuse diarrhea, and collapse." These symptoms are not so very unlike those of poliomyelitis.

So often have the questions been asked "Does the disease travel by air, and have climatic conditions anything to do with its spread?"

In its non-epidemic stage the germ of poliomyelitis is undoubtedly very resistant to ordinary conditions of temperature; it is perfectly willing to stay in its envelope for any number of years or seasons. To break from its shell membrane it needs continued humidity and heat. The early part of this summer was an ideal occasion for it to explode from its chrysalis and go forth on its rounds of destruction among those infants not already immune.

The summary of the theory I advance is that antitoxin molecules do exist as part of the nerve cells and glands which make the majority of children immune to poliomyelitis. Serum may carry its antitoxin molecules but to a far lesser extent. Poliomyelitis is not contagious, except to those who are not immune to the disease—to such it is both highly contagious and infectious. In epidemics of this disease the atmosphere is surcharged with invisible clouds of these germs fresh from sporadic form or a recent case. The remedy for poliomyelitis will probably be found in a non-toxic fluid that will be injected into the spinal cord by lumbar puncture at the onset of the disease or as a preventive measure during epidemics. The nature of this fluid will probably be an extract made from a mixture of healthy glands (including thymus) till the one definitely required is found.

In conclusion, I would like to state that, contrary to what I have seen in the medical press in connection with experiments on animals, it is impossible to inoculate the guinea pig with poliomyelitis. I have made exhaustive experiments to this end with the most virulent virus, injecting directly in the spinal sheath and have been unable to produce the disease. The guinea pig, as well as most other animals, is immune, and we should sooner or later be able to find from what their immunity comes.

Encephalitis Following Salvarsan Injection. — Kohrs relates the case of a man of twenty-six with secondary syphilis, who was given one injection of salvarsan and who developed no bad symptoms for two days when a chill set in. Next day he seemed in fair condition, but one day later there were clinical evidences of apoplexy, ending promptly in death. Autopsy revealed hemorrhagic encephalitis.—*Müenchener med. Wochenschrift.*

MEDICINE IN NEW YORK CITY IN THE 60'S.

"THERE WERE GIANTS IN THOSE DAYS."

By A. L. SWEET, M.D.,

GENEVA, N. Y.

At the time of which I am writing the old University Medical College building stood, according to my recollection, in Fourteenth Street not far from Union Square. It has since burned down, and I think that Tammany Hall stands upon its site. I use this institution as a nucleus around which to arrange these sketches because I was there at the time and it was the oldest medical school in the city, and also in its halls were gathered some of the great ones of our profession. This building, if it were to be described, would be characterized as absolutely without any modern improvements. There was a tradition that there was a furnace somewhere in the subterranean regions, but no one believed it, for there were never any indications of its existence. During lectures we who were there as students were obliged to wear our overcoats and arctics, and during the intervals box and jump about to keep the circulation going. One would laugh now to see such an amphitheater as we had in those days, and in the center a little old blackboard which revolved on a peg on a short post, upon which Van Buren used to write "prostrate" and tell us that that was *not* the name of the gland. This building contained among other things the museum of Dr. Valentine Mott, the destruction of which was an irreparable loss to the medical profession. In the front of the building on the front floor was a sort of reception room, where prospective students were received, and where they procured the tickets of the different professors and were registered. I may say in passing, though not in its proper place, that on the tickets of Dr. Mott there were engraved a hand with the index finger extended, and in the end of the finger an eye, a very striking and significant device. In this room frequently some of the professors would foregather before the time for lectures to begin. One morning in particular I recall that Professors Draper and Paine were present, and perhaps others I do not recall. A young lad from a small country village was there and was suffering from a bad attack of homesickness (a malady, by the way, that none of the great ones could cure—the only known cure being a railroad ticket). The racket and confusion of the city had got on his nerves and he had passed a sleepless night. He wished the college to give him back his money and allow him to go home. Professor Draper took it upon himself to calm and comfort the young man, and among other things told him that "probably God had sent him there for some good purpose." As a result the young man stayed and finished his course and graduated with as high honors as anyone in the school. The reminiscences in this article are my own as I recall them—some of the biographical and other facts taken from different sources. It is fitting that we begin these sketches with the name of John W. Draper, as he was one of the senior professors, and also because he was a very distinguished man, and known as well in Europe as in this country. He was born in England in 1811, and came to this country in 1830. After finishing his preparatory studies he took his degree of M.D. at the University of Pennsylvania in 1836. He took a prominent position as a teacher of medical and scientific subjects almost as soon as he graduated, and in 1839 was called to the chair of natural history and chemistry in the academic department of the University of the City of New York. He also lectured on physiology at that institution. In 1841 he was appointed professor of chemistry in the University Medical College, and in 1850 the chair of physiology was also added to his duties. In a few years he became the president of both the medical and scientific departments of that institution. His connection with the college continued until his death, but the time of that event I am not able to ascertain. In appearance he was not an imposing man. He was very short and rather stoutly built, and his head was so large that it gave him the appearance of being cut out of one piece. I have a good picture of him before me now, and his massive and strikingly intellectual face is as vivid in my memory almost as if I had only seen him a short time ago. He was a "shaggy" man and evidently did not spend much time before his mirror, his beard on the side of his face starting down in his neck and going up to join his hair. A little tilt to his nose gave one the impression that he might have a large sense of humor, and perhaps he had, but the numerous duties which pressed down upon him, and his constant consideration of great subjects, made him perforce a serious man. He had the leonine type of face, and looking upon it one had an impressive sense of the massive mind and soul behind it. He was a man of immense and varied activities. He not only lectured constantly and contributed to many foreign and domestic scientific journals, but at the same time was pursuing original research work in many directions. It is impossible to speak in detail of all he did, but it was said that he was of great assistance to Morse in his invention of the telegraph, and one of his discoveries led to the invention of the incandescent light. His crowning glory, perhaps, was the discovery of the process by which the human face could be photographed. Daguerre, who had the credit of inventing the picture which bears his name—although he was not the inventor, only one of those who perfected it, tried to do it, but gave it up and said it could not be done, but Professor Draper, who knew more about the chemical action of light than any other man, attacked the problem and solved it successfully. The first photograph of the human face was that of his sister, Dorothy Catherine Draper. One can imagine the feelings of Dr. Draper when that face looked out upon him from the sensitized paper. Dr. Draper was one of the most modest and unassuming of men. He would come into the lecture-room with a quiet, almost deprecating air, and when he came to his experiments would probably say, "Now, gentlemen, if I have combined these chemicals properly the result will be of a certain character," and there were never any failures. There was only one request that he ever made of the students, and that was that they would not smoke in his lecture-room. Owing to some idiosyncrasy, tobacco positively unfitted him for his duties. To be obliged to refrain from smoking was a great hardship for some of the students, but they all cheerfully complied with his request. Some of his important works should be mentioned here: His "History of the Intellectual Development of Europe" made a profound impression upon the thinking classes of the world and was translated into a dozen or more different languages. In 1865 four lectures which he delivered before the U. S. Historical So-

ciety were published in a volume entitled "Thoughts on the Civil Policy of America." I suppose that it is out of print by this time, but if our present-day statesmen could have access to that volume, they might gain some ideas which would be of immense value to them in shaping the political policy of the nation. Another volume which aroused a great deal of criticism at the time was his "Conflict between Religion and Science." I have not the space to go into anything like a review of this book. Of course there were many things in it disturbing to the orthodox Christian, but in my opinion the criticism grew out of the *title* more than anything else. It should have been called the conflict between certain churches and religion, or better still, between certain ecclesiastics who were hostile toward anything in the form of science. I have no positive knowledge in regard to the religious convictions of Dr. Draper, but the episode of the student which I related above would indicate that he had a reverent spirit and that he believed in the divine ordering of things. It is surprising in the brief time allotted to us here how much some men can accomplsh; thus Dr. Draper was distinguished as a scientist, historian, philosopher, physician.

In this connection I wish to speak briefly of the sons of Dr. Draper. There were two: John and Henry. Both were exceptionally gifted men, but I came more in contact with John and remember him better. He was altogether different in appearance from his father. He was a very handsome man with absolutely black hair and full beard. He would stroll into the lecture-room behind the old table which was covered with all sorts of chemical apparatus, with his hands in his pockets and a smile upon his face, which might express the fact that he had just heard a good story and dropped in to tell it to the "boys," and very likely he had, for the sense of humor was very largely developed in him. He would then take a drink from a tumbler which by some means always stood there, and drawing his mustache into his mouth to get rid of the surplus water, would begin his lecture with an air that seemed to say, "Well, gentlemen, this is all a joke, but we will have to go through with it, I suppose." But his lectures, as I recall them, were brilliant and fascinating, and unlike some in the building, were all too short. One day he was examining a student in chemistry for his graduation. The subject was one of the arsenical tests. At one stage of the process he asked the prospective M.D. what would be the result if we placed the glass capsule over the flame of the spirit lamp? "It would break the glass," was the naïve reply. This was too much for the risibles of the professor; he threw his head back and laughed heartily. As I recall the matter he took the place of his father in the chemistry department while he continued to lecture on physiology. He also published several works and contributed to English and American scientific and medical journals. Henry was also a lecturer in the college on chemistry (analytical) and physiology. He made at Hastings-on-the-Hudson the largest telescope that had ever been constructed in the United States up to his time. He was also the author of some books along his own line and a contributor to scientific journals. He was also an authority on the spectroscopic conditions of some of the heavenly bodies. Valentine Mott, M.D., was also a lecturer in this institution at the time of which I am writing, but it was the twilight of his great intellect. I only had the pleasure of hearing one course of his lectures, as he died in 1865. He invariably illustrated his lectures on the cadaver and his demonstrator was F. D. Weiss, a very brilliant young man who passed all his examinations several years before he was of legal age to graduate.

One striking habit of Dr. Mott's I will put down here lest I forget. One would suppose that a man who had been operating upon the human body constantly for a great number of years would be so familiar with regional anatomy that he could almost find his way in the dark, and yet Dr. Mott was so considerate of his patients that he never performed an operation of any consequence without first performing it upon the cadaver. Dr. Mott had the Websterian style of face, and his lectures were absorbingly interesting, not only because of what he brought out of the stores of his own great experience, but he had met most of the great surgeons of the world and had interesting reminiscences of them.

Dr. Mott was born at Glen Cove, L. I., in 1785. He took his degree from Columbia College in 1806, but also studied in London and Edinburgh. He held the chair of surgery in Columbia until it was united with the College of Physicians and Surgeons in 1813. As I said above, his lectures were intensely interesting, but occasionally the shadows would gather and he would wander from the subject in hand. One day he gave us an interesting talk upon flying-machines, which were just beginning to interest scientific men. One day during his lecture I happened to look across the amphitheater (and in those days it was not very far across), and saw a man who became deathly pale as the lecturer progressed. I supposed, of course, that he was not a student, but some man who had dropped in from curiosity and had seen something which he did not expect. Finally he started up the stairs, and as soon as he reached the upper level, fell like a log to the floor. Dr. Mott thought perhaps that it was someone who was trying to disturb his lecture, and he expressed his willingness to go up and thrash him on the spot. He was then 80 years of age. There is no question but Valentine Mott was one of the greatest surgeons that ever lived—taking into consideration his original work, perhaps the greatest. Sir Astley Cooper, the great English surgeon, said in regard to him: "He has performed more of the great operations than any man living, or that has ever lived." He performed operations which no other man had thought of and would not have dared to perform if he had. The following is a brief résumé of the things that he did: "As early as 1818 he tied the arteria innominata—only 2 inches from the heart—for aneurysm of the right subclavian artery, for the first time in the history of surgery. Although the circulation was supposedly entirely cut off, pulsation could be distinctly felt in the right radial artery, and the limb presented no appearance of sphacelation. On the 26th day, however, secondary hemorrhage set in and the life of the patient was speedily terminated. He successfully removed the entire right clavicle for malignant disease of that bone, when it was necessary to apply 40 ligatures. He was also the first to tie the primitive iliac artery for aneurism. He tied the common carotid 46 times and amputated nearly 1000 limbs. He early introduced an operation for immobility of the lower jaw and succeeded after many eminent physicians had failed. In 1821 he performed the first operation for osteo-

sarcoma of the lower jaw. He was also the first surgeon who removed the lower jaw for necrosis." He was also the author of several works pertaining to his own field. He literally died in the harness—I heard him lecture in 1863-4, and he must have been at that time 80 years of age. He was one of the great Americans and was the first man who won from Europe any recognition of American surgery. It seems to me that there ought to be some public recognition of his greatness—he ought at least to have a niche in the Temple of Fame.

Martyn Paine lectured on Materia Medica and Therapeutics during my stay at the College. He was one of the greatest thinkers of his time, but was a brilliant illustration of the saying that "a prophet is not without honor save in his own country," and it might also be said of him that he was without honor in his own college. He had come down from a former generation and found that medical thought had swung far away from him and left him solitary on a desolate eminence. He still believed in bloodletting in selected cases, and in the antiphlogistic treatment of inflammation. At this time all bloodletting had been consigned to the limbo of unconsidered trifles, and pneumonia, typhoid, and diseases of that class were being treated with quinine and whisky. Dr. Paine saw no reason to change his ideas in regard to the treatment of disease, but was continued in the college out of regard for his eminent character and for what he had done for the school in the past. The younger professors smiled indulgently when his name was mentioned, and, of course, the student body took their cue from them, and they would lounge into his lectures because they must come before him for exams, but frankly bored and would sometimes snap their watches if they thought the lecture was exceeding the limit. He was a tall, imposing, cadaverous-looking man, with apparently not an ounce of adipose tissue on his body. His face was pale and not mobile, but his brilliant, luminous eyes lent to it expression. Dr. Paine was the author of "Medical and Physiological Commentaries," "Materia Medica," "Institutes of Medicine," and perhaps other works. The latter volume I am most familiar with, and it is a monumental work. There is no branch or phase of medicine which is not treated in this volume. He wrote before the days of germs, but he pursued to their lairs the hidden causes of morbific action, and the intelligent reader has no difficulty in accepting his views. It is interesting to reflect at this time that he sought the ultimate causes of disease, applied his remedies, and cured his patients in utter ignorance of the germ which had caused all the trouble. After a long and studious life (he would often meet the servant coming down to light the fires as he retired to rest), he was gathered to his fathers, and as far as I know no tribute was paid to his memory.

Alfred C. Loomis began his career as a lecturer about the time I entered the university. As I recall the matter he was the last survivor of a tuberculous family, and decided that in self-defence he would study medicine and find, if possible, some new facts in regard to consumption, and in this effort he took the shortest and most direct method to ascertain the effect of the malady on the human body. He studied the cases at the bedside and when they were fatal followed them to the morgue and studied them post-mortem. In this way he became absolutely familiar with the pathological lesions of this disease (and others) which was the foundation of his fame as a diagnostician in later years. Professor Loomis, as I recall him, was a rather tall, well-built man, with very dark hair and eyes, and very white but healthy-looking skin. I am frank to say that I enjoyed his early lectures more than those of later years, when he had become a distinguished man, and his lecture room was crowded with professors and students from all the colleges. At this time the very fullness of his teaching made it difficult for the average student to appropriate it. One day he was lecturing on croup and related the following incident: He was coming through one of the streets on his way to the college when he saw a number of children playing on the pavement in front of a large residence. As he came nearer he heard one of them cough—that peculiar, croupous bark that we have all heard and dreaded. His first impulse was to ring the bell and tell the parents to care for the child, but professional diffidence restrained him and the next time that he came that way there was crape on the door. After leaving college I did not see Professor Loomis for several years. I was practising on Long Island and broke down from overwork and naturally went down to see him. After a careful examination he told me that my liver was badly atrophied and if I had any business matters to attend to I had better be about them. That was about forty years ago, and I am here writing about him, and he has long since gone to dwell in that "low green tent whose curtain never outward swings." Dr. Loomis said one day that he supposed every man must have a hobby and his own was quinine. At that time it was quite the habit of some practitioners to treat pneumonia with that drug, which was certainly contrary to all pathological teaching, and the effects of the remedy. The wife of Dr. Loomis, who died of pneumonia, was presumably treated in the same way. A few years after, by a strange coincidence, the professor himself died of the same disease. Two things impress me in this connection—before the gathering shadows shut out the light from that great brain did he congratulate himself that at least he had not died of tuberculosis, and did he order for his own treatment that which had doubtless wrought many cures in his hands. Dr. Loomis had an international reputation and was the author of a work on diagnosis, which as far as I know has not been excelled.

Just at this point there flits across my mental vision a unique figure in the professional world. Prof. "Jimmy" Wood was not one of the great ones, but he accomplished a great deal, for he began his surgical career when a mere youth. He was a miniature man with hands and feet like a lady and the habit of blushing like one of that sex. As I remember, he was connected with the College of Physicians and Surgeons. I was present at his clinic one day when he was operating for hernia. The room was full of students and professors. He explained the different tissues as he came to them and then said, "Gentlemen! the next fascia is the cremaster muscle—you will probably never see it, as it is the creation of the anatomist." He came down to Long Island to operate upon one of my patients for cancer of the antrum. After the growth was all removed he asked us to place our fingers in the upper part of the cavity. "That, gentlemen," he said, "is the cribriform plate of the ethmoid bone—I never go beyond that." As I said, he began as a youth and was operating constantly until his life went into an eclipse.

William H. Van Buren lectured at the old college

during my time. He was the most kingly man that I ever saw. Over six feet in height and well proportioned, with a fine head and face, he was a figure never to be forgotten. He lectured an anatomy and surgery, with special reference to the genitourinary organs. When he came up into the old amphitheater and made his courtly bow, there was always a burst of applause. He published one book, at least, along the line of his own specialty and perhaps more, I do not remember.

But we must stop with only a brief mention of others who were ornaments to the profession in those years, and who are worthy of a niche in the medical Temple of Fame. Charles A. Budd and Fordyce Barker, both brilliant lecturers on obstetrics; Alfred C. Post, who might be remembered as the Sir Galahad of the profession—without fear and without reproach—modest and methodical and delighting in all of what might be called the ornamental phrases of medical terminology. During my own examination he asked if an injury was on the right side of the cranium, where would the paralysis be, if any? On the left side, of course, was the answer to that question. "What is that sometimes called?" he asked. I happened to remember that it was sometimes spoken of as *contre coup*. "Yes, sir, very good," he replied, "a French term." Another unique figure in the profession was Prof. G. S. Bedford, whose specialties were diseases of women and children. In 1850 he established a clinic in the college for the treatment of those diseases, and from the time it was established to 1868 there had come before his classes more than 8,000 patients. His lectures were *sui generis*—they were witty, sentimental, poetical, and religious, and his cases were presented in such a graphic manner that one would never forget them. Many of these cases—perhaps all of them—were reported and published in a volume which is as fascinating as a novel. Professor Markoe was known as the great tenotomist, and his friends said there was not a tendon in the body which he had not cut. Professor Sayre was the great authority on morbus coxarius, and was operating almost daily.

These reminiscences would not be complete without the name of D. B. St. John Roosa, who was a contemporary of mine, and who became eminent in his specialty as an oculist. He was not only distinguished in his profession, but was a public-spirited and influential citizen and received the degree of LL.D., I think from his own college.

In looking over my notes, I see I have omitted the name of Prof. J. C. Dalton. He was not an inspiring lecturer, but he was an authority on physiology and published a work on the subject, which was used as a textbook at the college. It may be possible that there are some inaccuracies in these reminiscences, as I have written with unassisted memory—and a half century is a long time.

Case of Lipodystrophy in a Boy.—Boissonnas describes a case of this relatively new affection which has hitherto been seen to attack girls only. The patient is six years old and his trouble appeared two years before, after pertussis. The face, while its musculature is normal, is quite free from fat. This lack of fat involves the neck but does not extend further downwards. Arms and trunk have normal fat, but the notes and lower extremities show a notable increase of adipose. On account of this peculiar distribution the dystrophy is spoken of as "fatleggedness." The absence of fat in the face and neck gives a peculiar appearance to the child, whose cheeks are hollow and eyes deeply sunken. The diameter of the cheek shows that only skin and mucosa are present.—*Correspondenz-Blatt für Schweizer Aerzte.*

AN IMPROVED INSTRUMENT FOR MAINTAINING AN ORAL AIR-WAY, DURING GENERAL ANESTHESIA.

By JOSEPH E. LUMBARD, M.D.,

NEW YORK.

INSTRUCTOR IN ANESTHESIA, UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE; ANESTHETIST TO BELLEVUE AND ALLIED HOSPITALS, HARLEM DIVISION, LUTHERAN, KNICKERBOCKER, AND LYING-IN HOSPITALS.

In previous articles* I mentioned the importance of keeping a free oral air-way for certain condithesia and described my invention for that purpose. Since then I have changed the instrument, making it smaller and stronger. Inasmuch as all anesthetists fully agree, which is saying much, that too great emphasis cannot be placed upon the necessity of keeping a free oral air-way during general anestions, I feel justified in harping on my hobby and have succeeded in making a more perfect device. During the last few years numerous tubes have appeared for the same purpose made by Hewitt, Connell, Ferguson, Coburn, Flagg, and Pinneo.

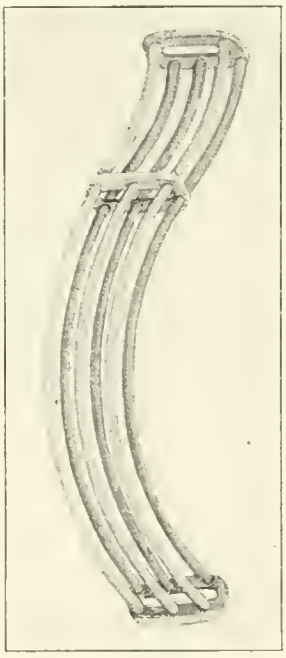

Fig. 1.—Lumbard's air-way; the lower is the pharyngeal end. Two-thirds actual size.

In the second of the articles above mentioned I call my instrument "A Controller of the Tongue and Palate During General Anesthesia." While this is possibly more correct than the new title, it is lengthy and ambiguous.

My latest instrument (see Fig. 1) for maintaining an artificial oral air-way, is constructed as follows: a double row of three curved wires running parallel, about an eighth of an inch apart, are firmly held together by three crossbands. The instrument is 4½ inches long, ½ inch in width and ⅛ inch in thickness. It contains nine pieces and is nickel plated. Properly made, it will not rust nor come apart when sterilized.

No attempt should be made to introduce this instrument until the patient is well anesthetized, for the pharynx is one of the last reflexes to yield to general anesthesia and the introduction of the instrument too soon is apt to cause gagging. The

*Helps in Surgical Anesthesia, *Journal A. M. A.*, November 23, 1912, p. 1853. A Controller of the Tongue and Palate During General Anesthesia, *Journal A. M. A.*, May 22, 1915, p. 1757.

instrument is easily introduced by inserting the pharyngeal end between the tongue and the soft palate until it rests in the pharynx (see Fig. 2). Should the respirations become noisy this annoyance can be overcome by extending the head back-

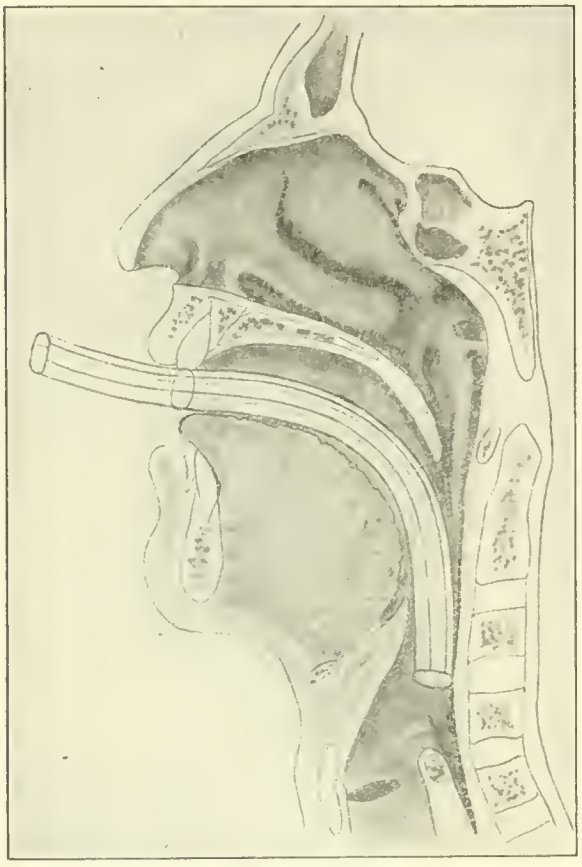

FIG. 2.—Lumbard's air-way in situ.

ward. Sometimes the noisy breathing, when the tube is in situ, is indicative of a light anesthesia. In such cases it is better to take the tube out and deepen the anesthesia before replacing it. A few cases will do better if traction on the tongue is made before the air-way tube is introduced; in such cases do not use the tongue forceps, but always make traction with a piece of dry gauze held between the fingers. A swollen tongue from crude instrumentation will often cause the patient more trouble than the operation itself.

The instrument does not interfere with any face mask nor with any method for administering a general inhalation anesthetic. Not only does this air-way obviate the task of holding the jaw forward, but is useful in the aged where the lips obstruct the air passage.

I have often noticed when instructing interns and students that they are quick to see and appreciate the advantages of this instrument. I would earnestly recommend the use of this tube in all abdominal operations, especially when in the Trendelenburg position; also when there is any obstruction to free respiration during anesthesia. Keeping the instrument in situ after the operation, until swallowing returns, will greatly hasten the recovery from the anesthetic. I consider an instrument for maintaining an artificial oral air-way one of the most important items of an anesthetist's outfit.

A free oral air-way is indicated in the following conditions: When there is (1) cyanosis due to obstructed nasal or oral breathing; (2) unrelaxed muscular condition, due to faulty breathing; (3) enlarged tongue or falling back of the tongue, especially when the patient is in the Trendelenburg position.

When using the insufflation method or oxygen, a rubber tube can be easily attached to the side of the instrument by a rubber band or string. (See Fig. 3.)

The insufflation method and oxygen can also be used with Lumbard's vapor mask, with the air-way tube in situ.

The substitution of free oral respiration for imperfect nasal or oral respiration will, in a great majority of cases, immediately be followed by slower and quieter breathing, improvement in color, and greater muscular relaxation; in fact, a much improved type of anesthesia is the result.

The following are the advantages of this tube, each of which removes several disadvantages in similar instruments: (1) It will not clog with mucus, thus eliminating the chief defect of other instruments. (2) It is easily and quickly inserted. (3) It is easily kept in position, whereas the weight of a solid tube often displaces it. (4) It cannot be compressed by the teeth and gums. (5) It will not conduct a fluid anesthetic to the pharynx, an accident liable to occur with other tubes. (6) It may also be used on children as well as adults. (7) It is quickly cleaned and sterilized, because it is open

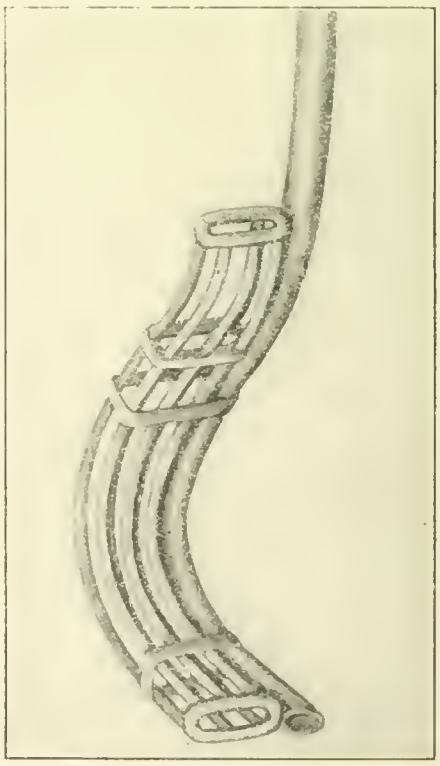

FIG. 1.—Lumbard's air-way with rubber tube attached for the insufflation method or oxygen. Two-thirds actual size.

on all sides. This tube has well been called the "sine qua non" of the anesthetist.

1927 SEVENTH AVENUE.

Action of Salvarsan.—It is certain, according to Eliasberg, that salvarsan may be toxic and fatal and that we are unable either to foresee or prevent this toxicity. Abortive treatment, so-called, only renders the disease latent and cannot justify marriage. Salvarsan is only a treatment of symptoms, while the intermittent and chronic use of iodine and mercurials should cure the disease.—*Dermatologisches Centralblatt.*

REPORT OF THE COMMITTEE ON INDUSTRIAL HYGIENE OF THE RETAIL DRY GOODS ASSOCIATION.

By MORRIS H. KAHN, M.D.,

NEW YORK.

ONE of the vital desiderata in the maintenance and progress of an industry is that the health of the individuals concerned in furthering it shall be at the highest possible standard.

Some industries and the city departments, and some members of the Retail Dry Goods Association (Bloomingdale Brothers, Lord & Taylor) have undertaken a method of medical supervision which calls for periodic examination of every individual in their employ. Through routine examination of the employees of various department stores we have been able to discover cases of kidney and heart disease, cancer, diabetes, and quite a number of cases of pulmonary tuberculosis. These diseases progress insidiously for a number of years and affect the efficiency of the worker. By the time the employer feels obligations to the employee for length of service, the disease incapacitates him completely. He is put on the list of dependents or pensioned, or for months money is spent vainly to help him when the entire occasion was avoidable.

About 10 per cent. of the applicants for employment in one store (John Wanamaker) were affected by tuberculosis.[1] Another store revealed twenty-four cases of pulmonary tuberculosis with physical signs in the first thousand consecutive examinations of its employees, and in another were found four cases of advanced tuberculosis with positive sputum in the first 250 examinations made.[2]

It frequently happens that epidemics in department stores are averted by the isolation of a case of infectious disease, such as diphtheria, scarlet fever, etc. In one department store (Bloomingdale Bros.), the incidence of acute infectious diseases during 1914 and 1915 were as follows:

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1914												
Acute follicular tonsillitis	15	18	24	12	2	1	3	2	..	..	1	10
Acute rheumatic fever	3	2	..	2	1	..	..	..	..	..	..	..
Diphtheria	1	1	2	..	2	1	..	..	..	..	..	..
Pneumonia	..	..	1	..	..	..	..	..	..	..	..	..
Influenza	14	4	9	1	..	..	..	..	..	..	..	1
1915												
Acute follicular tonsillitis	4	7	6	8	9	5	4	1	2	..	..	6
Acute rheumatic fever	1	..	1	1	1	1	1	1	..	..	..	..
Diphtheria	..	..	1	1	1	..	..	..	..	..	..	..
Pneumonia	..	..	..	..	..	..	..	..	1	..	..	..
Typhoid fever	..	..	..	..	..	..	..	..	1	1	..	..
Erysipelas	..	..	..	..	..	..	..	..	..	..	..	1
Malaria	..	..	..	..	..	..	1	1	..	1	..	..
Influenza	5	1	5	5	1	..	..	..	..	1	..	19

Each case required at least one week of absence from work. But for the prompt isolation of the cases of diphtheria, tonsillitis, etc., as they occurred an epidemic would have been inevitable. At one time the shoe department of another store was almost entirely depleted by the spread of acute follicular tonsillitis. When the smallpox epidemic was threatened, those department stores having physicians promptly undertook vaccination, with a consequent security which was comforting and healthy; and they served as subsidiary health centers for advocating also vaccination against typhoid fever.

In those stores from which the employees go for one week during the summer to a cottage provided and paid for by the employer, physical examinations were made of each applicant. In one store during 1915, 203 applicants were examined especially for pediculosis capitis, skin diseases, throat and lung diseases. Leaflets dealing with the eradication of pediculosis, "colds," tuberculosis, general hygiene, etc., were distributed among the applicants.

Prevention by sanitary measures and early recognition of disease are the great aims of medical supervision. In the several industries employing a physician, he is on the premises for a varying number of hours during the day, and examines and treats the medical and minor surgical cases. When found ill and with fever the cases are sent home and instructed to stay in bed. Throat cultures are taken in all suspicious cases. Exact treatment is outlined until the following morning and the patient is advised when able to consult the family physician. If the patients are better the following morning and return to work they are seen then. If still ill, they report the fact, after which they are visited and advised, according to their need. When necessary, the patient is referred to the proper hospital and arrangements are made for admission. Cases requiring dispensary care, as for test-meals, *x*-ray examinations, etc., are sent to the proper clinics. One store has granted leaves of absence for this purpose to employees on pass from physician, without deducting the time. (Bloomingdale Bros.)

When we live or spend any part of the day among a community affected by conditions and diseases which are infectious and communicable, we are taking the risk of the spread of the infection to our own selves. It is to the advantage of the conscientious employer to protect his employees and the public. We cite this merely because the danger has called itself to our attention repeatedly.

A nurse recently discovered a girl with syphilis working among other girls in the office of one store. She had active signs of the disease with an eruption on her skin and sores in her mouth. It happened to be an office in which no sanitary drinking cups are installed, adding to the gravity of the situation. When such a state of affairs is possible once, no too great precautions can be taken.

With the rapid and splendid advances made by the Department of Health in our municipal administration, there is only one way to keep apace with them, or our sanitation and scientific methods of industrial supervision in department stores will become an anachronism and a menace, rather than an asset. The Department of Health some time ago inaugurated physical examination of cooks and waiters of all the restaurants and public dining rooms of this city, to establish their freedom from an infectious or venereal disease in a communicable form. When a department store takes such matters into its own hands, through the conscientious interest of its own physician, it demonstrates a regard for the public welfare which is highly commendable, and profitable from a commercial standpoint. In one public dining room a physician noticed a lesion on the finger of a waiter, and, upon investigation, it proved to be an early and very contagious stage of syphilis.

A prolonged sickness is often avoided by timely attention. In one store (Bloomingdale Bros.) where this is constantly enjoined by the physician in short daily talks to the employees, there has been a remarkable reduction in the weekly number

on the sick-list. This reduction is, in great part, attributable to these talks. During 1914 and the early part of 1915 there was a weekly sick-list of 13 to 28, with an average of 19 each week for the first four months of 1915. The number on the sick-list fell to from 2 to 12 each week, with an average of 5 each week for the last six months of 1915, a reduction of more than half the number. The talks were given among a fluctuating audience of employees during their lunch hour, and the physician noticed the greater number of early cases of "colds" and infections seeking his attention, which previously came when the condition required rest at home and an absence from work of one to six weeks. Thus immediately a great deal is saved by such a provision in the medical administration of our stores.

It is essential for each department store to have a physician to advise and direct the sanitary side of the problems which arise in the course of time. Having a physician and a graduate nurse in attendance is necessary from the standpoint of custom. When customers faint or are injured in the store, the presence of the store physician, or of the store nurse, gives the customer security of prompt medical attention.

The presence of a nurse among the employees is an educational advantage as well. Cleanliness and appearance and personal hygiene are habits which it needs training to acquire. One amazing fact alone stands out convincingly in favor of medical supervision. Of 150 girls examined in one department store (in 1915) approximately 75 to 50 per cent. showed vermin in their hair, visible without deep scrutiny. A customer buying at a counter where he or she noticed such a condition would certainly hesitate to buy there again. But a nurse can keep insisting all day upon eradication of such a condition. A crusade is being conducted in one store by the physician with some success through the distribution of a circular of instruction with that regard.

In the same store in 1916, it is noteworthy that of 220 girls examined, only 32 or 14.5 per cent. showed pediculosis, in marked contrast with last year's statistics.

During the winter season in every department store a number of applications, written or verbal, are received from employees requesting aid. Insufficient food, lack of supply of coal, and sickness figure as factors in the conditions. The only way to learn of the exact conditions existing is by systematic visits made to the home of the employees. This can best be done by the store nurse. The nurse can also discover the underlying factors and causes of these conditions in the families—such as alcoholism and drug habituation; large families of minor dependents, mental deficiency, ignorance, lack of ambition, disease, etc. The nurse can do the great part of the welfare work in the store.

A medical department is, therefore, an unquestionable necessity for each store. It may be made practicable even for two stores to divide the services of one physician. We therefore recommend the employment of a nurse or doctor or both as a part of the running force of every department store and every factory having more than 250 people in its employ on stationary premises.[3]

This would mean the setting apart of a room in which employees might be treated. On the basis of the broad experience of its members, the committee suggests that such a hospital be adapted as economically as possible to meet the real needs of the employees, and that the money expended be put into service first, rather than into over-elaboration of plant.

In machine shops and factories, where heavy machinery is used, a well fitted up operating room is an essential part of the factory hospital. One doctor testified at the American Public Health Association that he had amputated a leg in his factory hospital, and performed many other serious operations. These conditions, however, do not obtain in the department stores. According to Dr. Kristine Mann, who has done such excellent work with the Department Store Education Association, records show the percentage of cases to run something as follows, varying, naturally, with the season of the year or other changing conditions: Minor surgery, 37 per cent.; indigestion, 7 per cent.; colds, 17 per cent.; headache, 9 per cent.; dysmenorrhea, 6 per cent.; eyes, ears, throat, 8 per cent.; unclassified, 15 per cent.

An analysis was made of the numerical data of diseases as they occurred in the Bloomingdale Bros. Department Store during 1914 and 1915. The cases were accurately recorded daily and reported every month.

Classification of Diseases.	1914		1915	
	Number.	Per Cent.	Number.	Per Cent.
Acute infectious diseases, including tonsilitis, diphtheria, typhoid	134	9 6	106	9 3
Alimentary tract, including mouth	229	16.5	187	16.4
Respiratory tract, bronchitis, etc	186	13 7	190	17
Tuberculosis	4	0 3	6	0.5
Circulatory system	13	1	4	0.3
Skin diseases, not including pediculosis	229	16.5	173	15
Nervous diseases	69	5	62	5.5
Eyes	57	4	63	5.5
Ears	32	2 2	29	2.5
Genitourinary and gynecological	71	5	45	4
General diseases, diabetes, chronic nephritis, anemia, etc	30	2.3	4	0.3
Diseases of bones, muscles and joints	60	4 2	38	3 3
Minor injuries and infections	269	19.5	233	20.4
	1383	.....	1140	.....

The most striking feature of this table is the remarkable parallelism in the percentage of the various diseases during both years.

When an employee feels ill during the day, the administration of some medicine at the time, or that combined with rest in bed for half an hour or an hour enables the employee to continue efficient for the remainder of the day, whereas otherwise much time is lost with expense to both employer and employee.

To care for these cases, the store that can afford the space should set apart a suite of five rooms: A waiting room, a small doctor's office, a small sterile room for dressing slight wounds, and two "wards," where men and women, respectively, could lie down or be put to bed. If the store cannot give up this amount of room, the work could be begun with a waiting room and hospital, the hospital beds being properly screened. Such a suite should not be called a hospital, but better a dispensary, infirmary, or rest room. The more informal the atmosphere of the place can be kept, the less nervous the employees will be, and the more it will be used by the people.

In a series of examinations conducted by the Department Store Education Association on about 200 women, discovery was made of the fact that department store women are pretty bad physical

specimens. Their chief defects of body were found to be bad posture, functional curvature of the spine, incoordination of muscle, or body rigidity. If these conditions were eliminated or decreased, no one can estimate how great would be the improvement in feelings and symptoms. The lives of the women outside the stores showed a great need of free out-of-door (or in-door) exercise. What they get in the store, in badly constructed corsets and high-heeled shoes, behind the narrow confines of a counter, is negligible.

The committee, from a knowledge of the lives, desires, and physical needs of the department store women, would urge that in planning this health work emphasis be laid on the constructive side of it with the possibility of introducing, as part of the welfare work, as Dr. Kristine Mann has so forcefully advocated, evening gymnasium classes—partly recreative, partly for health.

No matter how diligently and conscientiously an individual applies himself to duty, an added stimulus is rendered by an expression of personal interest by the employer. And to provide medical attention for the employees is an incentive which finds its echo in their gratefulness, appreciation, and efficiency. The committee feels assured that the results will be remarkable and progressive, and will more than justify the slight expense of the introduction and running of this proposed supervising and educational system.

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165 West Seventy-first Street.

OBSERVATIONS OF TETANUS WITH REPORT OF A SUCCESSFULLY TREATED CASE.

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Tetanus is an acute infection caused by the tetanus bacillus of Nicolaier (1884) and Kitasato (1889), usually following some wound or abrasion. Tetanus is characterized by tonic and clonic spasms of the voluntary muscles. While it is usual for some traumatism to precede the attack, it is not always possible to discover such wound or abrasion, but it should be remembered that the infection may take place within the alimentary canal (being abraded), or from some subcutaneous injury becoming infected through the blood (rarely), or from an undiscovered wound. Tetanus has at times been almost epidemic in certain hospital wards and in portions of the tropics supposed to be due to the action of the warm climate and manure mixed in the stable and garden soil, favorable to the development of the virulent tetanus organism. The bacillus is anaerobic, a facultate, saphrophyte, capable of continuing its development outside the body tissue. It is an almost constant part of the soil of the garden, stable, and dairy pens, and it is on this account that laborers, negroes, stable and dairy attendants are the most often attacked by the disease. It should also be remembered that such laborers are least careful about keeping trivial wounds aseptic. The hygienic surroundings, as well as habits of such people are generally bad. The reason they suffer from tetanus more often than other people is explained by the fact that the tetanus bacillus is normally found in the dung of cattle and other warm-blooded animals; hence their liability to infection through contact. Before asepsis was thoroughly understood the death rate among infants in poorer white and colored families was very large, during the first two weeks of infant life, from so-called "nine-day fits." The cord in many cases was severed by the midwife's rusty septic scissors, tied with a dirty thread, wrapped with an uncleanly rag, and often greased with non-sterile applications. Hebrew surgeons say that the deathrate from trismus was more frequent than it should be, before the rabbis were taught to be more aseptic with the Mohel and after-treatment of circumcision. It is our personal opinion that all such operations in the interest of child conservation should be done by doctors and dressed under the direction of nurses who have been thoroughly drilled in aseptic surgery.

Many cases of tetanus have been produced in the present European war by explosives and the contact with stable and garden soil in the trenches of Belgium, France, and Galicia, and other countries, especially in the highly cultivated districts of these countries. Early experimenters found that if garden mould or soil was placed in an abrasion or under the skin of the animal, tetanus would follow.

Kitasato in his studies could not isolate the germ until he heated the pus to 80 deg. C. for one hour to get rid of the other septic microbes, as tetanus is nearly always a mixed infection. The tetanus, like the anthrax bacillus, is very resistant to heat. The tetanus bacillus develops in the wound in long delicate threads, breaking up into separate bacilli with spores at one end, resembling the head of a pin. It is next to impossible to recover the tetanus bacillus from the original wound of infection, though the cerebrospinal fluid taken from the patient and injected into an animal will readily produce the characteristic tetanus convulsion. The tetanus bacillus always remains in and around the original wound, while its toxalbumin are absorbed into the system through the motor nerve tracts; so it is a pure toxemia, not a germ, traveling along the motor nerve tracts. The tetanus bacilli are independent of oxygen, of low vitality, and invade only bruised or septic tissue. As the germ develops in the septic wound, toxic bodies are produced, going direct to the spinal cord and brain, resulting in the tonic spasms which are characteristic of the disease. The toxin is said to be four hundred times more poisonous than strychnine, to which it is similar in pathological action.

There is no doubt about the fact that prevention of tetanus by proper disinfection of all wounds and immunizing doses of antitetanic serum is far better and safer than the treatment of the disease after it has developed. Tetanus cases have been reduced by 75 per cent in the United States since the doctors and the public have been educated to a saner Fourth of July and Christmas, and the necessity of proper disinfecting and sterilizing of all wounds as soon as received. All punctured and lacerated wounds should be enlarged and relieved of all foreign bodies by instruments or by pouring into them a warm 50 per cent. solution of hydrogen peroxide in order to remove the deeper and smaller particles driven into the tissue. Equal parts of tincture of iodine and alcohol are more suitable to these wounds than are the antiseptic dusting powders, which do not so thoroughly penetrate the wound. The application of a 20 per cent. phenol solution followed immediately

by alcohol to neutralize it, is an almost sure way of destroying the bacillus. All lacerated wounds should be thoroughly cleansed, drained, packed and allowed to heal by granulation. Out of sixty thousand wounded during the present war in Bavaria, seven-tenths per cent died, four-tenths per cent of these died of tetanus, regardless of the prophylactic injection of serum; hence the necessity of using all other legitimate preventive measures, including Bier's hyperaemia. The mistake is in giving just one dose of antitetanic serum and stopping when it should usually be repeated within from seven to ten days in order to make assurance doubly sure.

Removal of all foreign bodies, cleaning, opening, and draining of all wounds has been a routine measure at our clinic for the past ten years; the result has been fewer cases of tetanus to treat in the great Charity Hospital of New Orleans from the clinic, though many more wounds have been treated during that decade than in previous years.

The later is the development of the disease, the fewer are the spasms, and the more chronic is the course, the better is the chance for recovery. When incubation is under ten days the mortality usually reaches 60 per cent. When it is over ten days and the course of the disease runs three weeks, it is denominated chronic tetanus and the mortality is from 20 to 40 per cent. If the period of incubation and the course of the disease are both three weeks in duration, 70 per cent may recover. Lacerated and punctured wounds in which foreign bodies have been driven, furnish the best medium for the development of tetanus, for the germs are anaerobic, and are partial to saphrophytic wounds. Gunshot wounds, compound fractures, and the puerperal state are also favorable to the development of tetanus. Occasionally hospital wards and neighborhoods seem to be infected, the contagion being spread by actual contact through contaminated dressings, instruments, etc. The suspected wound should be disinfected not once, but twice daily, for it must be remembered that the germs remain in and about the wound where it was first received and that it is only the toxin which is generated several days after the wound is made, that is absorbed. There are no symptoms of tetanus manifested until the toxins have reached the spinal cord. Irritation of the motor nerve tracts causes the tonic convulsions to begin. Muscle cramps and girdle pains are due to the irritation of the sensory nerves. The extensor muscles always overcome the flexors, hence the head is retracted, feet extended, and back arched (opisthotonous). Tonic spasms are continuous except when relaxed by heroic doses of sedative drugs, which have to be kept up throughout the attack. The spinal cord is in such a state of excitability that any noise, draught, or jarring causes painful spasms to occur. Asphyxia may be threatened by tonic convulsions of the chest and throat muscles. Often the inexperienced surgeon is taken off of his guard as to the seriousness of the attack on account of the clear mind to the fatal termination. Other prominent symptoms of tetanus are retention of the urine and constipated bowels, rigid muscles, including the abdominal ones, with no sleep without heavy drugging. The first symptoms of tetanus are difficulty in mastication, spasms of the jaw, with rigid neck and abdominal muscles. When the face muscles are involved, a sardonic grin is produced that is peculiar to the disease. The violent muscular contraction with the absorption of the toxin produces high fever and sweating, which is usually persistent to the end of the case. The patients usually suffer a great deal from girdle pains around the waist produced by spasms of the diaphragm.

We should endeavor to keep the bowels well open and the skin and kidneys active in order to eliminate as much of the poison as possible. The irritability of the spinal cord should be controlled by large alternating doses of sedative medicines, including chloroform, to control the spasms. We prevent the toxins entering into the system by thorough disinfection of the original wound. We inject two thousand units of antitetanic serum in the vicinity of the wound or between the wound and the spinal cord. If the wound is upon the hand use the serum in the arm or near the brachial plexus. If in the foot, use it near the sciatic nerve. Ashhurst and Johns prefer chloroform to ether in order to relax the spasms, as it is more easily administered, but it is five times more lethal in its effects. Meltzer of New York recommends twenty minims of a 20 per cent solution of sulphate of magnesia to be injected into the spinal cord to relax these spasms. Eighteen cases so treated resulted in four recoveries; two were acute and two chronic, showing a death rate of 70 per cent, which was about the same mortality as under treatment by other methods. Irons recommends from three to five thousand units of antitetanic serum intraspinally and ten to twenty thousand units intravenously as soon as the disease is diagnosed. The earlier the treatment is begun the more favorable the prognosis of the case. After these heroic dosings on the fourth day, he again uses ten thousand units subcutaneously. We think the alternate use of syrup of chloral, bromide of potassium, morphine, and atropine should be the way in which sedatives are given to control the convulsions of tetanus. Daumsler of the French Army used six grams of chloral every six hours until the spasms were relaxed. Wintraud says that little can be expected from the serum treatment, that its use is preventive and not curative. Sainton cured six patients out of twenty-two by injecting 40 c.c. of a 2 per cent phenol solution twice daily subcutaneously. It has been found that phenol is less toxic by injection than by the stomach. Johns and Ashhurst depress the functions of the spinal cord by from thirty to sixty grains of chloretone given in either oil or whiskey. The bowels should be kept open daily by some mild purgative or enema. You may expect retention of urine, which is very common on account of the spasm of the cut-off muscle. Intraspinal injection of fifteen hundred units of antitetanic serum is the best and quickest way to apply the remedy to the over-excited spinal cord. The same amount of spinal fluid should escape before the antetanic serum is injected. In the nourishing of a case of tetanus rectal or nasal feeding may become necessary. When it is impossible to get the food into the mouth on account of the spasms of the jaws, a tooth may be extracted to facilitate the introduction of nourishment.

The following is a report of a case of recovery following tetanus:

Mrs. C., age thirty-five, mother of two children. She had never had any serious sickness before, was attacked by all the classical symptoms of tetanus, and the diagnosis was made accordingly. The only abrasion that could be found upon her person was an ulcerated hemorrhoid from which she had suffered for the past three weeks with impacted feces. The jaw-closing tonic and clonic spasms increased daily as did the temperature, when it became necessary on the fourth day to control the spasms by chloroform and sedatives in large and increasing doses. We darkened the room by

curtains, forbade visitors, ensured quiet, and protected the patient from draughts. Although we pushed the sedatives to the limit, the patient would be attacked by spasms as soon as the doses were reduced or given at longer intervals. In the early period of the disease we obtained eight vials of 1,500 units each of antitetanic serum, which we administered in the flank, two each day until they were all used. We discussed the use of the serum intraspinally, but on the principle of "safety first" for the patient, we injected into the flank and deltoid; this we commend to others in serious cases as they at least subject the doctor to less criticism if the case should prove fatal, as it is liable to do. We nourished the patient on milk, broths, soups, and various liquid foods (she swallowed best when under the influence of sedatives). We kept the bowels open with purgatives or enemas, used milk instead of water to quench the thirst, as it served the purpose of nourishment at the same time. When the temperature would reach 104°, she was given one 5-grain dose of acetphonetidin or acetanilide compound, not to be repeated more than twice in twenty-four hours, provided the temperature again reached 104°. The woman finally recovered.

As to whether this patient was benefited by the injection of the antitetanic serum as a cure, or whether the antiseptic treatment of the hemorrhoidal ulcer or unloading the impaction, or the alternate use of the sedatives, nourishing food, keeping the bowels open, or whether nature cured the case in spite of our efforts, I leave to the medical association to judge.

506 Medical Building.

A GASTRIC ASPIRATOR.

By WILLIAM GERRY MORGAN, M.D.,

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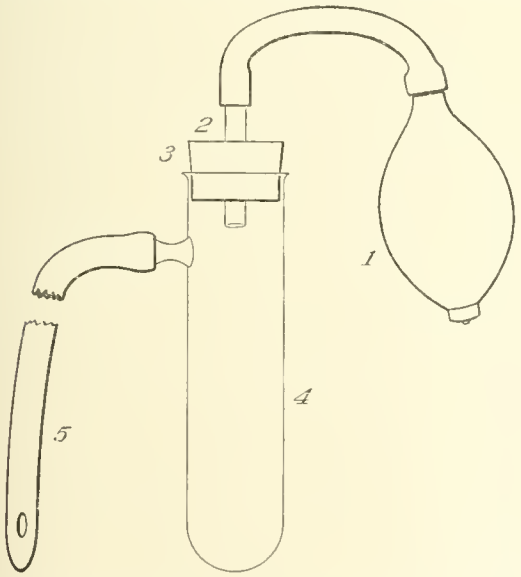
I would like to describe here a little apparatus which I have used for fifteen years, which does all that any other appliance, such as that described by



The gastric contents evacuator. 1, aspirating bulb; 2, glass connecting tube; 3, perforated rubber stopper; 4, large test tube with side spout; 5, stomach tube.

Dr. P. A. Sheaff in a recent issue of the *Journal of the A. M. A* does, costs but a few cents, and can be carried to the homes of patients; it may well form a part of a doctor's emergency outfit for aspirating the contents of the stomachs of patients who have swallowed poison. This apparatus consists merely of a test tube an inch and a half in diameter and six inches in length. It has the usual round bottom; an inch below the open end is a glass spout; a rubber bulb aspirator, a perforated rubber stopper, through which passes a glass connecting tube, and an ordinary stomach tube complete the apparatus. The method of use of my aspirator is quite simple. The bulb aspirator is attached to the glass tube in the rubber stopper which is in turn inserted into the test tube. The stomach tube is connected with the spout of the test tube and is then introduced in the usual way into the patient's stomach. The aspirator bulb is squeezed and the contents of the stomach at once are drawn into the test tube.

One of the advantages of this apparatus over any other, aside from the small cost, is the fact that there is so much elasticity in the degree of vacuum produced in the glass container as greatly to reduce the danger of injuring the mucosa. Another advantage is that the patient is told to himself hold the container, which in a measure distracts his attention to that phase of a very disagreeable procedure which, in a nervous individual, is of no small help.

1624 I Street.

Medicolegal Notes.

When Use of Books to Contradict Medical Expert Is Improper.—In an action for personal injuries sustained in a panic following a burst of fire from a street-car controller a medical witness for the defendants, basing his opinion on his experience, testified that the plaintiff could not have suffered epilepsy as the result of the accident in question, saying, "Fright does not produce epilepsy." The plaintiff's attorney, after having identified through the witness a book on nervous diseases written by Professor Starr, asked whether Professor Starr did not say in his book that "about one-half of the cases of epilepsy is caused by fright." Questions to the same import were repeated and so framed as to appear to be statements of what was contained in Starr's book. The plaintiff's counsel then exhibited the book to the court and jury, and stated that he proposed to show by it that such contrary opinion was stated. It was held that the allowance of this constituted reversible error.—Mann vs. Blair, 195 Ill. App. 254.

Statements to Physician—Expert Evidence.—The Circuit Court of Appeals, Seventh Circuit, holds that unless it clearly appears that the plaintiff's description to a physician to whom she had gone of her subjective symptoms was made solely to aid an expert to give evidence on the trial in an action for her injury, and not in good faith to assist him in diagnosing her case for purpose of treatment, it is admissible, though the weight to be given it by the jury may be slight. If there is no conflict in the evidence as to the manner of a plaintiff's injury, it is not improper to permit a physician to state that the accident did cause, and not merely that it might have caused, the injury.—Chicago Rys. Co. vs. Kramer, 234 Fed. 245.

Fees of Young Practitioners.—In an action by a physician against an estate for services rendered the testatrix for some disease of the brain, the nature of which even a post mortem examination did not clearly determine, it appeared that the plaintiff was a young physician who had been an old friend of testatrix. The trial judge allowed the claim of $1,500 only to the extent of $262, being of opinion that a young practitioner has no right to charge, or expect to be paid, the fees charged by those who are older and whose reputations have been established. On appeal, the Louisiana Supreme Court said that it may happen that the knowledge of the schools goes beyond that upon which reputations have been founded, and that the later graduate, bringing, with his diploma, the latest discoveries, is more competent to deal with a particular case than the earlier, with the experience of a past generation. However that may be, the court held that any physician has the right, in the absence of a custom of his own, to charge for his visits, day or night, at least the fee sanctioned by the custom of the community in which he lives; nor is he obliged, in so doing, to rate himself below the class to which, in his opinion, he properly belongs; and in such a case, the burden rests upon the patient who refuses to pay to show a better reason for such refusal than that the physician is comparatively fresh from the seats of learning. The amount to be allowed was increased to $1,500, the amount claimed.—Succession of Percival, (La.) 72 So. 467.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM.

THAT small group of disorders formerly known as the parasyphilitic affections of the central nervous system, which included tabes dorsalis and paresis, for a long time offered successful resistance to the efforts of the therapeutists. Tabes especially was made the object of numerous methods of treatment some of which achieved a little brief notoriety, but all eventually were discarded as valueless. The recognition of the essentially syphilitic nature of these conditions and the demonstration of the presence of the spirochete in the nervous tissue placed their pathology on a sound basis. The advent of salvarsan found the profession beginning to realize that the cerebrospinal fluid offered a rich field for investigation, and experience with meningitis had shown them that intraspinous medication was at times extremely efficacious. Making use of all the information which had been yielded by such research, Swift and Ellis developed a technique for the intraspinous administration of salvarsan and obtained results in the treatment of tabes and paresis which had not been approached up to that time. Since the publication of their work there have been numerous papers written on the subject. The technique has been modified and adapted and altered and the method has been praised or condemned, often in no measured terms. Unfortunately conclusions have been drawn at times from insufficient data and an unbiased and critical observer might have some difficulty in obtaining from the literature a very clear idea as to the true value of this method of treating this group of conditions.

It is, therefore, a pleasure to see the report of the cases which have been treated at the Peter Bent Brigham Hospital during the past three years, which is presented by Walker and Haller (*Archives of Int. Med.*, 1916, xviii, 376). The report concerns forty-eight cases of tabes dorsalis, six of general paresis, sixteen of cerebrospinal syphilis, and five of syphilitic meningitis. There were given 450 intraspinal injections of salvarsanized serum and 350 intravenous injections of salvarsan. The authors divide their cases into three groups. The first group consists of patients who received salvarsan only by way of the vein. Of these only those whose infection was comparatively recent showed any definite improvement. Those patients whose infection was of long standing showed practically no benefit, so far as their nervous symptoms were concerned, from intravenous injections. In group two are collected those patients who received salvarsan into their veins and also salvarsanized serum intraspinously. In most of these cases the improvement was definite and steady. The cell count of the spinal fluid approached or reached normal and the Wassermann became either negative or less strongly positive. At the same time there was a marked abatement in their symptoms. Fifteen of these patients have been observed for a sufficiently long time to determine whether the treatment has a permanent effect. Four have relapsed and four died. The other seven have remained without symptoms for at least eighteen months. Fifteen other cases in this group have shown improvement, but the interval since the end of their treatment has not been sufficiently long to determine the end result. The third group comprises seventeen cases in which the Wassermann in the blood serum was negative, while that in the spinal fluid was positive. These cases were treated only by the intraspinous administration of salvarsanized serum. All of these patients improved. One shows a relapse in ataxia and a second still suffers from headaches. The remainder have been free from symptoms for periods varying from two to twenty-four months, seven of them for more than a year.

Patients are, therefore, treated according to this rule: If satisfactory results do not follow three or four intravenous doses of salvarsan, they are given salvarsanized serum as well. If the serum Wassermann is negative they receive only intraspinous salvarsanized serum. Following this rule the results are seen to be most excellent. There are, of course, some relapses and a few of the patients react so severely that the treatment may be impossible and it is not possible to say that any of them are permanently cured. Nevertheless, the majority show marked improvement and many remain without symptoms for comparatively long periods of time. Certainly the disease may be considered as arrested at least. Equally satisfactory results were obtained by Fordyce in the series of 180 cases of tabes, paresis, and other forms of cerebrospinal syphilis, reported in the MEDICAL RECORD of September 30. In most of these cases the Ogilvie modification of the Swift-Ellis method was used and proved itself to be as satisfactory as, and in some respects superior to, the autosalvarsanized serum method. The results are noteworthy and deserving the serious consideration of the whole profession. Certainly no patient with one of these conditions should be denied a serious trial of this treatment. The technique is not essentially extremely difficult, and while much better carried out in a hospital, can, if necessary, be done elsewhere.

PHARMACY IN RUSSIA.

THE Russian government lately appointed a committee to inquire what native plants were available as sources of those medicinal substances of which the empire stood in need. (*Pharmatsevticheski Journal*, p. 76, 1916.) Chemists and pharmacists have addressed themselves to this problem, and the

result is that there are now several published classifications in the Russian Codex of Russian plants which may be applied to the practical purpose of supplying the drugs and galenicals that had previously been imported. In most cases these drugs are identical with the foreign, while others are very good substitutes and imitations. Before the war Germany was the chief producer of alkaloids and synthetic compounds, and was able to export its surplus of coal tar, benzol, and toluol to Russia as well as the finished products of its coal tar industry, salicylic acid, salol, antipyrin, and the series of antiseptics which Russian markets took on terms most favorable to Germans. As a Russian writer in *Industry and Commerce* pointed out, it was somewhat difficult for the Russian manufacturer to succeed under a tariff in which there was a wide disproportion between the duties on raw and on finished products. Raw materials, as a rule, paid higher duties, and this is the reason, to a great extent, why Russia has fallen behind in the more modern chemical manufactures and industries. In these circumstances the Russian manufacturer could not make a new drug sufficiently cheaply to compete with the German.

Now the Government has taken the matter up, and during the past six months, the resources of the country in medicinal plants have been studied and a useful series of galenicals prepared. Pharmacists have found out, not only that such plants as digitalis, *Aconitum napellus, A. orientale, Veratrum album,* rhamnus, are plentiful in the Caucasus, Bessarabia, and the Crimea, but that they yield, in many cases, an unusually high proportion of the substances to which their active properties are due. From *Aconitum orientale* for instance, the chemist Kourrote extracted as much as 2.207 per cent. of crystallized aconitine. Similarly, from *Veratrum album,* growing in Bessarabia, he obtained 0.84 per cent. of jervine. It is in some of the plants of the Caucasus that, in Russian opinion, the resources of the country show their real greatness, the richness in plants that, for want of a better word, may be described as truly medicinal, the plants in which the healing and the chemical properties are in happy equilibrium, in which the therapeutic compound is formed on the recipe supplied by Nature herself to the investigating chemist. Many instances are given in the report of the government pharmacist, Mouschinski. Among these plants are *Pimpinella saxifraga, polygonum, Senecio crucifolius, Althaea officinalis, Fœniculum officinale,* digitalis, *Rhamnus frangula,* Russian male fern, menyanthes, and geranium. Preparations of all these are to be found in the new Pharmacopeia.

It is a different story as regards alkaloids. The war has greatly increased the demand for these among all nations and, as a consequence, the output of the sole country on which Russia could now rely, England, has nearly all been used for the latter's own needs. Russia is thus deprived of her source of supply, and incidentally offers the American chemist one of his greatest opportunities. He can profit, if he will, by the exclusion of Germany, the chief manufacturing source of the rarer alkaloids. There will be keen competition with England later, but in the meanwhile, the manufacturer in the United States should take this chance. Besides this, America and Russia have natural advantages, such as climate and soil favorable to growing plants. England, in spite of every effort, has made no great progress in the manufacture of alkaloids. With a reduced staff in her laboratories and a limited supply of labor, the conditions are decidedly opposed to the contrivance of new processes. And, as regards synthetic drugs, the war has nearly exhausted the supply. Many of these are not manufactured in England. They are now produced in Russia, but high prices and the cost of freights and of delivery hamper Russia. When atropine costs on the British market 170 shillings an ounce, the most interesting commercial facts for pharmacists is how to profit by such prices, which may be either in finding new processes or in developing the sources of natural supply.

CARE OF CHILDREN IN THE ELEMENTARY SCHOOLS OF GREAT BRITAIN.

Owing to the falling birth rate and to the slaughter of adults in the war, Europe is naturally paying more and more attention to the preservation of child life. This is especially the case in Great Britain, where the birth rate has declined, and is declining, and where men, on account of the war and of emigration before the war, have been decreasing in number at a somewhat alarming rate. A report issued recently by Sir George Newman, president of the Local Government Board, is, in the circumstances, a particularly depressing document, and will doubtless bestir the British public to efforts with the object of bettering existing conditions. The report in question points out that there are 6,000,000 children in the elementary schools of England and Wales. Of these, 1,000,000 are in bad physical condition, and 250,000, or thereabouts, are really too ill to learn. These are startling figures, and Newman's analysis of the situation is interesting and valuable, in considering not only English school children, but the school children of this country. The U. S. Public Health Service is at the present time investigating the health of rural school children in parts of America, and the result of their investigations so far has been almost as discouraging as the English report. The writer of the report places the blame for the deterioration of English children on the rearing of children prior to school age, but chiefly upon school life itself. For disease and defects in the child leaving school are some reflection on the influence exerted upon it during its nine years or so of school life. As the report notes, it is not easy to escape the deduction that if the child, on entering school, is ailing, it is part of the business of those responsible for its ultimate equipment to seek to improve its physique both before it comes to school and during its school life; and if the leaving child is unfit for employment and citizenship, the system of its education stands, in greater or lesser measure, condemned.

It is most assuredly undeniable that education, while primarily designed to equip the mind, must provide also for the body's needs. The ill-nourished, unhealthy child cannot absorb knowledge properly, and even if it could it would be at the expense of

its physical powers. It is a means of draining vitality which augurs ill for the future of a race or nation. Child power requires as much attention as man power, and Newman suggests as the sole reliable safeguard a complete scheme of education, physical as well as mental, by the state.

Epileptic Myoclonus.

It has often been stated that one case thoroughly studied has far more educational value than a digest of a lot of loosely observed material. This is especially the case with little understood affections. A case by Wolfer in the *Correspondenz-Blatt für Schweizer Aerzte*, August 26 is one in point. This disease appears notably in degenerate stock and the author is fortunate in being able to record the family history. As there were several cases in the family, we are reminded that the familial type is very common and severe. The father was a strenuous drinker and also had tabes, the mother being healthy. It is of interest that Bührer reported the case of the elder (female) in 1901. The father's father and mother's mother were both alcoholics in association with marked psychic degeneration. The sisters' epilepsy began at 12, myoclonus at 14. In addition to the brother's case, a sister is known to have had fits. She died of pneumonia. Two more brothers, healthy in Bührer's time, are still living and well (now aged 25 and 23). A sister living at 20 had a doubtful history of partial epilepsy in childhood. According to Bührer the case was one of partial epilepsy with complete unconsciousness. Thus of 6 cases, 4 were surely tainted as a result evidently of crossed inheritance. Study of the author's patient was negative. A piece of pectoralis muscle showed no evidence of myopathy. There was evidently a heightened muscular tonus, a heightened mechanical excitability of the muscles and complete absence of sensory disturbances. The nervous system was unstable, and the intensity of the contractions was dependent on the state of the psyche. The author believes that the inferiority of the patient's constitution was manifested chiefly in the muscles and parts of the nervous system, both central and peripheral. Treatment was of no avail. As Lundborg exhausted the subject of familial myoclonus-epilepsy many years ago, but little can be added that is new, but 4 cases out of 6 children in a family should be almost a record.

Treatment of Whooping Cough by the Krauss Vaccine.

According to Paranhos, of Sao Paulo, Brazil (*Brazil Medico*, September 30), an epidemic of pertussis appeared in that city in the early months of 1915 which attacked children with unprecedented severity. At the University Polyclinic all sorts of treatment laid down by classical writers were given a trial. It was learned from an article in the *Semana Medica Argentina* that a vaccine was prepared and used in that country with excellent results. Following the published directions, the author had the vaccine, designated originally by the name of Krauss, at once prepared both for private and clinical work. It was tested on a material of 49 cases, of which 28 were in the early stages, 17 between the second and fourth week of the disease, and 4 after the fourth week. The technique of Krauss, which consists essentially in the use of increasing doses, was closely followed. In the early cases there was marked improvement in respect to cough and vomiting in the great majority. After the second inoculation the accesses diminished in frequency and severity. In the more advanced cases the response to treatment was less pronounced, or rather more slow, but benefit was apparent after repeated inoculations, and the duration of the disease was cut short. As far as this epidemic is concerned, the vaccine may be regarded as decidedly the most efficient treatment.

News of the Week.

Death Rate in New York.—For the week ending November 11, 1916, the death rate in New York City was 12.28, representing a total of 1,315 deaths, as compared with a rate of 12.63 and a total of 1,324 deaths for the corresponding week of last year. Seven deaths from poliomyelitis were reported during the week; and there was a decrease in the deaths to contagious diseases, diarrheal diseases, cancer, tuberculosis, and diseases of the nervous system, and an increase in the mortality of heart disease, lobar pneumonia, and Bright's disease. The death rate for the first 46 weeks of 1916 was 13.96, as compared with 13.91 for the corresponding period of last year.

Dinner to Health Official.—Mr. Eugene W. Scheffer, secretary of the Board of Health, New York, who retires at the end of this year, was the guest of honor at a dinner given at the Yale Club on November 15, about 150 guests participating. Addresses were made by former Commissioners Goldwater and Darlington, Dr. William H. Park, Dr. Robert J. Wilson, and others. Mr. Scheffer entered the Department of Health as assistant chief clerk in 1895 and became secretary in 1902.

Resolutions of the New York Neurological Society.—At a meeting of this society held November 15, the following resolutions were presented by Dr. Walter Timme and unanimously adopted:

Whereas, Anterior poliomyelitis and its concomitant polioencephalitis are intrinsically neurological diseases, and

Whereas, Anterior poliomyelitis and polioencephalitis have been managed in all stages in the recent epidemic practically without the supervision and control of neurologists in the institutions of Greater New York, and

Whereas, In order to avoid faulty diagnosis, inadequate treatment, and poor methods of gathering important statistics, resulting not only in detriment to the present patients but also in a final loss to scientific medicine of valuable data of great service in future epidemics; be it

Resolved, That it is the sense of the New York Neurological Society that anterior poliomyelitis and polioencephalitis being neurological diseases, the sufferers from such diseases ought at an early period to come under the care or supervision of neurologists, with the cooperation of orthopedists and other specialists as the cases may require. And, in consideration of the unprecedented number of cases in the recent epidemic, in all public institutions and clinics where these diseases are treated, there should be a standardization of equipment and method. And be it

Resolved, That the New York York Neurological Society petition the Committee on Public Health of

the New York Academy of Medicine that it consider the advisability of appointing at once a commission on poliomyelitis which shall take into consideration the ways and means best calculated to meet and combat a future epidemic similar to the one we have just experienced and make definite recommendations for same. This commission shall consist of four subcommittees, as follows: (1) A committee on communicability and quarantine, comprised of bacteriologists and epidemiologists. (2) A committee on the criteria of diagnosis and clinical management, to consist of neurologists, pediatrists, and orthopedists. (3) A committee on pathology and serology, to consist of pathologists who shall devise the best means of caring for such pathological material as is obtained as a result of the epidemic. (4) A committee on treatment and immunization, to consist of neurologists, orthopedists, pediatrists, and bacteriologists. This committee shall consider the therapeutic means best adapted to the acute stage and also to the after treatment.

Physicians to Germany.—Difficulties in transportation may force the abandonment of the plan to send six American physicians of German descent to Germany and Austria-Hungary for six months, to care for civilians in those countries. The State Department is now endeavoring to obtain guarantees of safe conduct from Great Britain, but it is doubtful that these will be forthcoming. It is said that $16,000 has been raised in Philadelphia to pay the expenses of the trip and the salaries of the doctors.

Anti-Heart Disease.—The Association for the Prevention and Relief of Heart Disease was recently incorporated in New York for the purpose of working for the prevention of heart disease through the dissemination of information and the application of recognized preventive means. The association proposes to gather data, to study and develop occupations and vocational guidance for cardiacs, and to assist in the establishment of cardiac classes. The officers of the association are: Dr. Lewis A. Conner, *President;* Dr. T. Stuart Hart, *Vice-President,* and Dr. N. L. Deming, *Secretary.*

Changes at Cornell.—Dr. W. Gilman Thompson, professor of medicine in Cornell University Medical College since the founding of the college in 1898, has resigned his chair in order to devote his time entirely to his private work, and has been appointed professor emeritus. The vacancy thus created has been filled by the appointment of Dr. Lewis Atterbury Conner, who, has been connected with the department of medicine at the college since 1898, and since 1900 has been professor of clinical medicine and in charge of the medical instruction at New York Hospital.

Harvey Lecture.—The third lecture of the present series of the Harvey Society will be delivered at the New York Academy of Medicine, 17 West Forty-third Street, on November 25, at eight-thirty, by Dr. Paul A. Lewis of the Henry Phipps Institute for Tuberculosis. Dr. Lewis will speak on "Chemotherapy in Tuberculosis."

The Seventh District Medical Society of North Carolina will convene at Monroe on December 4 and 5. The society has a membership of over two hundred and it is expected that the majority of the members, as well as a number of invited guests, will be in attendance.

The Harvard Hospital Unit.—Six surgeons, a dentist, and twenty nurses sailed from New York on the *Andania* on Tuesday of this week to join the Harvard Hospital Unit at a British base hospital in France. They will take the places of an equal number whose term of service expires on December 9. Since the organization of the unit in June, 1915, 117 surgeons and dentists and 184 nurses have been in the service.

Additional Gift to Chicago.—Announcement has been made of the gift of $500,000 from Mr. Julius Rosenwald of Chicago to the University of Chicago, for the proposed new medical school. As previously announced, the Rockefeller Foundation and the General Education Board have given $2,000,000 for the same purpose, and the remainder of the money necessary is to be provided by the University of Chicago and by private subscription.

London "Times" Red Cross Fund.—The London *Times* on November 15 announced that its collections in behalf of the Red Cross had passed the $25,000,000 mark.

Blockley Ex-Resident and Resident Physicians.—The thirtieth annual banquet of past and present internes of the Philadelphia General Hospital was held at the Hotel Rittenhouse on November 11. Dr. B. Franklin Stahl presided, and Dr. Herman B. Allyn acted as toastmaster. Addresses were made by Dr. J. Chalmers Da Costa, Dr. Joseph Sailer, Dr. Charles B. Kendall, Dr. Randle C. Rosenberger, Dr. D. J. McCarthy, and Dr. Wilmer Krusen.

Association for Advancement of Science.—The sixty-ninth annual meeting of the American Association for the Advancement of Science, and the national societies affiliated with it, will be held in New York during the last week of December. An attendance of more than 2,000 is expected.

Memorial Tablet.—A bronze tablet in memory of Dr. Abraham Mayer has been placed in Lebanon Hospital, New York, the dedication taking place on November 19.

Removal.—Dr. W. A. Bradley has removed from 55 West Seventy-fifth Street to 127 West Seventy-fifth Street.

Heroine Addicts Increasing.—At a meeting of a committee of judges, physicians, and others, organized to fight the drug habit in New York, recently, the statements were made that heroine addicts are becoming so numerous in the city that the city hospitals and institutions must enlarge their facilities greatly if they are to deal successfully with the cases turned over to them by the courts; that ninety per cent. of all drug victims are enslaved to heroine; and that while the drug-store sales have been cut 75 per cent., smugglers of the drug still keep the sidewalk dealers supplied.

Fake Salvarsan.—The recent indictment in Newark, N. J., of two men engaged in the traffic has revealed what appears to be a widespread conspiracy to defraud the Government by smuggling salvarsan and neosalvarsan into the United States. Still more serious is the discovery that these men had also in their possession a large quantity of spurious salvarsan, which, on examination, proved to be either starch or table salt. These spurious products, it is believed, have been offered for sale throughout the country, and, as they are contained in ampoules closely imitating the real product, many physicians have been deceived. In order to stop the sale of this fraudulent salvarsan it becomes incumbent on any physician having any information on the subject to communicate with Chief Inspector E. R. Norwood, U. S. Customs House, New York, or, in case of emergency, with the local police authorities.

Health Insurance.—A conference on social insurance, to be held in Washington from December 5 to 9, 1916, has been called by the International Association of Industrial Accident Boards and Commissions, an organization of the official bodies charged with the duties of administering compensation laws in the United States and Canada. An interesting program has been arranged under the four headings of Workmen's Compensation, Sickness Insurance and Benefits, Invalidity and Old Age Insurance, and Social Insurance Applying Especially to Women.

Accuracy of Poliomyelitis Diagnoses.—The Weekly Bulletin of the New York Department of Health for November 18, 1916, contains an answer to the assertion that the recent epidemic of poliomyelitis in the city was largely a creation of the Department, and that a considerable number of the cases listed as poliomyelitis did not belong in this class. Of the 9,418 cases occurring during the epidemic, 4,474 were treated in the Department's hospitals; of this number, 96, after observation, were discharged as no illness, and in 49 additional cases the illness proved to be other than poliomyelitis. This means that actual mistakes in diagnosis occurred in only 1 per cent. of the cases. Again, out of 2,715 cases followed in their homes, 1,885 were found to have a serious paralysis, and 530 a partial paralysis, of one or both legs, and 273 a total paralysis of one or both arms. These figures, in the opinion of the Department, bear ample testimony to the high degree of diagnostic accuracy attained during the epidemic.

Opportunities in Civil Service.—The New York Municipal Civil Service Commission will shortly hold an examination to fill vacancies in the position of junior alienist in Bellevue and Allied Hospitals. The salary of the position is $1,200 per annum, with advancement to the position of chief alienist with a salary range of from $3,780 to $4,680 per annum for full-time service.

The Commission also offers an opportunity for a man desiring to fit himself for industrial corporation work in the Occupational Clinic recently established at 49 Lafayette Street. For this work the compensation ranges from $300 to $600 per annum for not less than six hours a week, and from $900 to $1,140 per annum for not less than eighteen hours a week. The duties include the examination of applicants for licenses as food handlers. Clinic physicians for the diagnosis and treatment of patients applying at the Tuberculosis Clinics of the Department of Health are also desired. Further particulars may be obtained from the Municipal Civil Service Commission, Room 400, Municipal Building, New York.

The National Board of Medical Examiners held its first examination from October 16 to 21, in Washington, D. C. There were thirty-two applicants from seventeen States, representing twenty-four medical schools; of these, sixteen were accepted as having the necessary preliminary and medical qualifications, ten took the examination, and five passed. The following States now have the power, and are willing to recognize the license of the National Board: Idaho, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota, and Vermont. Most of the others have expressed their willingness to accept the license as soon as the respective legislatures give them the power. The second examination will be held in Washington in June, 1917. Further information may be had by applying to Dr. J. S. Rodman, secretary, 2106 Walnut Street, Philadelphia, Pa.

Obituary Notes.—Dr. MATHEW J. MANGAN of Rutland, Vt., a graduate of the College of Medicine of the University of Vermont, Burlington, in 1905, died at his home on October 7.

The New Rochelle Hospital, New Rochelle, N. Y., receives $1,000 under the will of the late Mrs. Lydia W. Thorne, which provides also for the ultimate gift of the testator's country estate overlooking the Sound, to the city of New Rochelle, to be used as a public park.

Dr. JAMES P. CONNELL of Fond du Lac, Wis., a graduate of the Medical School of Northwestern University, Chicago, in 1887, and a member of the American Medical Association, the State Medical Society of Wisconsin and the Fond du Lac County Medical Society, died suddenly on October 22, at St. Agnes Hospital, after performing an operation, aged 54 years.

Dr. WILLIAM GUY FRIERSON of Shelbyville, Ky., a graduate of the Medical Department of the University of Nashville in 1897, died at his home on October 21, after a lingering illness, aged 41 years.

Dr. EUGENE ALEXANDER FREIS of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1885, died at his home on November 6, aged 56 years.

Dr. NATHANIEL MCMASTER of New York, a graduate of Bellevue Hospital Medical College, New York, in 1868, a member of the Medical Society of the State of New York and the New York County Medical Society, and attending physician to the Demilt Dispensary, died at his home on November 8.

Dr. WILLIAM JACK MCMAHON of Courtland, Ala., a graduate of the Long Island College Hospital, Brooklyn, in 1860, and a member of the Medical Association of the State of Alabama and the Lawrence County Medical Society, died at his home recenty, aged 76 years. Dr. McMahon was a veteran of the Confederate Army.

Dr. WILLIAM C. IRBY of Laurens, S. C., a graduate of Jefferson Medical College of Philadelphia in 1870, died on October 26, aged 68 years.

Dr. WILLIAM ALTON BURR of Pasadena, Cal., a graduate of the Hahnemann Medical College and Hospital of Chicago in 1869, died recently, aged 76 years.

Dr. EDWARD WILLIAM SCHAUFFLER of Kansas City, Mo., a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1868, a veteran of the Civil War, and a member of the American Medical Association, the Missouri State Medical Association, and the Jackson County Medical Society, died at his home, from heart disease, on October 29, aged 77 years.

Dr. OWEN J. EVANS of Minneapolis, Minn., a graduate of Albany Medical College, N. Y., in 1862, died suddenly on October 17, from heart disease, aged 76 years.

Dr. EUGENE CLARENCE DUNN of Fresno, Cal., a graduate of New York University Medical College in 1881, and a member of the Medical Society of the State of California and the Fresno County Medical Society, died in a sanatorium in Fresno on October 14, from nephritis, aged 62 years.

Dr. FREDERICK C. WEAVER of Dayton, Ohio, a graduate of the Miami Medical College, Cincinnati, in 1894, and a member of the Ohio State Medical Association and the Montgomery County Medical Society, died at his home on October 14, aged 46 years.

Dr. Edward H. Grannis of Menomonie, Wis., a graduate of the Hahnemann Medical College and Hospital of Chicago, in 1875, and a member of the State Medical Society of Wisconsin and the Dunn County Medical Society, died at his home on October 14, from pernicious anemia, aged 62 years.

Dr. Frank C. Ferguson of Baltimore, Md., a graduate of the School of Medicine of the University of Maryland, Baltimore, in 1901, died at his home on October 11, from pleurisy, aged 37 years.

Dr. Gilman Corson Dolley, a graduate of the Medico-Chirurgical College of Philadelphia, in the class of 1907, died at Manila, P. I., on October 21, at the age of 37 years. He was resident physician at the Culion Hospital, Palawan.

Dr. Harry W. Weyant of Philadelphia, died of pneumonia on November 2, at the age of 47 years. He was graduated from the medical department of the University of Pennsylvania, in the class of 1895, and was for twenty-one years surgeon to the police department of Philadelphia.

Correspondence.

THE STORY OF A WINDOW TENT.

To the Editor of the Medical Record:

Sir:—My attention has been called to an advertisement in the *Journal of the American Medical Association* of the so-called Walsh Window Tent, in which it is stated that "four physicians invented it. The patents of Dr. W. E. Walsh, Dr. J. H. Williams, Dr. S. A. Knopf, Dr. W. B. McLaughlin are all combined and built into the Walsh Window Tent."

That I invented the window tent which bears my name, I do not deny. Those who saw my first tent, shown on February 27, 1905, at the meeting of the Medical Society of the County of New York, and the illustration of it in the *New York Medical Journal* of March 4, of the same year, and have also seen subsequent pictures of it in various publications (*New York Medical Journal*, April 22, 1911, Medical Record, October 31, 1914, Seventh edition of "Tuberculosis as a Disease of the Masses and How to Combat It") will even grant me that the device has been materially improved since it was first presented to the profession.

I protest, however, most energetically against the statement in this advertisement to the effect that I have taken out a patent on this device which was worked out particularly for the benefit of the consumptive poor who cannot have the luxury of an outdoor porch. I feel, however, that I must give the profession an explanation how this window tent came to be patented at all.

After having seen Dr. Bull's aerarium, which is an outdoor window tent, suitable for one or two-story country houses, but utterly impracticable for a New York tenement house, I was impressed with the possibility of devising an indoor window tent and eagerly began to work on the problem. At the time when I was experimenting with the device Dr. W. B. McLaughlin was my resident physician in the New York Health Department's Riverside Hospital-Sanatorium on North Brother Island. He claimed to possess mechanical ingenuity and I gave him my ideas of an indoor window tent, asking him to make a model and promising to give him an opportunity to read, together with myself, a paper on the subject of aerotherapy before the County Medical Society, when we would present this new device under our combined names. He made a model, which unfortunately was not satisfactory, and I then gave the idea of the device to the Kny-Scheerer Company and they made me another model suitable for presentation. In compliance with my promise, however, I asked the that-time president of the County Medical Society for a place on the program for the meeting of February 27, 1905, the paper to be entitled "The Open Air Treatment at Home for Tuberculous Patients, with the Description of a Window Tent and a Half Tent," to be read by S. A. Knopf, M.D., and W. B. McLaughlin, M.D. I wrote the paper and invited McLaughlin to be there to demonstrate the window tent. He promised to be present, but did not appear. I did not hear from him again until I learned to my amazement that he had taken out a patent for the window tent in his name. I interviewed patent lawyers to find out what I could do to contest the patenting of a device which I had invented for the purpose of giving air and light to the most unfortunate of the poor—the consumptives in the tenement houses of our large cities. I received a good deal of sympathy, but was told that such a suit was likely to cost several thousand dollars, and since Dr. McLaughlin had complied with all the legal requirements prior to taking out the patent, the outcome would be doubtful. I did not feel that I could afford to risk such a large sum, but in my popular writings on tuberculosis, including my International Prize Essay, I made it a point thereafter to describe the mechanism of the tent completely so that any one handy with tools could make one for himself.

From this little history of my window tent you will see that I have a very strong reason to protest against being designated as a patentee of a life-saving device intended for poor consumptives, to give them God's fresh air to which they should be entitled without extra pay to such of the medical gentlemen who claim to be inventors. I had intended that my indoor window tent should be free from all patent restrictions, just as the above mentioned half tent, sputum flask, and other devices which I have from time to time designed in my anti-tuberculosis work, are free to all who care to make them.

The saddest thing of all in this matter is that the manufacturers of my window tent, which, according to such authorities as Babcock of Chicago and Bonney of Denver, is ideal in every respect, claim that they can no longer manufacture the device without loss, owing to the large royalties they must pay to the owner of the patent, so that now the poor people who need it most will not be able to get the tent at a reasonable rate. I have written to the editor of the *Journal of the American Medical Association* asking him to refuse to publish the advertisement with my name, and I have no doubt that my request will be complied with. But among the readers of the Medical Record I believe I have a goodly number of friends who are not readers of the *Journal of the American Medical Association* and for that reason I ask you, Mr. Editor, to extend to this letter the hospitality of your columns.

S. A. Knopf, M.D.

Action of Salvarsan.—According to Citron injections of soluble mercurials cannot cause the disappearance of the Wassermann. Inunctions of mercury and injections of insoluble mercurials give much better results. Salvarsan has a clean superiority to mercury in any form, but has elements of danger. The author has seen it cause death in patients with visceral disease, especially in nephritis. The author gives both remedies in concert. —*Berliner klinische Wochenschrift.*

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WOUNDED SOLDIERS ENTERTAINED — OUR DAY — ZEPPELIN RELICS—LUSITANIA MEDAL—OBITUARY.

LONDON, October 23, 1916.

FIVE thousand wounded colonial soldiers were entertained at a fête in Windsor Great Park last Saturday afternoon. Australians, New Zealanders, South Africans and Canadians were all present, and all had had their part in the fighting, and many had wonderful stories to tell. They were gathered from about thirty hospitals in and around London. The king showed his interest by granting the use of the park for the occasion, and Princess Christian, the Duchess of Albany, Princess Alexander of Teck and her little daughter, Princess May, paid a visit during the afternoon. The gathering originated with Mrs. R. D. Fiske, who has previously entertained wounded soldiers on a large scale, and was on this occasion backed by the officials of the Australian Commonwealth, the gathering being arranged to commemorate the departure of the first Australian contingent to the front, just two years ago. The weather was October's finest, and this contributed largely to the success of the entertainment, for it seemed rather risky to hold an outdoor gathering in the middle of October. It was no slight undertaking to provide for so many men. There were 1,250 pounds of meat, 4 tons of flour, 6 hundredweight of sugar, 1,000 pounds each of currant and plain cake, 12 barrels of grapes, 15 boxes of apples, 150 pounds of tea, £25 worth of butter, and 20,000 cigarettes. The cavalry exercise ground was specially laid out by the crown authorities for the occasion, water was laid on, and about a dozen field ovens installed for the purpose of boiling it. Two huge marquees were erected, each capable of accommodating a thousand men, tea being served in batches. The men came by train, motor cars, and all sorts of vehicles, some even on steam launches, by river, a taxicab association brought 250 bad cases from the London hospitals, and there were many private cars.

The celebration of "Our Day" on Thursday was a great success, and the Red Cross Society and the Order of St. John will benefit accordingly. The weather was all one could hope for in a London October, and almost every one you met in the street wore the flag which betokened some gift to the cause. Four millions of these flags were offered for sale in London alone, and nearly all were sold. For the Empire 35 millions were provided, and it is said not many were left in the hands of the ladies who sold. The flags were of paper, silk, and other materials, and of various handsome designs. There were also real zeppelin relics offered for sale, which found ready purchasers. Brooches, bangles, and other ornaments, woven with wire from the wreck of the Cuffley zeppelin, disappeared as soon as they were offered, at prices from one shilling to ten, in some cases twenty. Well-known ladies in large numbers presided over stalls in large hotels and public places. Society was fully represented, both in the audience and among the indefatigable sellers of programs.

A medal in commemoration of the Lusitania disaster fetched £300. The king gave to the fund £5,000 the queen £1,000, the Prince of Wales £1,000, Queen Alexandra £500, the Australian Branch £31,000; 30 contributors between them subscribed £76,184. It was felt that no amount could exceed the needs of the fund, which in the ordinary course of a week expends £40,000 on the wounded. Last year the amount raised on "Our Day" exceeded £1,000,000, and this year a larger sum is hoped for.

An exhibition of zeppelin relics has been held in the city for some weeks. It attracted some 20,000 visitors daily, and a collecting box realized over £1,000, principally in coppers, for the Red Cross Society and the Lord Kitchener memorial fund. Later a private view was held in aid of the Countess of Denbigh's war hospital.

The death has occurred of Mr. R. W. Doyne, the eminent ophthalmologist of Oxford, of which he was Hon. M. A. 1902. He was surgeon to the Oxford Eye Hospital for more than 25 years and was consultant to the Radcliffe Infirmary, and first reader in ophthalmology to the university. The congress on this specialty was originated by him, and he was for many years its leading spirit. He contributed valuable papers to the journals and wrote a book on the "More Common Diseases of the Eye," the value and misuse of spectacles in the treatment of headache, migraine and other functional troubles of the eyes, and undescribed forms of iritis, family choroiditis and conjunctivitis were illustrated by him in ophthalmic transactions.

Dr. G. A. Heberden of Victoria, S. A., great grandson of the famous Wm. Heberden, has died at the age of 55. He took the double qualification in 1888. The next year he went to South Africa, and practised there throughout his life. As M. O. H. at the siege of Kimberley, he was awarded the D. S. O.

Dr. W. Symington, J. P. for Brampton, Cumberland, where he practised for 28 years, died there on the 3d inst., aged 51. He was a surgeon-major of the Fourth Border Regiment (T. F.). He was attacked by blood poisoning about four months ago, which has proved fatal.

Dr. W. A. Haslam, R. M. O. Hull Fever Hospital and Sanatorium, died September 1 of fever contracted in his occupation. He was a Guy's man, aged 51, took the double qualification in 1892, was M. O. H. of Prescot (Lanes) Infirmary, 1898, and in 1911 entered the service of the Hull Corporation.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 9, 1916.

1. Treatment of Weak Labor Pains. Stephen Rushmore.
2. A Study of the Symptoms and Treatment of Congenital Transduodenal Bands. John Homans.
3. Indications for Wet Packs in Psychiatric Cases; An Analysis of One Thousand Packs Given at the Psychopathic Hospital, Boston, Massachusetts. Herman M. Adler.
4. John Clarence Cutter. Sarah H. Powers.
5. Syphilis of the Lungs. Nathaniel K. Wood.
6. Control of Scarlet Fever. D. M. Lewis.

2. **A Study of the Symptoms and Treatment of Congenital Transduodenal Bands.**—John Homans, having met with a number of instances of these bands or adhesions, deemed it worth while to make a study of all such cases occurring over a period of several years at the Peter Bent Brigham Hospital. The investigation was undertaken to throw light upon the question whether transduodenal bands of congenital origin give rise to such symptoms as to cause them to be considered a pathological entity, having a definite course, symptomatology, and treatment. Eleven cases were studied in which definite bands passing from the gall bladder and liver across the duodenum were found, and in which gastric or duodenal ulcers or gall-bladder dis-

ease had been held to be absent. There were six males and five females, the average age of both being forty-four years, the youngest nineteen and the eldest sixty-seven. The average duration of symptoms was eight to nine years. The general character of the patient's complaint tended to resemble that of ulcer or gall-bladder disease, but gave the impression of a reflex symptom-complex. In respect to intermittency, the symptoms resembled gallstones or chronic appendicitis rather than ulcer; in respect to food relief, those of gallstones and chronic appendicitis rather than gastric or duodenal ulcer; but when food was present it simulated duodenal or pyloric ulcer in type. In respect to vomiting, the disease was rather like gastric ulcer or gallstones; while in respect to bleeding, band cases presented negative findings. In Roentgen-ray studies these cases tended strongly to imitate duodenal ulcer. Homans, at the same time, made a comparative study of six cases of duodenal ulcers and six of gastric ulcers. In the preoperative diagnosis of these cases there was no mistake, while in the diagnosis of the eleven band cases much inaccuracy was displayed. In but three of the cases was the existence of bands suggested, while ulcers of all types, gallstones, and cancer were considered as the cause of the condition. The Roentgen examinations in gastric and duodenal motility and in the position and outline of the stomach and duodenum showed abnormalities in all instances of well-developed transduodenal bands in eight out of the eleven cases. Three cases were not so studied. Of the eleven cases operated on, one that of an old lady who died one month after leaving the hospital, probably of cardiac condition, ten have been followed for periods of two and a half years in the first case to four months in the most recent. Three patients died shortly after operation of intercurrent diseases. Of the eight living, all are well or express themselves as satisfied with the results of the operation. Homan treated these cases by making a division of the transduodenal bands, and in two instances opened the duodenum and performed a Finney pyloroplasty. From the study and operation upon these cases he draws the following conclusions: (1) Congenital transduodenal bands may be responsible for symptoms "reflex" in type which have, in spite of considerable divergence, a definite family resemblance; (2) accompanying these symptoms the Roentgen findings very generally indicate duodenal spasm or dilatation of the first, or first and second, portion of the duodenum; (3) division of the bands and appropriate treatment of raw surfaces is satisfactorily curative, but plastic operations to widen the opening into the duodenum probably give the best results; (4) congenital transduodenal bands, judging from the frequency with which they are reported at autopsy, are not necessarily pathological, but may be responsible for digestive disturbances having a recognizable symptomatology, a prolonged course, and appropriate operative treatment.

6. **Control of Scarlet Fever.**—D. M. Lewis, epidemiologist, Board of Health, New Haven, Conn., states that, from lack of epidemiological observations on sporadic or endemic cases, the control of this disease is as yet limited to the search for missed cases and the supervision of reported ones. He shows that it is possible to demonstrate the carriers of this disease, who, as responsible for the missed as well as the reported cases, are consequently the basis for the control of scarlet fever. He cites eight cases, ranging from seven to twenty years of age, who were carriers of scarlet fever. One case, a boy aged five, was reported November 2, 1914. Released at expiration of six weeks, with discharging ears and purulent nasal discharge. During following two months there were four neighborhood cases in children of the same age. Almost a year later Lewis found the same boy being admitted to a day nursery with his ear filled with cotton, a purulent nasal discharge, a marked streptococcus sore throat, a strawberry tongue, and a temperature of 102°. Without ensuing rash or desquamation, it was only after six weeks' treatment that the nasal discharge was cured and the tongue faded. Carriers may be divided into two groups: those individuals having ear or gland discharges at the end of convalescence, and those who have had the disease previously. The one essential is that both groups shall show some grade of buccal-pharyngeal inflammation as shall be characteristic of primary scarlet fever. With the subsidence of this factor in the first group and its absence in the second group, Lewis does not find individuals infective. Lewis not only carries out strict quarantine measures, but any carrier in the family, house, or neighborhood was isolated, though given rear-yard freedom. Inspection of adults was insisted on only when there was a history of previous sore throats or the adult was a raw-food handler. Postal-card notification of all school absentees, as well as those who are in school and have nasal or ear discharge, is the basis for finding carriers. During the last four months of 1915, with some thirty-nine reported cases, he has a record of twenty-one carriers found, as well as three missed cases; for the first five months of 1916, with some ninety cases of the disease, a record of ten carriers and two missed cases. He says in conclusion that he has abolished recurrent cases, made infrequent secondary cases, and lessened reported cases by demonstration of carriers of convalescence and carriers previously having had the disease and by isolating these carriers. Results of so-called grading of quarantine does not depend on the quarantine, but upon the fact of the presence of the carrier being within or without the family circle. Full liberty may be safely given to all contacts who are free from the signs of the disease at the time of isolation of the one sick and the carrier. Control of scarlet fever will be found to lie in the supervision of those who have previously had the disease, at and during those periods when with intercurrent infections they again show the buccal-pharyngeal signs of scarlet fever. Secondarily, missed cases and the convalescent reported cases are of equal importance.

New York Medical Journal.

November 11, 1916.

1. The Blood and Its Vessels in Epilepsy, and Their Treatment. Thomas E. Satterthwaite.
2. Strychnine as a Tonic. William Forsyth Milroy.
3. Final Control in Medicine. Beverley Robinson.
4. Epilepsy. T. E. McMurray.
5. Postures and Types of Breathing Exercises. Nathalie K. Mankell, and Edward C. Koenig.
6. The Relationship Between the Nervous System and Therapeutics in Pulmonary Tuberculosis. Francis M. Pottenger.
7. Joint Hypotonia. Harry Finkelstein.
8. Acute Mastoiditis. Harold Hays.
9. Shall We Get Rid of Tuberculosis at Last? Richard Cole Newton.
10. The Struggle for Binocular Single Vision. Aaron Bray.
11. One Thousand Wassermann Reactions. John M. Ladd.

1. **The Blood and Its Vessels in Epilepsy, and Their Treatment.**—Thomas E. Satterthwaite states that though it has long been known that circulatory derangements are produced by epilepsy, it is only during recent years that it has been found, conversely, to produce epileptic attacks. In the three principal varieties of this disease circulatory disturbances are among the dominating features. He does not include Jacksonian epilepsy, because circulatory anomalies are not constant features of the neurosis. He refers to many authorities on this disease with reference to the circulatory conditions found, and quotes Gower as advo-

cating many years ago the use of nitroglycerin. Echeverra of New York about half a century ago stated that cardiac diseases might originate epileptiform convulsions from embolism of the cerebral arteries. Sachs has recently reported one case in which focal epilepsy was produced by enlarged veins in the pia mater and another by similar conditions in the dura mater. Another case is referred to in which the epileptic attacks disappeared after the vascular growth at the base of the brain had been removed by operation. After referring to the general hygienic and therapeutic management of epilepsy, Satterthwaite is led to the following conclusions: (1) Abnormalities of cardiovascular phenomena occur in the vast majority of epileptic seizures. (2) The grosser forms of cardiac disease rarely occur in epilepsy. In fact, they are present in so small a proportion as to indicate that they are accidental rather than determining factors of it. (3) That a cerebral disease or abnormality may produce epilepsy is well established. The evidence shows that removal of enlarged veins or nevoid growths adjacent to the base of the skull has been followed by cessation of the seizure. (4) There is therefore a reciprocal relation between circulatory disorders and epilepsy to this extent; that epilepsy causes circulatory disturbances and that abnormalities of blood or vessels cause epilepsy. This reciprocal relation he believes to have been hitherto overlooked. (5) In most forms of epilepsy there is cerebral anemia, and this is relieved effectively by various heart stimulants, the high-frequency current, and radiant electric light. The importance of the use of cardiac stimulants in epilepsy has not been properly appreciated by the profession.

2. **Strychnine as a Tonic.**—William F. Milroy puts up a plea for strychnine, for he believes that the profession as a whole only half appreciates this old time remedy. Doctors are afraid of it. Few realize what it can accomplish in maximum doses; it is in this phase of the subject that he is especially interested. He uses it chiefly in cases of pulmonary tuberculosis, where it can be tolerated and be made to produce beneficial results over a period of years; while in nervous disorders representing conditions of depression good results are to be obtained. Also in pneumonia, when edema is forming in the dependent portion of the unaffected lung, prompt relief can be given in a few hours by the injection of one-sixth grain of strychnine. Its action is primarily upon the nervous system, including the sympathetic system, producing a stimulation of the physiological activity of practically the whole body. Admitting that cardiac muscular power and blood pressure are not influenced by strychnine, nevertheless the heart action is influenced favorably in certain conditions, such as irregular, intermittent heart. Cellular nutrition is not a process of passive absorption, but is an active, vital process under the direct control of the nervous system. Therefore the profound stimulation of the nervous system by full doses of strychnine directly promotes a new and vigorous cell activity of the whole body, thus tending to restore the lowered opsonic index. Milroy usually administers the drug by mouth, four doses daily, beginning with one-thirtieth grain and adding one-thirtieth to the daily allowance at the end of each five-day period until eight-thirtieths are given daily, then reducing the increase to one-sixtieth until the limit is reached. The maximum dose is indicated by the occurrence of muscular rigidity. Though the drug may not be wholly eliminated from the body under eight days, it is practically gone at the end of twelve hours, and therefore the doses must not be too infrequent. No tendency to habit formation can be induced, and a perfectly safe margin exists between the first appearance of muscular spasm and a really poisonous dose.

4. **Epilepsy.**—T. E. McMurray announces that in his limited experience with epilepsy the following facts impressed him strongly: Digestive disturbances as manifested by foul breath, coated tongue, constipation, and intestinal gases; the enormous appetite, especially for bread and sweets. He reports three cases out of eleven treated according to his treatment in which improvement has been marked as indicated by an absence over a continued period of time of the convulsions and improved general health. The diet followed was that outlined for diabetes, otherwise starch and sugar free. He recommends to these patients Hill's book on diabetes, thereby giving suggestions for a more liberal diet. McMurray also included pancreatin and sodium bicarbonate at meals, a dose of epsom salts every fourth day, and mineral oil daily if needed to keep the bowels active. In only two cases was it necessary to give bromides, and then only for a short time. In two of his cases convulsions returned after excesses at the table and disappeared after the diet was restricted again. The cases all showed gastric hyperacidity, acidosis, but no glucose in the urine. A blood test for sugar was not made.

Journal of the American Medical Association.

November 11, 1916.

1. The Health Education of the General Public. W. C. Rucker.
2. The Nonspecific and the Specific Defense of the Child Against the Tubercle Bacillus. Francis M. Pottenger.
3. The Use of Boiled Milk in Infant Feeding and Elsewhere. Joseph Brennemann.
4. The Use of Malt Soup Extract in Infant Feeding. B. Raymond Hoobler.
5. Rest of the Individual Lung by Posture. Gerald B. Webb, Alexius M. Forster, and F. M. Houck.
6. Tumors of the Third and Fourth Ventricles. Peter Bassoe.
7. The Progressive Torsion Spasm of Childhood (Dystonia Musculorum Deformans): A Consideration of Its Nature and Symptomatology. J. Ramsay Hunt.
8. Bacteriological Findings in Cerebrospinal Fluid in Poliomyelitis: A Preliminary Report of the Examination of Fifty Cases. John W. Nuzum.
9. The Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association. Torald Sollmann.
10. The Treatment by Radium of Carcinoma of the Prostate and Bladder: Preliminary Report. Benjamin S. Barringer.
11. Separation of Buttocks. John C. Silliman.

1. **The Health Education of the General Public.**—W. C. Rucker states that in order to accomplish anything in a public health way it is necessary that the sanitary authorities have the financial and moral support of the citizenship. As assistant surgeon-general, United States Public Health Service, he speaks with authority when he says that if the general public is not informed as to the need for personal and public hygiene and sanitation, it is extremely difficult to secure public health. More and more time is being devoted in efforts to bring these facts before the public; but the work has only just begun, and he considers that there is at least thirty years of hard work ahead before maximum results will be achieved. If publicity be of the right sort and carried on with a full understanding of the mass psychology, it will achieve good results in the end. While the spoken word, the mass meeting, has a certain place in public health education, it must not be forgotten that only those who are interested in the problem come to the lecture. Too much dependence has been placed in the spoken word. What the American people want is more demonstration and less talk in public health work. Demonstration takes many forms, including stereopticon slides and motion picture films. In reference to the first method, the pictures should be good enough to tell their own story without the aid of the lecture, and the same may be said of the lecture. Moving picture films have not been absolutely successful; the sanitary scenario must be sugar-coated

in order to live up to the traditions of the motion picture stage. Printer's ink is the greatest medium of public health education. Intelligent, well-written newspaper articles, prepared after due consideration of the psychology of the average newspaper reader, are of the greatest benefit. The greatest sanitary hope of the future lies in the health education of the child. This must begin with the kindergarten and extend through to college days. The general public does not know how much good can be done them. We must create in them a demand for public and personal hygiene. It would be well to study the methods which have been used in popularizing manufactured articles and to change the plan just enough so that it may better fit this important work which lies ahead of the medical profession. He considers that the American Medical Association has already accomplished much in this field, but there is much more to be done.

2. **The Nonspecific and the Specific Defense of the Child Against the Tubercle Bacillus.**—Francis M. Pottenger. (See MEDICAL RECORD, June 24, 1916, page 1162.)

3. **The Use of Boiled Milk in Infant Feeding and Elsewhere.**—Joseph Brennemann. (See MEDICAL RECORD, June 24, 1916, page 1162.)

4. **The Use of Malt Soup Extract in Infant Feeding.**—B. Raymond Hoobler. (See MEDICAL RECORD, June 24, 1916, page 1163.)

5. **Rest of the Individual Lung by Posture.**—Gerald B. Webb, Alexius M. Forster, and F. M. Houck state that respiration in a normal person takes place upward of 30,000 times in twenty-four hours. When a tuberculous patient rests on one side at night, the dependent lung is restrained in motion; but the upper lung opens and closes about 12,000 times in ten hours of sleep. They have noticed a marked tendency for the consumptive to lie on the side of the better lung at night, and it often happens that the very lung which needs the most rest is getting the most work. For various reasons it would seem that the majority of normal persons sleep on their right sides. While Walsh pointed out that in pulmonary tuberculosis the disease would seem to begin in most patients at the right apex, the writers have noted that they have had more patients needing pneumothorax with extensive left-sided than with extensive right-sided tuberculosis. From history one would suppose that the disease would be more widespread in the more exercised lung; but the fact that the majority of persons sleep on their right sides and that the majority of advanced tuberculous lesions are apt to be found in the left lung may not prove to be entirely coincidental. The experiences noted from successful artificial pneumothorax show the great value of rest of the individual lung. During the past year they have applied this principle of rest in a large number of cases, and in addition have placed a small firm pillow to restrain the motion of the diseased lung to a greater degree. Some patients so treated have been able to remain lying on the side of the diseased lung over twenty hours a day for months at a time with little effort. This must be accomplished gradually. The results were encouraging, and the writers feel that they have observed in certain cases a cessation of fever, a diminution of expectoration, and lessened liability to relapses. In a tuberculous patient a moderate degree of hyperemia is thus produced by this rest on the affected side. Rest on the right side must be done occasionally in order to afford drainage when needed. It would seem wise, the authors think, to observe all patients who suffer from either nocturnal or early morning hemorrhages, with a view to ascertain, if possible, the side on which they have slept at night.

8. **Bacteriological Findings in Cerebrospinal Fluid in Poliomyelitis.**—John W. Nuzum states that it is the opinion of those familiar with the bacteriology of poliomyelitis that the cerebrospinal fluid, whether obtained by lumbar puncture during life or at necropsy, is sterile. Recently he reported the isolation of a gram-positive micrococcus from the cerebrospinal fluid during life in eight out of nine cases of acute poliomyelitis, and a little later this same peculiar gram-positive microorganism has now been isolated from the spinal fluid in forty-five out of fifty cases studied. It presents the same cultural and morphologic characteristics as does the micrococcus isolated from the brains and spinal cords in fatal human cases at necropsy. Control cultures were made with the cerebrospinal fluid obtained by lumbar puncture from normal individuals and from patients afflicted with diseases presenting more or less clinical symptoms resembling infantile paralysis, such as brain tumors, tabes, tic, etc. In no case was the peculiar microorganism characteristic of poliomyelitis obtained. The cultures were made as follows: From 1 to 2 c.c. of the spinal fluid was regularly inoculated into a series of four tall tubes containing ascites dextrose broth, ascites broth, human ascitic fluid, and ascites broth to which a sterile piece of rabbit's kidney was added. The tubes were inoculated at 35° C. At the end of twenty-four to thirty-six hours a diffuse turbidity commonly appeared in all four tubes of the positive cultures. Control tubes remained clear. Smears made at this time usually revealed a minute organism, gram-positive and arranged in pairs, clumps, and short chains. Many were so minute as to be just visible under the oil immersion lens. They corresponded in every morphologic detail to the minute globoid bodies described by Flexner and Noguchi. A further description of the tubes containing the cultures at the end of forty-eight to seventy-two hours was given, and the smears made then show a larger form of the same organism. Any routine clinical test would be of inestimable value in these cases of poliomyelitis, especially the atypical cases. It was hoped that complement fixation tests might prove a valuable aid in diagnosis. Bacterial antigens were prepared from the cultures of the brains and spinal cords at necropsy. With suitable controls hemolysis resulted in a large number of cases tested. A number of cases are reported by the author in order to illustrate the value of the isolation of the organism as a routine measure. In the cases reported the disease resembled poliomyelitis, but examination of the fluid showed none of these organisms. At necropsy the true cause of each condition was found, and none was a case of poliomyelitis.

10. **The Treatment by Radium of Carcinoma of the Prostate and Bladder.**—Benjamin S. Barringer gives the results of his experience with this form of treatment, and states that problems presented by bladder and prostate carcinomas are so entirely different that they must be considered separately. He gives the technique of using radium in both conditions and reports of cases, and offers the following summary: By means of radium we have caused the rapid and complete disappearance of two bladder carcinomas out of nine treated. These cases were carcinomatous by cystoscopic appearance and microscopic examination. Time only will tell whether these patients are cured. In one case of prostatic carcinoma, treated for six months, the carcinoma and the symptoms have markedly retrogressed. In another case, treated three months (possibly borderland), the symptoms have improved. Of three other patients treated, one is dead, one has only recently been treated, and one is doing a full day's work but could not be reached for examination.

The Lancet.

October 21, 1916.

1. An Address on the Spirit of Medicine. J. Mitchell Bruce.
2. Some Observations on Dysentery. William Magner.
3. A Series of Military Cases Treated by Hypnotic Suggestion. J. Bennett Tombleson.
4. The Luetin Reaction in Syphilis. William Fletcher.
5. The Surgical Uses of Ozone. George Stoker.
6. Placenta Prævia and Cesarean Section. A. G. Tresidder.
7. Left Fallopian Tube Found in Femoral Hernia. E. G. Renny.

2. Some Observations on Dysentery.—William Magner divides this disease into two more or less distinct stages, due to the pathological aspect of the large intestine. The early stage of this condition is characteristically apyrexial, but the later stage is pyrexial due to the bacterial invasion of the intestinal walls. As a result of his work on a large number of cases of dysentery he draws the following conclusions: (1) Both in amebic and bacillary dysentery secondary invasion of the ulcerated intestinal wall by organisms from the intestinal lumen is an important factor aggravating both the local and general condition. The pyrexia so frequently observed in the later stages of amebic dysentery is a result of this secondary invasion, and, though usually toxic in origin, may be due to bacterial invasion of the blood stream. A similar septicemia may occur in the bacillary type of the disease. (2) Amebic dysentery may be latent, the ulcers being confined to the cecum and producing no symptoms. Apart from the danger of the disease becoming active, such cases may act as foci for the spread of the disease. (3) Every case of amebic dysentery should be treated by the administration of at least 10 grains of emetine. Incomplete treatment may result in the patient becoming a cyst carrier and a danger to the community. (4) The prevention of amebic dysentery depends upon the elimination of cyst carriers, rapid and complete disposal of fecal matter, and protection of food from dust and flies. (5) In bacillary dysentery the earliest pathological change in the intestinal wall is dilation of the vessels and a marked hemorrhagic exudation into the submucous coat. Leucocytic accumulation is a later phenomenon resulting in necrosis of tissues. (6) Mannite-fermenting dysentery bacilli can exist in the intestine in an avirulent form. The presence of such an organism in the stools loses much of its significance in the absence of a positive Widal reaction. (7) The agglutination reaction in dysentery is a valuable means of differentiating the bacillary type of the disease. In Shiga infections specific agglutinins are invariably present after the first week of the disease. Distinct agglutination with a serum dilution of 1 in 100 is diagnostic. (8) Judging from serological tests, it would appear that certain organisms, normally saprophytic, may in both types of dysentery stimulate the production of specific agglutinins as the result of invasion of the ulcerated intestinal wall. (9) The toxins of Shiga's bacillus are highly pathogenic to rabbits. Subcutaneous injection with either living or killed cultures results in the development of paralytic symptoms and death. The characteristic lesions of the human disease cannot be readily reproduced.

3. A Series of Military Cases Treated by Hypnotic Suggestion.—J. Bennett Tombleson reports the result of sixty cases which he has treated by this method of therapeutics. He considers the most successful results were obtained in cases of shock psychasthenia of all kinds, while cases of hyperthyroidism and neurasthenia also showed good results. So far as he has been able to trace them, the cure has been permanent in these cases, and he suggests that if the same standard of criticism be applied to these cases and to similar cases treated in other ways the utility of hypnotic suggestion would be obvious to any fair-minded critic. Among the cases treated were those of neurasthenia due to shock but with a history of condition some time before the war; psychasthenia, due to injuries; trench shins, due to exposure in Balkans; epilepsy, in which fit had occurred every two months but oftener since enlistment; hyperthyroidism, and chronic rheumatism.

5. The Surgical Uses of Ozone.—George Stoker considers this method of treatment of wounds satisfactory from every standpoint. He gives the results of the first twenty-one cases treated at the Queen Alexandria Military Hospital, which cases were for the most part those of cavities and sinuses in the femur and tibia. The apparatus used is known as an Andriolis ozoniser, and the treatment consists in the application of ozone to the affected parts. The properties of ozone, which have a wonderfully healing effect, are, as far as is known at present, three: (1) It is a strong stimulant, and determines an increased flow of blood to the affected part. (2) It is a germicide which destroys all hostile microorganic growth. (3) As the French chemist Hennocque has shown, it has great powers in the formation of oxyhemoglobin. The ozone is applied on the wounded surface or to the cavities and sinuses for a maximum time of fifteen minutes, or until the surface becomes glazed. Ozone has the particular power of disclosing dead bone, foreign bodies, septic deposits, etc. This it does by destroying the granulations and microorganic growths (presumably unhealthy) that are found in close contact with septic deposits, foreign bodies, or dead bone. Cleansing and Dressing: Wounds and sinuses, etc., are washed twice daily with boiled water and a dressing of dry gauze is applied. It must be observed that at first ozone causes an increase of the discharge of pus; later on the pus is replaced by clear serum, which at a still later stage becomes colored reddish or pinkish. In open wounds it is necessary to strip off the parchment-like film surrounding the edges, which is composed of oxidized serum. This is easily effected by applying a hot compress for fifteen or twenty minutes, after which the film can be easily peeled off with a dissecting forceps.

7. Left Fallopian Tube Found in Left Femoral Hernia.—E. G. Renny presents a report of a case of this condition, and states that he has found no record of a similar case. The patient, aged forty-two, married, mother of three children, noticed a lump in the left groin for eighteen months. During the last five weeks it had become painful, and, thinking it was a rupture, she bought a truss and wore it. The truss made the lump very inflamed and painful. She then consulted Dr. Renny, who found a painful swelling in the groin which, on account of the inflammation present, made the diagnosis uncertain. It was dull to percussion, irreducible, with no impulse on coughing and no strangulation symptoms. The finger could be passed up the inguinal canal for a short distance. Later, after rest and a subsiding of the inflammation, an incision was made over tumor. It proved to be a femoral hernia with somewhat thickened sac, containing a considerable quantity of green fluid, under tension. Occupying the crural canal was a red, soft substance which, when traction was made on it, proved to be the left Fallopian tube, with its fimbriated extremity presenting. This was returned to the abdomen without much difficulty.

British Medical Journal.

October 21, 1916.

1. The Highly Strung Nervous System. Guthrie Rankin.
2. Practical Hints on Functional Disorders. M. Culpin.
3. Preliminary Note on the Intravenous Injection of Gynocardate of Soda in Leprosy, with Further Experience of Its Subcutaneous Use. Sir Leonard Rogers.
4. The Treatment of Certain Diseases of Protozoal Origin by Tartar Emetic Alone and in Combinations. Aldo Castellani.

5. Hydrotherapy as an Agent in the Treatment of Convalescents. Frank Radcliffe.
6. Notes on Blood Culture Technique. R. L. Thornley.
7. Digested and Diluted Serum as a Substitute for Broth for Bacteriological Purposes. A. Distaso.
8. Biliary Regurgitation After Gastro-enterostomy. Jas. H. Nicoll.

2. Practical Hints on Functional Disorders.—M. Culpin says that eighteen months' service has convinced him that much harm is done by failure to recognize psychical disabilities which, though sometimes so extraordinary as to deceive the most wary, should generally be diagnosed by anyone who is awake to their possibilities. Tests of sensation should be applied where there are not enough signs fully to account for all disability present. To differentiate between conscious and unconscious simulation is necessary but often difficult; sometimes the hysteric is a good fellow who deserves sympathy more than is consistent with cure; sometimes he resists all treatment and may say that he has no wish to be well. Among the types of cases tested and treated was one of talipes varus with a decided obsession; tilted pelvis with scoliosis and apparent shortening of a leg, which condition can be produced at will; paraplegia after shell-shock, which may, however, be genuine and needs careful diagnosis; frostbite, rheumatism, and abdominal psychoses. Culpin urges that a careful watch be kept for such cases when they begin. There is no mystery in the diagnosis; ordinary methods of examination, supplemented by sensory tests, detect the majority of them. In every injury the extent of possible movements should be early ascertained, and if no contradictions are present these movements should be strongly encouraged. A man whose functional disorder is diagnosed as organic will probably be a cripple for the rest of his life; the longer he remains under the shadow of a wrong diagnosis the harder will be the cure when his true condition is recognized.

3. Preliminary Note on the Intravenous Injection of Gynocardate of Soda in Leprosy.—Sir Leonard Rogers, who has had a long experience with this treatment as well as with the subcutaneous method, and published the results of the same in a recent paper, gives a further statement. He gives a detailed description of the method of preparation of sodium gynocardate and the technique of intravenous injections. He says that the two great advantages of the intravenous over the subcutaneous method are its painlessness and greater efficiency. Several months are required to produce an improvement by the subcutaneous method, while by the intravenous method the improvement is decidedly rapid. This is a big factor, since many of the patients refused to return until any material result could be expected from the subcutaneous method, while from the shorter method results are practically sure. The most striking result is the occurrence of definite local reactions in the diseased tissues, sometimes accompanied by fever. A most decided reaction was in the greatly thickened ears of a tubercular case, in whom fever occurred for three days, with redness and swelling of the helix, accompanied by some serous discharge containing broken-down leprosy bacilli. After the subsidence of the reaction at the end of ten days the diseased tissues were softer and less indurated than before, while nodules on the face, not showing the local reaction, were also diminished in size. In two anesthetic cases, with greatly thickened ulnar nerves, tenderness and slight swelling appeared in the affected portions after intravenous injections, which has been followed by some return of sensations in previous anesthetic areas of the hand. It is thus clear that intravenous injections of the drug have produced selective local reactions in the diseased tissues with the greatest amount of infiltration of the tissues with leprosy bacilli. While the results obtained have been decidedly beneficial and no ill effects have been found to follow these reactions, yet the possibility of dissemination of the bacilli in the body must not be lost sight of. Rogers concludes from the 200 intravenous injections of gynocardate he has given that he will substitute that method entirely for the subcutaneous method.

4. Treatment of Certain Diseases of Protozoal Origin by Tartar Emetic.—Aldo Castellani, acknowledging the work of other men in this direction, states that he has experimented with it in the tropics in the treatment of yaws, kala-azar, Oriental sore, and relapsing fever. The mode of administration varies, depending on the accessibility of the patient. Tartar emetic, though efficacious in yaws, is far from being speedily curative, and gives better results when combined with other drugs, of which potassium iodide is most beneficial; mercury has practically no action. He uses what is known as the Castellani mixture, which contains tartar emetic, sodium salicylate, potassium iodide, sodium bicarbonate, and water. The active drugs in the mixture are the tartar emetic and potassium iodide, while the sodium salicylate, though not having any specific effect on the malady, seems to hasten the disappearance of the thick, yellow crusts capping the framboeting nodules. The sodium bicarbonate decreases the emetic effect and prevents to a certain extent the symptoms of iodism. Tartar emetic was first used by Castellani for the cure of kala-azar. He treated children between two and four years for this disease. One case died, due to the fact of being in a dying condition when presented for treatment. The others recovered, treatment having been given to some intravenously, to some intramuscularly, and others by oral administration. In one both intramuscular injections and oral administration of the drug was used. In the intravenous injections the usual 1 per cent. tartar emetic solution in sterilized normal saline answers well; tartar emetic in 2 per cent. carbolic acid solution is also used, especially in relapsing fever. Half to 2 c.c. is diluted at the time of injection with sufficient sterile saline to bring it to 5 c.c. and the whole injected into a vein, taking the usual precautions. For intramuscular injection tartar emetic gr. viii, carbolic acid ♏ x, glycerin ʒiij, and distilled water to ʒj. Half to 1 c.c. is given every other day intramuscularly. The oral administration is given in conjunction with the two other methods, and tartar emetic gr. v, bicarbonate of soda gr. xxx, glycerine ʒj, chloroform water ʒj, and water to ʒiij can be given one to two teaspoonfuls in water three times a day. This dose can be doubled for adults. He concludes that tartar emetic is of great efficiency in various protozoal diseases such as already mentioned, and seems to have a beneficial effect also in relapsing fever.

7. Digested and Diluted Serum as a Substitute for Broth for Bacteriological Purposes.—A. Distaso claims that this substitution allows for a more luxuriant growth of the *B. coli* group, the streptococci, the staphylococci, *B. subtilis*, *B. proteus*, and *fluorescens*, and that, compared to it, the growth on normal broth seems scanty. The medium is prepared as follows: (a) One volume of sheep or ox serum is mixed with one volume of tap water, and boiled till it becomes milky. (b) A pancreas of a pig is minced and extracted with 400 c.c. of distilled water in the presence of chloroform for twenty-four hours. (The first experiments were performed with 1 per cent. trypsin, but, for the sake of economy, afterward pancreatic extract was used, which is equally suitable for the purpose.) (c) A piece of the upper part of the small intestine is extracted in the same way in order to activate the pancreatic extract. (d) To one liter of (a) is added 100 c.c. of (b) and 10 c.c. of (c), and digested at 60° C. for the night. Next morn-

ing the flask contains an amber-colored liquid with fine flocculi floating in it. Filtered through Chardin paper, the amber-colored liquid passes through and the flocculi remain in the filter. The liquid is collected and sterilized at 120 C. for fifteen minutes, then tubed and resterilized.

Berliner klinische Wochenschrift.

September 25, 1916.

Medicine in the University of Warsaw in the Past.—Brudzinski gives a survey of medical teaching in the university during the old Polish cycle. Nawrocki, the physiologist—with particular reference to the nervous system—was active in the university from 1867 to 1874, at which period the stifling advent of Russianization interrupted his career. His was not a strong character. There remain for consideration Szczucki and Luczkiewicz. The former lived during 1786-1832. He joined the faculty of Warsaw University in 1818 as professor of medicine and pathology, and in 1825 began to deliver lectures on the history of medicine. He was a fanatical advocate of Latin for medical instruction, which interfered with his usefulness. The opposition to the mother tongue on the part of a Polish teacher shows that the Russians did not exactly originate this proscription. Luczkiewicz lived 1826-91. Not until 1862 did he join the medical faculty, and in 1864 began to teach pathology and therapy. His literary activity was marked, and he founded no less than three prominent journals, edited a cyclopedia of medical science to which he was also a contributor, wrote a text-book on diseases of the nervous system, and was also a prolific translator. No activities are mentioned after 1876, and his status in the Russianized university is not given. The credit awarded to Szczucki and Luczkiewicz is chiefly because of their broad activities in attempts to fix the status of medicine as a science and art, to write its history, to look ahead, to preserve the national traditions, and especially to determine the preliminary instruction best adapted to a medical career (propedeutics).

Uric Acid Reaction in the Saliva.—Von Noorden (and Fischer) reports briefly on this subject, and refers to the elaboration of Folin's calorimetric method for the general determination of uric acid. This rests on measurements of the blue color which arises when phosphotungstic acid acts upon uric acid in the presence of soda solution. This method has done well in blood determinations of uric acid, and doubtless our knowledge of blood urea has been considerably increased by Folin's method as contrasted with the older procedures for which large quantities of blood were required. As far back as 1889 Medicus was speculating as to the practicability of a test based on the blue color liberated in phosphotungstic acid precipitates as a means of determining the amount of uric acid and other related substances, but so far as known he abandoned this lead. The author and van Ackeren, however, used this principle in determining the presence of uric acid in the perspiration. They found a marked positive result in gouty and nephritic cases. The author then proceeded alone in tests of gastric juice and saliva, the former being invariably positive. With saliva there was a positive result in chronic nephritis and gout and a faint reaction in normal men. The announcement of Folin's special method at once caused the author, in cooperation with Miss Fischer, to take up again the old line of research. The results are thus far as follows: After the mouth has been cleansed, saliva is induced to flow by chewing movements and exercise of the tongue. Most of the fluid comes from the submaxillary glands. When to the saliva is added phosphotungstic acid and soda solution a blue color almost always appears. If the reagent and saliva are present in equal proportions this color varies between light sky-blue and deep blue. The saliva should be diluted with water and acetic acid added cautiously to get rid of the mucus. Albumin is now precipitated by boiling and the filtrate tested again for albumin with negative results. The phosphotungstic acid now gives a positive result. Each ingredient of saliva when individually tested gives a negative result, showing that some alien substance must be involved. When Folin's technique for blood urea was applied traces of uric acid were found—up to 10 mg. to 100 c.c. saliva. The highest values were, as already stated, associated with gout and nephritis. In very young subjects 1 or 2 mg. appear to be normal. The authors have as yet a number of problems to work out. It must be learned whether uric acid can be ranked as a normal constituent of the saliva.

Münchener medizinische Wochenschrift.

September 26, 1916.

Investigations into Typhus Fever.—H. da Rocha-Lima in his studies of this subject ignores completely the claims of Proescher and denies that the Plotz organism is the cause of the disease. He is concerned chiefly with the finds in the body louse, rather than with the various organisms recoverable from the infected blood. He goes back to 1910, in which year Ricketts and Wilder announced the discovery of certain polar-staining organisms in infected lice. Since that period a number of observers, including the author, have independently discovered this organism in the louse, and it has even been claimed that it has been seen in the normal louse. The author, at first with Prowazek and later by himself, found, as a result of hundreds of experiments, that certain corpuscles could be recovered only from lice which had sucked blood from typhus patients. These he named the *Rickettsia Prowazeki*. In the absence of cultures a suspension of the infected portions of the louse injected into guineapigs not only gave the same picture as when typhus blood is injected, but also conferred immunity. Suspensions of normal lice were used as controls, and proved negative. The Rickettsia cannot be made to grow on Plotz's medium, nor as yet on any other. Its nature cannot be determined, and morphologically similar formations may be seen in smears, so that the sole identification at present is the inoculation test. Since the preceding was written the author has pursued his researches and has found that when lice are allowed to feed on a convalescent typhus patient they never become infected. In other words, there is no such a person as a healthy typhus carrier. The second generation of lice which have been infected very seldom have the disease (one positive result in thirteen cases). Immediately after, and even at times during, defervescence the blood is so nearly sterile that lice are but seldom infected. At the other extreme the blood may not infect the louse until the fourth day of the disease, but this point has not been determined. The author is still at work on his subject.

Burial Injuries in the Trenches.—Orth speaks of the comparative frequency of burial by falling earth which has as results shock and severe internal injuries. The displacement of earth, masonry, and scaffolding usually results from shell explosion. Thus a man is suddenly pinned in a certain posture, in one case with knees slightly flexed. After four hours patient could no longer feel his legs and was not dug out until eight hours had elapsed. As the trench was still under fire, he could not be moved to the hospital until seventeen hours after his accident. In this case only the legs suffered, because the man was merely caught in the scaffolding. Another soldier was covered as high up as the

navel, but retained some leeway of movement in the trunk and limbs. After extrication he was found to be intact in the trunk and in the joints of the extremities, the muscles being the tissues to suffer most (this was also true of the first patient). These accidents affect chiefly the calf muscles, and the resulting contractures leave the patients crippled, with an equinus gait. Microscopic biopsy shows that the muscle undergoes a special type of injury in these cases, involving degenerative phenomena. The changes have been likened to those of ischemic contracture produced by tight bandages; but the author states that such a condition, which is due primarily to anemia, cannot explain all the phenomena. In the more severe cases there is more or less crushing, comminution, laceration, compression at a single point, with resulting necrosis and efforts at regeneration.

Le Bulletin Médical.

October 14, 1916.

The Fecal and Urinary Peril at the Front.—Bonnette states that because of the siege-like character of the present war, with troops almost stationary, unusual precautions are required for the disposition of excreta. Man is a poison to man through the presence of the latter, and no amount of preventive inoculation can take the place of sanitation. Among the precautions included under the latter head is the sterilization of water in barrels by Javelle's solution; the drilling of new wells and their supervision; the incineration or burial of filth of all kinds; the removal of dunghills; the whitewashing of habitations; the extirpation of lice and rats; the daily cleansing and sweeping of trenches and shelters; the frequent changing of loose straw and straw-beds in the subterranean posts; the supervision of privies and urinals, etc., etc. Accumulation of fecal matters furnishes the greatest peril. Some sanitarians advocate the use of long, shallow furrows around the towns, without burial. The feces, exposed to the light and air as well as to the soil, rapidly disappear through nitrification. The surface water is not polluted. Admitted disadvantages are the smell and the likelihood that torrential rains will flood the environment. Even worse is the attraction of flies with the possibility of fly-borne diseases. This disposition of feces is satisfactory in the case of troops on the march, but not in trench warfare. Portable receptacles (half-barrels) covered with wooden seats are recommended by others. As fast as these are filled they may be dumped in large pits. This idea is sound in theory but not practicable. The receptacles are never dumped until they overflow. They are provided with handles and carried about, so that they continually slop over. Moreover, should they come into common use many barrels would be taken from the regular supplies, and the price would soon go up. Much more practicable are deep pits boarded over to serve the purpose of fixed privies. The covers are perforated with holes, with hermetic lids, which serve to exclude flies. Such pits must be built far removed from wells. A shelter is constructed over them, open only in front. In loose, sliding earth the vaults should be coffer dammed. There is a great variety of construction described in this connection. Small, portable cabinet apparatus provided with tin pails may be used. The permanent vaults may vary in accordance with the number of people to be accommodated at a time, and may be constructed with the same care as privies for barracks, with brick vaults or waste pipes. The troops should be compelled to use these privies, and if, under cover of darkness, they avoid making the necessary journey must be disciplined. While much urine finds its way into the privies, separate portable tin cans with freely moving handles are provided at convenient stations which are indicated by signs. These are emptied every morning and then disinfected with cresyl or other substance. A zinc gutter placed at a slight incline along the side of a wall is also much used, the urine being carried to a receptacle. There appears to be nothing new in any of these devices and nothing peculiar to warfare.

La Presse Médicale.

October 23, 1916.

Modifications of Cardiac Murmurs Under the Influence of Ocular Compression.—Lauboy and Harvier sum up an article on the subject as follows: The effects of ocular compression vary and are at times contradictory, as far as stethacoustic translation is a guide. Nevertheless, we obtain the impression, even in the absence of graphic proof, that compression of the eye profoundly modifies the cardiac contractions. Even electrocardiography throws no light on this subject as a whole. That the reflex arc is complete in the test is certain. Compression is at once followed by a rhythmic response, and there are also certain other responses connected with the contraction of the heart. Nevertheless, the finds differ not only in different subjects but in a single individual. A phenomenon of this sort, in which every individual test may be peculiar, must, of course, disconcert the clinician and cause him to renounce it as a practical measure. The valvular lesion which provokes the murmur does not comprise the total pathology of the heart, but when due to organic disease it speaks without uncertainty, even if at times in a feeble voice. We have only to hear it to know how to make it speak and to incite it to speak. Hence the authors' test may prove of value in the individual case.

Anaphylaxis.—Soula endeavors to sum up briefly the entire doctrine to date of anaphylaxis. As originally formulated by Richet in 1902 it was a very simple affair. He was then dealing with a single poisonous substance. At present, after enormous research which has led to complicated conclusions, there is a tendency to return to Richet's primitive hypothesis. Thus the attempt to extend the production of anaphylaxis to nonproteid substances has been recalled. Richet would do away with the belief that anaphylactic reactions are specific and give rise to the formation of immune bodies. The nature of anaphylatoxin is still obscure. The phenomenon known as passive anaphylaxis shows that the primary injection induces some change in the blood. Anaphylactic shock after the second injection shows the great rôle of the nervous system in anaphylaxis. Extracts of degenerated nervous tissue readily sensibilize animals and anaphylactic shock produces peculiar alterations in the brain which renders the nerve substance toxic. After an animal has been sensibilized it shows changes in metabolism along with functional hyperactivity. A sort of proteolysis results, with increased elimination of nitrogen, while the brain lipoids are increased as a result of anaphylaxis, save when they are combined with nitrogen. Phosphorus when not combined with lipoids is increased by anaphylaxis, etc. To sum up in a few words, anaphylaxis seems to be a general reaction of the nervous system. The changes in the blood and fluids are perhaps secondary, and due to neurochemical disturbances.

Female Bleeders.—Castex mentions the extreme infrequency of hemophilia in the female. In the celebrated Mampel family, four generations of 212 individuals, there were thirty-seven bleeders, all males. In certain individual statistics, however, 10 per cent. and even more have been of the other sex. The author describes in detail a case of hemophilia in a girl of sixteen.—*Revista de la Asociación Medica Argentina.*

Book Reviews.

PHYSIOLOGICAL CHEMISTRY. A Text Book and Manual for Students. By ALBERT P. MATTHEWS, Ph.D., Professor of Physiological Chemistry in the University of Chicago. Second Edition. Illustrated. Price, $4.25. New York: William Wood & Company, 1916.

FURTHER acquaintance with this excellent treatise has served only to confirm the praise of it expressed in these columns on the occasion of its first appearance. The time that has elapsed since that date is so short that but little modification has been required in the present edition. The most noteworthy changes appear to be in the section on colloids, in the discussion of which their surface properties receive rather more emphasis, and additional references have been supplied in some instances through the book. This feature of the work is an especially useful one, and the extensive bibliographies appended to each chapter make the volume most serviceable for reference. The book is an extraordinarily complete presentation of physiology from the chemical standpoint, and cannot fail to win the approval of every reader.

VENESECTION. A Brief Summary of the Practical Value of Venesection in Disease. For Students and Practitioners of Medicine. By WALTER FOREST SUTTON, M.D., Fellow of the American Medical Association; Member Medical Society of the State of Pennsylvania; Allegheny County Medical Society; Ex-President, Carnegie Academy of Medicine, etc. Illustrated with several text engravings and three full-page plates, one in colors. Price, $2.50. Philadelphia: F. A. Davis Company, 1916.

THE first impression obtained by the reviewer refers to the complete omission of any reference to the work on the same subject by Heinrich Stern which has appeared within two years. The present book was written because there appeared to be a demand for it, according to the author. With Dr. Stern's excellent work on the market, such a demand was perhaps satisfied. The author is, however, unusually well qualified to write on the subject, and the book itself reflects throughout his great practical experience and general information.

TRATADO DE PEDIATRIA. Por el DR. ANDRÉS MARTINEZ VARGAS, Catedrático numerario por oposición de Enfermedades de la Infancia en la Universidad de Barcelona, etc., etc. Tomo I. Fundamentos de la Pediatría, Anatomía, Fisiología, Hygiene, Patología y Terapéutica de la Infancia. Barcelona: T. Vives, 1915.

DR. VARGAS is an authority on pediatrics of international reputation, and a treatise on that subject from his pen is an event in the world of medicine. This first volume of 959 pages carries the reader only through general pediatrics, and if the same thoroughness is to be maintained in special pediatrics at least two volumes of like size should be necessary to complete the work, which represents the fruit of the labors of 33 years in the chair of pediatrics in Barcelona. Over 500 pages are devoted to the anatomy, physiology, and hygiene, and nearly 200 pages to general pathology of infancy. The section on general therapeutics, 146 pages long, seems hardly necessary from the American viewpoint, as most of the material will have to be duplicated elsewhere, and is in general inferior to the preceding sections. But few pages are given on diet, although we should expect to find in this section the entire subject of infant feeding. Normal dietetics is found under physiology, but in practice it is hardly possible to consider diet for the well child apart from that of the ailing child. The several excellent monographs on child development have been utilized freely by the author, and calory feeding in infants and young children receives much attention. The very bulk and thoroughness of the work is evidence enough that the author has drawn extensively on the labors of all contemporary authorities. On the other hand, he appears to have received no assistance from collaborators, so that when finished it will stand as a monument to his life activity.

EXAMINATION OF THE URINE AND OTHER CLINICAL SIDE-ROOM METHODS (late Husband's). By ANDREW FERGUS HEWAT, M.B., Ch.B., M.R.C.P., Ed. Tutor in Clinical Medicine, University of Edinburgh; Lecturer, Edinburgh Post-Graduate Vacation Course. Fifth edition. New York: Paul B. Hocher.

THIS little book is of great practical value. It was written with the view of giving the student a short description of the methods of examining urine, blood, stomach contents, sputum, etc., and well fulfills the purpose. That part of the book dealing solely with the urine is the result of a very thorough revision of the fourth edition of Husband's book on "The Urine in Health and Disease." It is a work that would be of service to all medical students.

DIAGNOSIS AND TREATMENT OF SURGICAL DISEASES OF THE SPINAL CORD AND ITS MEMBRANES. By CHARLES A. ELSBERG, M.D., F.A.C.S., Professor of Clinical Surgery at the New York University and Bellevue Hospital Medical College; Attending Surgeon to Mt. Sinai Hospital and the New York Neurological Institute. Price, $5 net. Philadelphia and London: W. B. Saunders Co., 1916.

THIS book is a notable addition to neurology and seems destined to become a classic in the diseases and surgery of the spinal cord. Dr. Elsberg has divided his subject into three parts. He takes up first the anatomy and physiology of the spinal cord, together with the symptomatology of surgical spinal disease. The anatomy and physiology are necessarily very briefly discussed, but all the essentials are given. One of his chapter headings is rather curiously expressed: "The Normal and Pathological Physiology of the Spinal Cord." Why not "The Physiology and Pathology?" Chapter VII deals with Roentgenology of the spinal column and contains no less than 23 plates showing *x*-ray pictures of various parts of the spinal column, normal and diseased, most of them full-page plates. These are excellent examples of the radiographer's skill. There are some beautiful pictures of fractures of vertebræ, also spondylitis. One of the latter bears the remarkable caption: "The *x*-ray findings were confusing, but did not cause the patient's symptoms." This must have been a relief to the radiographer.

The second part of the book deals with operations upon the spinal cord and nerve roots. In this part the general practitioner will find what is probably the best description of lumbar puncture in the literature. This little operation sometimes has to be done by the family physician, and he is now and then embarrassed by failure; it seems, moreover, to be a difficult thing to find discussed adequately in the literature. Dr. Elsberg devotes nine pages to it, with seven illustrations, all of them helpful. His chapter on laminectomy, rhizotomy, and aspiration of the cord is excellent and, like all the rest of the book, well illustrated.

The third and largest part of Dr. Elsberg's work is devoted to surgical diseases of the spinal cord and membranes and is up to the high standard set by the first part of the book. The chapter on spina bifida is especially good. Comparatively little space is given to bullet and stab wounds of the cord and only one picture is shown, an *x*-ray of a bullet between the first and second lumbar vertebræ, and this comes from the European war. Railway spine is discussed in less than a hundred words—it had better have been left out altogether. Mention should be made of the illustrations, which are superb. There are photographs from life, diagrammatic studies, *x*-ray pictures and, best of all, a number of splendid drawings by Mr. Josef Lenhard from specimens, dissections, and actual operations. In short, all of the subjects discussed in this volume are illustrated so thoroughly as to enhance greatly their perspicuity. The book, aside from its great medical value, is a notable example of the publisher's art.

THE MEDICAL CLINICS OF CHICAGO. July 1916. Volume II—Number 1. Price $8.00 per year. Philadelphia and London: W. B. Saunders Company.

IN this first number of the second volume there are presentations from nine clinics and a contribution on oral infections by T. W. Brophy. A number of cases of diabetes are presented in a sketchy fashion but are followed by a fair discussion of the subject. The contribution on oral infection is excellent and is marked by a sane conservatism. Several of the cases presented from the clinics also involve the investigation of this subject so that its importance is well emphasized. In connection with the presentation of a case of "multiple tubercular serositis" we wish to protest that examples of infection with the tubercle bacillus should be designated "tuberculous" since the term "tubercular" has no specific application. In this same case the clinician expresses surprise that the fluid obtained from the chest should contain an excess of polynuclear cells and thinks there may be some secondary infection. The French have shown that the tubercle bacillus may at times excite a polynuclear reaction and that such infections are usually comparatively severe. There is an excellent clinic on the subject of fluoroscopy of the stomach.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held October 23, 1916.

THE PRESIDENT, DR. FREDERICK E. SONDERN, IN THE CHAIR.

The Treatment of Contracted Pelves, with Special Reference to Pubiotomy.—Dr. A. J. RONGY presented this communication in which he stated that the morbidity associated with childbirth had not been sufficiently emphasized either by teacher or by practitioner. The reduction of mortality and morbidity of childbirth depended upon our ability to properly manage the pregnant state from the thirty-sixth week of pregnancy on to the end of labor. This was especially true in primiparæ. Modern social conditions undoubtedly exerted a pernicious influence upon childbirth. By forcing a great number of young women to the industrial field early in life and compelling them to engage in sedentary occupations, their proper physical development was prevented. Among those of the higher social strata there was a tendency to overtax the nervous system either by overstudy or manifold social duties. The result was a highly sensitive nervous system, incapable of combatting the emergencies of life. These conditions had created new problems for the obstetrician, because of the inability of a large percentage of women to deliver themselves. Hitherto too great emphasis had been laid on the pelvic measurements; it was the relation of the fetal head to the pelvis that must always be taken into consideration. This clinical phenomenon must not be observed at term, when labor had already set in, but careful examination should be made from the time the fetal head was supposed to engage itself in the pelvic basin; this was frequently between the thirty-seventh and thirty-eighth week of gestation. As the head continued to grow it might dislodge itself, so that when labor was about to commence the head would be found floating above the pelvic brim. Had labor been induced at the time the first signs of disproportion appeared it would in all probability have terminated spontaneously. In the light of our present knowledge induction of labor at a period of full viability of the child was not associated with any danger to mother or child. Hospital statistics in reference to the induction of labor were not conclusive and should not be used as a guide. The average hospital patient was not intelligent, and it was often impossible to obtain the exact date of the last menstruation. As a rule, the weight of the child could be properly estimated and labor could always be induced in cases in which the child apparently weighed six pounds or more. Dr. Rongy stated that during the past few years he had induced labor in seventeen such patients, the smallest child delivered being six pounds, eight ounces; the largest eight pounds, two ounces. He felt sure that the morbidity in these cases was greatly reduced and that the lives of not a few infants were saved. Recent investigations by a number of obstetricians proved that the period of gestation varied. It was shown that only 80 per cent. of women went into labor between 270 and 280 days from the date of their last menstruation. A number of women carried beyond their computed time from one to five weeks. When this occurred the bones of the head became harder, the fontanelles diminished in size and moulding of the head during labor could not take place very readily. Furthermore, these infants did not stand labor well, between 15 and 20 per cent. dying during labor. Patients were usually advised to have labor induced when they went ten days beyond the computed date. The great problem in obstetrics was not the management of those cases in which a correct diagnosis had been made early, but those that suffered from a relative disproportion of the fetal head and pelvis in whom labor had already set in. This class of cases were commonly known as the borderline cases. In over 80 per cent. of these patients delivery by forceps would be comparatively safe if they were given the test of labor, but in a small percentage of cases the head failed to engage, notwithstanding strong uterine contractions lasting twenty-four hours or longer. Labor in such instances had reached a stage in which cesarean section as a method of delivery must be eliminated, the mortality of cesarean section in such cases being more than 20 per cent. These patients must be delivered by the vaginal route, either by high forceps, pubiotomy, or craniotomy, depending upon the condition of the child and the parity of the woman. High forceps, except in rare instances, must be eliminated from the category of modern obstetrics. This procedure was unsurgical and its fetal mortality in the hands of the most competent obstetricians over 50 per cent. The invalidism it induced in the mother was too great. Secondary plastic operations on the vault in such cases was almost impossible, because of the extensive cicatrization of old lacerations. High forceps might be resorted to in multiparæ, who suffered from simple flat pelvis in whom the vaginal vault was relaxed, and in such cases they tried to engage the head in one of the oblique diameters. The only indications for craniotomy were in cases in which the child was dying or dead, and in cases in which attempts at high forceps delivery had failed after a number of applications. Craniotomy ought never be performed when the child was fully viable. Cases brought to the hospital after having been in labor from twenty-four to thirty-six hours, with a history of having been examined frequently, presupposed infection and one was compelled to resort to the method which was least dangerous for the mother, and at the same time offered the greatest margin of safety to the child. For this class of patients pubiotomy became the operation of choice. Pubiotomy should never be performed when the diagonal conjugate was less than 7.5 cm., or when the disproportion of the head and pelvis seemed to be too great. The sacroiliac joint was always injured when the separation of the cut ends of the bones was too great. Cesarean section should be made the operation of election, pubiotomy the operation of emergency. Pubiotomy had the advantage over any form of Cesarean section that the patient was not left with a scar in the uterus, which might permanently weaken the uterine wall. The writer's experience with pubiotomy consisted of twenty-eight cases performed at the Jewish Maternity Hospital during the past seven years. This was the second largest series in this country. This operation was never undertaken unless the head was partially engaged or showed a tendency to engage, the cervix fully dilated and fetal heart sounds regular and of good quality. That the field for this operation was small was demonstrated by the fact that it was only resorted to eighteen times in over 9,000 indoor cases. Of the twenty-eight mothers, twenty-seven were discharged from the hospital between the fourteenth and forty-eighth day, the average stay being twenty-one days. One mother developed gangrene of the toe on the tenth day and finally died. All the children were born alive, but not all survived. Eight died at times varying from three hours to twenty-four days after birth. The chief objection to pubiotomy was the complication that might be encountered during its performance. It should never be undertaken by one who had not had proper training in obstetrical surgery. The danger of injury to the bladder and urethra was very great. In only one case, however, in this series did sloughing of the bladder wall occur. Communicating tears of the vagina occurred in six cases, but were readily repaired. Hemorrhage and oozing from the cut ends of the bones was always controlled by pressure and packing. The gait was somewhat impaired temporarily in six patients. Injury to the sacroiliac joint could be avoided if the thighs were properly held by two assistants in order to prevent too much separation of the cut ends of the bones. The partly open method of Doderlein was followed in twenty-one cases, while in the remaining seven cases the open method was used. Dr. Rongy presented a brief history of these cases, from which he said it might be observed that nearly 60 per cent. of the patients were multiparæ, whose previous labors were complicated and resulted in the death of the children. The vaginal vault in these cases was lacerated and relaxed. The Gigli saw might also be used as a prophylactic measure in cases of breech extraction, in which some difficulty was expected in the delivery of the head; the bone could be quickly severed in order to permit the head to pass through.

Dr. GEORGE L. BRODHEAD said that Dr. Rongy had brought up many interesting points. He said there was practically no danger in the induction of labor, and while he thought that the procedure was comparatively free from danger, one might get a prolapsed cord or malposition. Craniotomy was a comparatively safe procedure so far as the mother was concerned, but it had been abandoned in cases in which the child was viable and in good condition. By a careful examination

they could determine the size of the child quite accurately, but in fat women, and where there was hydramion this could not, as a rule, be done. It was undoubtedly true that some women did go beyond the normal period of gestation, and in these patients the advisability of inducing labor should be considered. They did not induce labor now as often as they did ten years ago. They had found that with proper diet the patient might be able to go to term, but in some instances labor must be induced at the eighth month. He could not agree with Dr. Rongy that labor should always be induced when the patient apparently went ten days beyond term. The question was simply one of relative proportion between the head and the pelvis. The high forceps operation was a dangerous procedure, especially in primiparæ, and must be undertaken with a great deal of caution. Craniotomy should not be considered if the child was in good condition, and one hesitated to do a Cesarean section in possibly infected cases. Dr. Brodhead thought that Dr. Rongy was to be congratulated upon the results in his series of cases and his figures were in accord with those of Dr. Williams of Baltimore, but personally he felt that, taking into consideration both the morbidity and mortality to mother and child, they would get better results with the extraperitoneal Cesarean section than with pubiotomy, but at the present time they were not in a position to state with authority which of the two operations should be performed.

Dr. GEORGE W. KOSMAK said that he had performed pubiotomy in four cases, the last three years ago. Since that time he had not seen a case that offered the proper indications for this operation. In three of these cases they obtained living children; the fourth case was operated upon after the application of the forceps and there occurred a submucous rupture of the sphincter ani. This was not discovered until after the woman got up and found that she had no control over her bowel movements. One of the great problems in obstetrics was the borderline case, in which the proper diagnosis had not been made or where there had been a lack of judgment on the part of the physician. In these cases the women were formerly allowed to go into labor and to do the best they could. If the child could not be delivered, craniotomy was resorted to, but fortunately that time was past. Dr. Kosmak was glad that Dr. Rongy had taken such a conservative view with reference to the scope of pubiotomy. This was a procedure that should not be undertaken unless the proper means were at hand for carrying it out in a correct manner. It was a good thing to wait until the head became engaged. As to permanent enlargement of the anterior-posterior diameter of the pelvis as a result of pubiotomy, he had made repeated examinations after this operation, and they failed to show any increase in this diameter. He had also found that bony union might take place. He had come to feel that the vaginal examination played a small part in infection and he had seen Cesarean section done where no vaginal examination had been made, and the woman became septic. He did not believe that the infections were due to the vaginal examinations altogether. If the infecting organisms were in the vagina then they probably got infection.

Dr. RALPH WALDO said that a few years ago this operation was quite popular. Dr. Rongy's paper brought out clearly the indications for pubiotomy. It was indicated for the emergency type of patients and was not an operation of preference. When the head was engaged and there was apparently a slight disproportion between the head of the child and the maternal parts, it might be advisable to resort to pubiotomy. Pubiotomy was indicated in a very small percentage of cases.

Dr. A. J. RONGY, closing the discussion, said that he did not come to advocate any single method of delivery, but only to attempt to show how better results might be obtained in cases of labor if they were properly watched and if indications and contra-indications for a given procedure were carefully studied. He wished to bring to the notice of the medical profession that if a woman was carefully observed from the thirty-sixth week of pregnancy to the end of labor, that many radical operative procedures would be avoided. It did not seem fair and reasonable to the average pregnant woman to neglect her during the most delicate period of her life. The usual practice followed by a great number of physicians to examine the patient once at the time she called on the doctor to make arrangements for the delivery could not be too strongly condemned. In answer to Dr. Kosmak he said that in their cases they had no permanent enlargement of the pelvis after this operation and that the union was fibrous in two-thirds of the cases. He did not wish to be misunderstood on the question of induction of labor. He did not perform it unless signs of disproportion of fetal head and pelvis began to appear. Induction of labor could be used as a prophylactic measure after the thirty-sixth week of pregnancy only, otherwise the life of the child was endangered.

Notes on the Diagnosis of Abdominal Distention in Children.—Dr. LOUIS FISCHER read this paper. (See page 932.)

Dr. HENRY KOPLIK said that he saw a good many cases of distension and usually these were referred to the pediatrist only when the diagnosis was difficult. In a case of intussusception with distension, it was difficult to make the diagnosis, because when the distension developed there was no tumor, or the tumor disappeared, and then they must make the diagnosis not only on the abdominal but on the general condition. The cases of distension one met with in connection with pneumonia were puzzling, and it was sometimes difficult to say whether the case was one of peritonitis or of lobar pneumonia. Abdominal distension sometimes decided the issue of a case of pneumonia and was sometimes the final symptom. The pneumonia might not be of great extent and the physician thought he was dealing with a peritonitis; at the same time they might have a pneumonia and a peritonitis. The causes of distension was sometimes very obscure. The diet might have something to do with it, and also the diaphragm where there was a local inability of the gut underneath the diaphragm to expel flatus.

Dr. MAX EINHORN said that the most cases that he saw in children had to do with partial chronic intestinal obstruction. If they saw a stiffening of the bowel or a peristaltic wave then the diagnosis was easily made. The distension might be due to a tuberculous peritonitis and, in some cases, was probably due to intestinal fermentation.

Experiences in Bone Surgery in France.—Dr. FRED H. ALBEE spoke on this subject, which he illustrated with lantern slides. He said that at the present time the chief feature of the war was the surgery of the bones, tendons and nerves. It took an immense amount of time for these septic war wounds to clear up under their older methods of surgery. He hoped to emphasize the fact that this was not the case with the Carrel-Dakin method of sterilizing wound. In many of the war wounds there was a great amount of lost tissue, and when such wounds were treated by the Carrel-Dakin method, the results were most remarkable. The granulations were a deep, healthy red, the edges of the wounds were not inflamed, and the skin was not indurated or sensitive and would slide about the wound very readily. These wounds looked different from any he had ever seen. When a case came from the front the first step was to look for foreign bodies and to localize them. For this the fluoroscope was used and the foreign body charted. The surgeon then went in and took out the foreign body and all the lacerated tissue was trimmed away carefully. Then the fenestrated rubber tube, either covered with gauze or not, was fastened in the wound, and sutured or not sutured. The tubes were laid so that the gauze might be kept saturated with the solution all the time. The reservoir was so arranged that by turning a stop cock the solution could be fed into the tubes. Just enough was allowed to flow in to keep the gauze saturated to the proper degree. A thick coat of yellow vaseline was applied around the wound. In some wounds a system of tubes was used. If the wound was a stump, it was soaked in the solution. Bacteriological examinations of the wounds were made every second day, taking a smear from the worst part of the wound. When only one or two bacteria were found in the microscopical field, the wound was closed. The microscopical appearance of a wound was not to be trusted as an indication of the time it might be closed. By this method of treatment the percentage of primary unions had been over 95 per cent. This method of treatment was applicable to compound and communited fractures as well as to flesh wounds. Dr. Albee demonstrated with the aid of motion pictures his method of putting in bone grafts, which was so effective in restoring limbs from which large portions of bone had been lost. These bone grafts were being used a great deal in jaw surgery.

Dr. H. H. M. LYLE showed colored photographs of wounds that were treated by the Carrel-Dakin method and said the point he wished to make particularly clear

was that this treatment was not merely the employment of a certain antiseptic, but a plan consisting of an immense amount of detail. There was no pus in these wounds and there were no inflamed edges. By the older methods it took about three months, sometimes much longer, to heal up a compound fracture; by this method most of these wounds were healed in from twenty-eight days to six weeks. Out of 450 cases treated by this method and sutured up, there were only six failures and these were not bullet wounds, but the more severe war wounds. Depage reported 137 cases with two failures, eighty compound fractures without a drop of pus. Pus had been practically abolished in that ambulance.

Dr. Samuel Lloyd said that they were all learning and he felt that it was well to have these things brought home to them, because they might have to use them and possibly sooner than they expected. They sent nurses to the Mexican border who wrote that they had 550 patients in the hospital. Only a very few of them were paratyphoids and dysenteries, the rest were gun-shot wounds and fractures. The fractures were the result of riding untrained mules and horses, and the gunshot wounds from trying to learn the use of the new automatic pistols.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held April 25, 1916.

Dr. George W. Kosmak in the Chair.

Degenerating Fibroid with Marked Toxemic Symptoms.—Dr. Solomon Wiener reported this case and presented the specimen, which consisted of the uterus with adnexa and a large submucous fibroid. In the fresh state the uterus was the size of a five months gravid organ and the fibroid was as large as a grape fruit. The tumor was held under great tension. On cross-section it showed marked edema with softening. It was deep purple in color and contrasted strongly with the pink color of the uterine musculature. It showed irregular areas of deep red, yellowish, and gray discoloration. The pathological report was fibromyoma showing edema and beginning degeneration. The patient from whom this specimen was removed was forty-five years of age, and had had six children and one miscarriage. A year before she had been operated on for acute appendicitis. For about two months before coming under the writer's care she had been bleeding every two weeks, the amount of blood lost being about as much as at the normal menstrual periods. About four days before her admission to the hospital she had been seized with severe pain beginning in the left lower abdomen. This persisted, and later radiated to both groins and sides. The day before operation the patient appeared very ill, much more so than was indicated by her pulse of 120 and temperature of 100.8° F. Physical examination showed marked tenderness over the lower abdomen with voluntary rigidity. Bimanually a large mass could be felt filling the hypogastrium and extending from the symphysis half way up to the umbilicus. The mass was firm, tender, and somewhat elastic. The uterus could not be felt separately from it, and the cervix apparently moved with the mass. Because of the thickness of the abdominal wall an absolute diagnosis could not be made. However, the indication for operation was clear. A simple supravaginal hysterectomy was performed. The patient required stimulation while on the table and for twenty-four hours afterwards. Her subsequent convalescence was uneventful. The chief point of interest in the case was the marked toxemia with the relatively slight degenerative changes in the tumor. The submucous character must have been the reason for the marked absorptive symptoms and toxemia. This class of tumors must be regarded as truly urgent, for the moment that infection of degenerative changes occurred the patient's life was endangered.

Examination of Semen with Special Reference to Minor Defects.—Dr. William H. Cary of Brooklyn read this paper. He said the frequency with which male sterility resulted from the lesser degrees of seminal defect was not realized, nor were the pathological conditions of the semen upon which sterility depended well understood. Proof of this was found in the literature which was very scant on this subject, especially in this country where the examination and study of semen had been much neglected. This might have been due, in part, to the unpleasant nature of the work, but more particularly to the difficulty encountered in securing properly collected specimens for examination. While always eager to claim his share of glory in the production of his offspring, a man was most reluctant to share any responsibility for failure. The study of this subject had been seriously handicapped by the almost universal assumption on the part of the laity that in the event of a childless marriage the wife was wholly responsible. It was not difficult to understand why such an erroneous impression had prevailed so long. In the male, ability to copulate and the normal ejaculation were regarded as sufficient evidence of his power to procreate; while in the female, the process of ovulation was an obscure one and, therefore, more readily suspected to be at fault. It was significant that the more study and observation this subject received, the higher was placed the percentage of male sterility. In countries where venereal diseases were more prevalent than they were here, observers had placed the proportion of cases in which the male was at fault at a surprisingly high figure. Most American writers place the male responsibility at from 15 to 25 per cent., which Dr. Cary believed to be a too conservative estimate. In cases of absolute sterility, the number in which the husband was at fault must be high, at least 1 in 3, for the sexual hygiene of the woman before marriage was usually better than that of her mate, and there was no real evidence to prove that the physiological processes involved in the production and delivery of the healthy ovum were more complicated or less often successful than was the secretion and emission of normal semen. At the present time it still seemed advisable to seek first the cause of a sterile marriage in the female. It must be stated, however, that to conduct long and exhaustive gynecological treatment and ultimately to offer a hopeless prognosis without having investigated the reproductive powers of the husband was neither fair nor scientific. In general the fertility of the semen depended upon the presence of (1) mature living spermatozoa (normal cells), and (2) a normal secretion to maintain the vitality of the cells until such time as they meet the ovum. The opportunity to secure the semen for examination presented itself oftenest to the gynecologist, and he should be equipped to make the examination as a routine part of the investigation of sterility. The most satisfactory arrangement for an examination was made by conveying the necessary implements to the home of the patient and making the observations immediately after conclusion of intercourse. The most common cause of sterility in the male had been formerly attributed to the absence of spermatozoa in the semen, the most common cause of which was gonorrhea. In a very large proportion of the cases this condition resulted from a unilateral or, more often, a bilateral epididymitis. Another cause sometimes responsible for the disappearance of spermatozoa from the semen was exhaustion due to abnormal demands upon the sexual organs. The use of the *x*-ray had figured prominently as a cause of azoospermia. The fecundating power of the semen might be greatly lessened by the presence of many malformed spermatozoa. Such cases were not rare. Inasmuch as it was not determined definitely at what time the ovum was freed from the ovary, and in view of the physiology of ovulation, it was obvious that the successful completion of the process of fecundation required that the spermatozoa should not only have the power to migrate to the interior of the uterus or tube, but that their vitality must be sustained until the ovum was presented. To this end Nature produced thousands of fecundating cells that one might survive to perform its complete function. Under normal conditions the vitality of the spermatozoa was remarkable. At the same time they were extremely sensitive, perishing promptly in tap water and in faint lactic acid media, or under other minor changes in their environment. One of the less common forms of seminal defect was that resulting from too great density of the semen, in which case their motion is sluggish and of short duration. Of still rarer occurrence were those cases in which the fertilizing elements of the semen were destroyed by the presence of pus and blood in the semen. The available data justified the assertion that pus was destructive to the evolution and life of the sperm cells, and this probably explained in part the sterility of women who suffered from endocervicitis and endometritis. There was some difference of opinion as to the effect of blood upon the seminal elements, but the writer's observations showed that spermatozoa would live four or five hours in blood which corresponded to the observations of Robin, while

Dieu had shown that when blood had mixed for some time with the contents of the seminal vesicles, the sperm cells were reduced in number or were entirely absent. The treatment of male sterility had been less studied and had received less attention than any other part of the subject. Many of these cases could be helped; others were hopelessly incurable. If it was suspected that the cause of sterility was to be found in the husband a detailed history must be secured. And if it was found that the patient was sterile, his case might be classified as coming under either one of the two groups *impotentia cocundi* or *impotentia generandi*. Only the latter group was under consideration. The treatment of some cases consisted chiefly in regulating the sexual life, correcting unwholesome habits, or adopting measures to check involuntary seminal loss. Sterility might be due to defective semen dependent upon a debilitated condition incident to an overactive business career, and might be cured by proper regulation of life and habits of the patient. Sterility due to obesity might be cured by treatment directed toward lessening the obesity. Azoospermia resulting from chronic inflammations or exudates due to a remote gonorrhea was very unsatisfactory to treat; these cases would improve and might be cured if placed in the hands of a genitourinary specialist. Azoospermia, when present in patients with a negative venereal history, should excite a suspicion of some chronic constitutional disorder. It must not be forgotten that absence of spermatozoa might occur in such rare conditions as cryptorchidism, congenital absence of the testes, congenital deficiencies of the excretory passages, and malignant diseases of the genitals. When dependent upon such conditions the azoospermia sterility was absolute and permanent. Tubercular disease of the testes and syphilitic orchitis rendered the prognosis very unfavorable. Dr. Cary illustrated his paper by lantern slides showing forms of normal spermatozoa and various types of deformities.

Dr. Max Hühner said he did not sympathize with the methods of collecting the specimen which Dr. Cary employed. It meant more work, was rather complicated, and was not as accurate as taking the specimen from the cervix. The condom specimen might be perfectly normal and the sterility due to hypospadias, epispasias, or the fact that ejaculation occurred before the penis entered the vagina. He simply had the woman come to his office after coitus and took a specimen from the cervix by means of a platinum loop, and if live spermatozoa were found one could tell right away whether the secretions of the vagina were harmful or not, and whether the husband was all right. He had found that the presence of pus in the semen was not an absolute test as to its power to fecundate. He had found that they were not killed in the presence of gonorrhea, and a man with gonorrhea might impregnate and give gonorrhea at the same time. The test for viability was not an absolute test either, because the semen under the microscope was not in its natural condition, but these same spermatozoa taken from the vagina after two or three days might still be active, while they might die in a very short time under the microscope. Nothing was known about the viability of the spermatozoa in the Fallopian tubes. In every case in which the tubes and ovaries were removed, we should find out when the last coitus had taken place and make an examination for living or dead spermatozoa. In this way we might get some information as to how long it took the spermatozoa to reach the tubes.

Dr. Henry C. Coe expressed the opinion that the profession had been entirely too ready to resort to curettage in cases of sterility and to make positive promises as to the success of this procedure, and said that he was opposed to subjecting a woman to an operation for sterility until the condition of the husband had been determined. The suggestion that an examination of tubes that had been removed should be made in order to determine the possible presence of spermatozoa and the length of time during which they retained their vitality was a very good one, and he did not think this had been done.

Dr. Thompson T. Sweeny said he was interested in this subject because he had a large clinic of Jewish women to whom sterility was a disgrace. In treating them for sterility he did so only until any pain they had might be relieved or any tubal condition that was perceptible to the touch was relieved. It was often difficult to get a specimen of semen from some husbands, due to their ignorance in believing that such a request was a reflection on their manhood. It had been a point of great interest to him to find that men who appeared absolutely healthy or powerful or robust and who had never had gonorrhea, mumps, or any affection, were sterile. In collecting a specimen of semen he had made use of the condom tied and dropped into a vaseline bottle containing water at 100°. In cold weather this bottle was wrapped in flannel and paper to retain the heat. When the husband was intractable he had the wife come to his office after coitus and took a specimen from her vagina. Many women had an occlusion of the tube sufficient to prevent pregnancy, but too slight to be detected by digital examination. Such a condition frequently yielded quickly to local treatment.

Dr. William H. Cary, in closing the discussion, said he had not considered the subject of impotence except to refer to it as included in the general subject of sterility. Dr. Hühner, in speaking of methods of examination, had taken an entirely erroneous viewpoint. In taking a specimen from the vagina he might find the spermatozoa dead, having been killed by the hyperacidity or other chemical changes in the secretions of the vagina; whereas, if he had taken the specimen directly from the male it might have shown normal vitality. Therefore, a specimen from the vagina or cervix was not a fair test of the fertility of the male element. Dr. Cary said he also had been interested in finding a condition of sterility in powerful men with a negative venereal history. He had found a condition of sterility in clergymen, brokers, and lawyers who were carrying heavy responsibilities, and had found that sending them away on a prolonged vacation and giving them a chance to recuperate improved their semen, and in a number of instances their wives had ultimately become pregnant.

Congenital and Acquired Retropositions of the Uterus, Their Differentiation and Relative Significance. — Dr. Arnold Sturmdorf presented this paper in which he emphasized the fact that our fundamental conception of uterine poise, normal and abnormal, had not as yet attained to any concrete finality, and barring the occasional allusion to the existence of congenital retrodisplacements and their probable dependence upon conditions of general visceroptosis the clinical significance of such displacements, and their diagnostic etiological and therapeutic contrast to the acquired form found no elucidation in the literature of the subject. The wide diversity in the nature of the two conditions presenting practically identical symptoms demanded their clinical differentiation, and such differentiation necessitated a differentiating factor of pathognomonic constancy. In seeking to establish such a pathognomonic factor it was necessary to recognize that the malposition did not represent simply a congenital uterine retroversion but a congenital retroversion of the entire pelvis, with resultant dystopia of its entire contents. Dickenson and Truslow had characterized these cases as the "gorilla type," in which the pelvis was rotated backward and downward, the plane of its inlet making with the horizon an angle more acute than that of the normal type. This flattening of the sacrovertebral angle was regularly evidenced by a corresponding obliteration of the normal lumbar curve, and the measure of its resultant approximation to the vertical constituted a pathognomonic index in differentiating congenital from acquired retrodisplacements of the uterus. In order to obtain this measurement the patient, with back exposed, assumed her natural standing attitude, while the edge of an ordinary 18-inch desk ruler held vertically in contact with the most prominent spinous processes of the dorsal and sacral convexities spanned the intervening lumbar hollow. The distance in millimeters from the deepest point of this hollow to the edge of the ruler represented our index. In an extensive series of observations the index ranged from 12 mm. to 45 mm. An excess of 45 mm. indicated the pathological lordosis and was of more obstetrical and less gynecological importance. An index of 30 mm. made the extreme minimum compatible with normal anteversion of the uterus; from 25 mm. down, the existence of congenital retroversion might be positively predicted in nearly every case prior to its bimanual verification, and this regardless of multiparity and the other complicating factors that obliterated the differentiating criteria. A uterus congenitally retroverted before conception would invariably resume its retroverted position after delivery, when the demonstration of a minus index would reveal the congenital nature of the displacement and exonerate the accoucheur. An application of the lumbar index would establish over one-half of all retroversions, complicated and uncomplicated, as congenital, instead of one-fifth as hitherto accepted. In an abdominal cavity of normal skeletal con-

figuration a true vertical in contact with the sacrovertebral promontory would impinge against the inner surface of the symphysis pubis at its lower border; hence, accepting the principles of deflecting planes which the writer had previously demonstrated as fundamentally applicable to this problem, it followed that every deviation from the normal in the angle of the deflecting surfaces presented by the sacrum and the symphysis must induce a corresponding deviation in the direction of the intraabdominal pressure with resulting visceral displacement, or, in other words, every abnormal pelvic tilt created a corresponding uterine tilt. The upward and backward rotation of the pelvis elevated the pubes and lowered the sacrum, which latter, thus forming the posterior instead of the upper wall of the pelvic cavity, necessarily altered the direction of the sacrouterine ligaments, their horizontal pull tending to hold the uterus backward against the depressed sacrum instead of suspending it from above as in the normal. Furthermore intraabdominal pressure inadequately deflected thrust the loose intesinal coils into the pelvic cavity and against the anterior surface of the uterus, crowding it into the space of least resistance offered by the sacral hollow. The continuous attitude was a strain on the sacroiliac joints, the erector spinæ and iliopsoas muscles which induced pelvic symptoms that simulated and were generally attributed to retroversion. Since compensatory retroversion was a compensatory necessity it followed that any procedure which converted such a retroversion into an anteversion converted a compensated into a decompensated visceral equilibrium within the pelvic cavity. The aim of the gynecologist in these cases should be to eradicate all coexisting intrapelvic complications, thus converting the complicated into an uncomplicated case. Hence these cases should be treated on purely mechanical and orthopedic principles. During and complementary to such treatment a properly moulded pessary should be inserted, not with the object of anteverting the uterus but to act as an artificial ledge at the deficient sacral promontory in the deflection of intraabdominal pressure. This would afford much relief during the long period of mechanical treatment.

Dr. Dougal Bissell said he had never been able to determine just what congenital retrodisplacement was. He conceived it as dependent upon structural defects as real as those of congenital prolapse of the entire uterus. As to the difference between congenital and acquired retroversion it might be assumed that in the congenital type the uterus had never assumed the anterior position, while in the acquired type it might be assumed that the uterus had occupied the anterior position at some time. Dr. Bissell said he had never recognized such a case as one of congenital retroversion except in one instance—that was a case that really fitted in with his idea of congenital retroversion. This young woman had a backward displacement of the uterus and a prolapsed double kidney which filled the entire right side of the pelvic cavity to such an extent that it would have been impossible for the uterus to have assumed the normal position. In this woman he replaced the kidney but neglected to employ operative measures to correct the retroflexion. A pessary was worn for some time but did no good. Later the woman married, conceived, and was delivered of a normal child.

Dr. George Gray Ward said he had not been present to hear the paper, but felt that when one had a case of retrodisplacement he must not assume that it was necessarily the cause of backache, for backache, as they all knew, might be associated with faulty posture, irrespective of the position of the uterus. As to the congenital type of retroversion he thought that it was not common and that when one did find it there were not many symptoms associated with as a rule as one found in retroflexion or retroversion with subinvolution following abortion or labor. In congenital retroversion one might find a short anterior vaginal wall and a faulty implantation of the cervix, and the position of the cervix could not be corrected without correcting the short vaginal wall by an operation such as had been suggested by Dr. Reynolds of Boston. All of these cases must be studied individually and the type of operation chosen which met the requirements of the individual case. Too often a man had a fad, some particular operation which he applied to all cases of retrodisplacement. If the uterus was freely movable and could be replaced the Alexander operation was suitable, especially if the woman had borne children and the ligaments were well developed. The Webster-Baldy operation was suitable where there was an adherent retrodisplacement with denuded surfaces on the posterior wall of the uterus. Here the round ligaments might be used to cover up the raw surfaces. The same might be said of the Coffey operation when one had a denuded surface on the anterior wall. When the round ligaments were elongated and in good condition Dr. Ward said he did a Simpson operation; this left no loop where the omentum or intestine might become strangulated. Dr. Ward said he did not believe in using the round ligaments to support a straight prolapse. Nature did not use muscle for this purpose, and the round ligaments were muscles. The broad ligaments and the uterosacrals supported the weight, and the round ligaments simply limited the backward excursions of the uterus. It would seem from the anatomical construction of the pelvic organs that woman was never intended to walk upright.

Dr. John Van Doren Young said that a clear concept of a deformity was the first requisite for its correction. One did not have to listen long to this discussion to learn that a clear concept of the displacements under consideration was lacking. Dr. Sturmdorf had cleared the horizon and given some basis for further work along this line. In a series of 6,224 cases of pelvic conditions which the speaker had recently reported over 2,300 showed some type of retroposition of the uterus. This gave one some idea of the importance of this form of displacement. Dr. Young said he had listened closely to Dr. Sturmdorf's paper and he did not understand his statement of congenital versus acquired retroversion. Each one who discussed this subject should say just what he meant by the term he used. About 90 per cent. of our trouble in discussing this subject was due to a misunderstanding of terms, and the large number of operations were due to the faulty conception of the deformity they were trying to correct. From the standpoint from which Dr. Sturmdorf had presented this subject it opened up a wide field; it showed why operations had so often failed and why the gynecologist needed the help of the orthopedist in the correction of these displacements; it showed why with the same technique one operator failed and another succeeded. Dr. Young said he disagreed with Dr. Sturmdorf on one point, and that was that a retroposition of the uterus, a mechanical pathological retroversion with retrocession of the fundus, antrocession of the cervix and descensus of the whole uterus was cured by a pessary or correction of body poise; these methods had failed in every patient he had ever seen. Dr. Young believed we should resort to operative interference after the pessary had failed. Twenty-five years ago they talked nothing but pessaries; within the last five years nothing but operations, and now the pendulum had swung the other way. Dr. Young asked whether a mispoised skeleton might not be acquired as the years passed not by evolution but by a lack of education and development.

Dr. Leroy Broun said it was difficult to fully appreciate the various steps in Dr. Sturmdorf's argument without reading his paper carefully and at leisure. He wondered whether Dr. Sturmdorf meant to include among congenital restroversions conditions associated with a general ptosis of other organs; in the latter condition it would be useless to operate on a displaced uterus when there existed a ptosis of other organs, as of the digestive tract and kidneys. Dr. Broun said he would not operate for retroversion alone when other ptoses were present. When there were symptoms of retroversion, backache, etc., not dependent upon an ill-fitting corset, or in cases in which sterility supposedly was due to retroversion, he obtained successes from operative procedures oftener than he got failures.

Dr. Samuel Bandler said that if Dr. Sturmdorf's method of getting this index would in the future show them the cases of congenital retroflexion without it being necessary to make a rectal and vaginal examination he would have added greatly to their gynecological knowledge. If they had practised gynecology and failed to recognize a position of the body as typical of malposition of the uterus, such as that to which their attention had been called, they had at least now been shown the A, B, and C of uterine displacement. It did not seem to him that it had proved any point. Dr. Bandler said that for a long time he had used the term retrodeviation to signify a simple retroflexion or retroversion. A retrodisplacement on the other hand was a change from the normal due to a shortening of the uterosacral ligaments. Lf Dr. Sturmdorf meant a retroflexion he would discuss the subject from that standpoint, but what was wanted was the right name for these conditions. The type of retrodeviation that took place in a nulliparous woman was entirely different from that in a woman after her first labor. This was a reason why the practice of ob-

stetrics was of value to the gynecologist, and explained why a large number of operations for retrodeviation failed. They all knew that labor was responsible for the acquired retroflexions. Whether their efforts at correction of the retroflexion succeeded or not depended on the ultimate position of the cervix. When the cervix was low down, it was natural for the fundus to fall backward, and corrective or operative measures must lift up the cervix and replace the fundus forward. In a large number of congenital retrodeviations the anterior vaginal wall was extremely short. These were the hardest cases to replace with a pessary, because the pessary could not put the cervix high up, and as a consequence the fundus fell back, because the short vaginal wall would not permit the uterovesical ligaments to stretch. The uterosacral ligaments were too loose, and here, if one did an Alexander-Adams operation and shortened the round ligaments, the result was that the uterus simply doubled on itself and would not stay in place. The proper thing to do in such a congenital case was to open the abdominal wall and to place the uterus in such a position that the fundus could be fastened to the abdominal wall, even three-fourths of the way to the umbilicus and then the doubling up would not occur as in the Alexander operation. With so many different forms and causes of retrodeviation Dr. Bandler doubted very much if the acceptation of one sign was going to help them very much in a practical way.

Dr. T. Thompson Sweeny said it was generally conceded that the uterus was supported by the uterosacral and uteropubic ligaments. It was evident that in the erect position nature had suspended a body from its base. On all fours it was inconceivable that a woman could have a retroversion, since in that position the uterus was suspended from its apex. Dr. Sturmdorf's paper explained many of the problems of retroversion. One woman physician in Chicago, after studying sixty cases of retroversion without symptoms, concluded that this was not necessarily an abnormal position. These were probably congenital cases in which the pelvic circulation adjusted itself to the malposition. Retroversion with inflammation produced symptoms only when the position interfered with the return of the venous blood. Dr. Sweeny said he found a large number of retroversions in young women which produced no symptoms, and had made it a practice to let them alone, making no effort to correct a condition to which the pelvic circulation had adjusted itself.

Dr. Sturmdorf, in closing the discussion, said that the intimation that he advocated the use of the lumbar index to the exclusion of direct examination in the diagnosis of uterine retroversion was an unwarranted perversion of his position. He had stated distinctly that "with an index of 25 mm. or less, the existence of congenital retroposition might be predicted in nearly every case, prior to its bimanual verification." The general trend of this discussion established one fact if nothing more, that congenital retroversion was known in name only. It was this fact among others that prompted and justified his present communication. Dr. Sturmdorf said he had utilized the general term retropositions advisedly, dividing the cases into complicated and uncomplicated, because such a division was more conducive to clarify than the textbook classification of versions, flexions and retropositions, adherent, nonadherent. He had distinctly stated that the usual operative measures applied to uterine retroversions and retroflexions were applicable to the acquired but not to the congenital form of uterine displacements. He was not discussing the relative values and indications for retroposition operations, but the recognition and differentiation of a class of retropositions in which any and all operative intervention was imperatively contraindicated. The method and means advocated for this differentiation were so simple that the verification or refutation of the statements he had made were within the reach of all.

Radical Extirpation of the Lacrymal Sac.—Carrases has performed this operation 110 times, using the Seidel technique. The principal factor in this operation is the avoidance of hemorrhage, which must be controlled sufficiently to permit of a deliberate and careful dissection. The addition of adrenalin to the novocaine is necessarily of great value, and later pledgets of gauze soaked in some local hemostatic may be used as occasion arises. Save when hemophilia is present a good hemostasis is possible before the actual dissection of the sac.—*Revista de la Asociación Medica Argentina.*

Miscellany.

A Student and Victim of the Plague.—In a recent issue of *Health News*, published by the U. S. Public Health Service, an account is given of John Daniel Major, a seventeenth century student of the plague. He was born August 16, 1634, in Breslau, and was a physician and naturalist of no mean ability. Bitten early by the wanderlust, he studied at Wittenberg, took courses at many of the schools in Germany, and finally went to Italy where he received the degree of doctor of medicine at Padua in 1660. Returning to his own country, he resided for a short time in Silesia, and in 1661 married at Wittenberg, Margaret Dorothy, a daughter of the celebrated Sennert. The following year, his young wife was stricken with plague and died after an illness of eight days. Distracted by his loss, Major wandered up and down Europe studying plague wherever he found it in the hope that he might discover a cure for the disease which had bereaved him. Spain, Germany, France and Russia were visited by him. He settled in 1665 in Kiel, where he was made professor of botany and the director of the botanical gardens. He made frequent voyages, however, always in quest of the remedy for plague. Finally in 1693, he was called to Stockholm to treat the queen of Charles the Eleventh, then ill with plague. But before he could render her any service, he contracted the disease and died on the third of August.

Child Labor.—At the request of the Massachusetts Board of Labor and Industries, Assistant Surgeon M. Victor Safford of the U. S. Public Health Service was detailed by the Federal Government to cooperate with the State authorities in a study of the effect of employment in various occupations on the health and physical development of children now permitted by law to work therein. A report of this study with respect to the cotton manufacturing industry of Massachusetts has just been published by the Federal Government as Public Health Bulletin No. 78, entitled "Influence of Occupation on Health during Adolescence." The physical condition of over 600 boys between the ages of 14 and 18 employed in this industry in different parts of the State received careful study.

A considerable proportion of the younger boys and also of those over sixteen were undersized and physically undeveloped for their ages while those between fifteen and sixteen averaged larger than other classes of boys of their age with which comparisons were made. This fact is explained by the accumulation in the mills of strong boys waiting to reach the age of sixteen to go into permanent "full time" occupations. The presence of a noteworthy proportion of undersized boys is not ascribed to the effects of the occupation but to the fact that the cotton mill offers one of the few chances of employment for undersized boys. Evidence of injurious effects of their work or working conditions, even of the temperature and humidity of the mills, on normal boys was seldom found. Comparatively few cases of dangerous diseases were discovered. There was, however, a wide variety of defective conditions disclosed by the investigation, many of them of such a character as to impair seriously the future health and economic usefulness of the individuals concerned if not remedied.

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Original Articles.

A CONSIDERATION OF THE INTESTINAL TOXEMIAS FROM THE STANDPOINT OF PHYSIOLOGICAL SURGERY.*

By JEROME MORLEY LYNCH, M.D., F.A.C.S.,
AND
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NEW YORK.

(From the Clinic of Surgical Gastro-Enterology, New York Polyclinic School and Hospital, and from the Laboratory of Surgical Pathological Physiology, New York University.)

THE alimentary canal is the one single system in the body. All others are bilaterally symmetrical. Why is this so; are there compensations for the apparent deficiency, or does it mean that nature has felt this the oldest of all the systems to be so perfect as to be sufficient to the economy as a single unit? Has this interesting phenomenon any pathological significance? Bichat and others advanced cognate hypotheses a generation ago. Does the length of the canal offer any explanation of its efficiency and what bearing, if any, has the fact that the diameter varies directly with its length? Can any deductions be drawn from the fact that the pars pylorica is well developed long before there is evidence of any fundus? May not priority in origin point to priority in function? Has not the very fact of its amazing efficiency a bearing upon the well-known law that as an organism approaches perfection it tends to self destruction?† In its extreme age, in its refinement of function, we may perhaps seek for some of the fundamental causes of its variations from the normal and for the resultant known generally as intestinal toxemia.

Like the many sects in medicine, each one of which sees truth through its own narrow slit, so also has the subject of autointoxication been approached. Some have considered it a mechanical condition pure and simple; some a neuromuscular one; some a disturbance of internal secretions; some as arising from a vagotonic disturbance; some a psychosis; some, like Adami, consider it a subinfection; some, like Combe, a hydrolytic process of bacterial origin. Non-partisan students are at a loss in seeking the truth from among this maze of authoritative statements, for the partisans are clever and their writings are voluminous.

One thing at least is clear, viz., that the causes are either exogenous or endogenous. The factors operating from without, like misplacements, displacements, obstructions, and bacteria which hydrolyze proteins within the lumen are totally separate and distinct from those of a biochemical nature which probably have their origin in the disturbed conditions in the cells of the intestinal epithelium itself, and are properly endogenous.

*Read before the Jefferson Hospital Medical Society, Philadelphia, January 28, 1916.

†The classic example of this is the extinction of the Irish elk, due to overgrowth of antlers.

What part does the modern surgeon play in this complex problem? To our mind a very large and increasingly important one. *The physiological surgeon is the internist of the future.* This view is not held without dissenting voice for the general conception of the surgeon's place in the therapeusis of the canal, aside from the treatment of acute conditions, is that he may occasionally be of use to remove mechanical obstructions which cause obstipation. Popularly this condition is known as stasis. We hold that this term is an unfortunate one because it implies mechanical rather than biochemical or physiological considerations, which seem to the essayists of far greater importance. This is not a plea against the mechanistic school which plays its important part, but fortunately surgery is no longer divorced from the sciences, having become an integral part of them.* Thus its votaries will give great help in determining the etiology and therapeusis of the non-obstructive, non-static intoxications, in many of which surgical intervention alone avails. This means only that the diagnostician must now think in terms of both medicine and surgery.

The pathology of adolescence begins in utero, and this seems to the essayists one the strongest arguments for eugenics. Whether due to ontogeny or phylogeny needs no further discussion here.

Until birth the child's future is predestined by the forces of nature. In childhood much can be done to correct congenital alimentary defects; at maturity, the individual to a great degree shapes his own career, quite aside from the limitations of his environment. Thus there are three periods—the first, over which we have no control save through eugenics; the second, over which an increasing control will be gained through increasing knowledge of child hygiene and therapeusis; the third, over which control will be gained in direct proportion to the acquisition and diffusion of the truth regarding etiology, diagnosis, and therapeusis. Out of this vast field we have chosen to discuss in detail a few factors relating to the third.

For purpose of comparison we may roughly look upon the stomach as a receptacle which prepares the food for digestion. In action it is analogous to a cement mixer—crushed stone, cement, and water are poured in at one end and without absorption or loss, chyme is dejected at intervals from the other. For is it not in the experience of all to have seen unimpaired digestion proceed in gastrectomized animals or men. It is a specialized morphological adaptation; useful but not essential.

Similarly, as regards the ceco-colon which prepares the food for dejection. Who among us has not seen colectomized men and animals remain in perfect health, all diarrhea being controlled through the assumption of colonic function by it embryological prototype the terminal ileum? Even more sig-

*New York University now grants the degree of Ph.D. in surgery.

nificant is the fact that broken health has unquestionably been restored in human beings after partial or complete resection of the colon. It is far from our intent to argue that these organs have no function, for it is well known that along with all other groups of specialized cells, those of the stomach and colon must normally play an important part in balancing metabolism.

To further complicate the problem of surgical diagnosis and therapeusis, there are compensatory properties inherent in the alimentary canal just as truly as in the heart. A resected stomach may in part reform in six months; an ileac segment transplanted into a colon will shortly assume both the size and in a measure the function of the colon, with the exception of anastalsis; a terminal ileum upon which, by the operation of ileostomy, the function of a colon is suddenly thrown will vicariously assume colonic function both as regards water absorption and fecal storage and dejection; an intestine will thicken oral to an obstruction and in proportion to the load, until, as in the heart, overload begets atonia and dilatation. Thus it is more than ever clear that in the alimentary canal we are dealing with a system which, in part due to asymmetry, in part to extreme antiquity, and to the persistence in it of primordial zymotic reactions long dormant and now superseded by the nervous system, is endowed with many functions, a few of the grosser of which are known, but most of which are utterly unknown. It is a system subject to the utmost variations of form due both to hereditary and to environmental conditions, and which, save the brain, finally is the seat of the most complicated derangements of any part of our bodies. Of the symptoms traceable to this canal one great surgeon has said, "We know so little as to their origin and treatment that we should consider ourselves the fools rather than the neurasthenic patients whom we seek to relieve."

Diagnosis of Adult Conditions.—After all, the diagnosis of adult intestinal toxemias has as its basis the cardinal symptoms diarrhea and constipation. These conditions have been treated empirically from time out of mind, so that it is next to impossible to get either physician or patient to look upon them as symptoms rather than as entities. But progress demands it. As the modern physicist is showing that the supposed elements are really manifestations of a single basic ion, and therefore not in a true sense elemental, so must we modern physicians realize that the ancient disease entities which we have been taught to believe in are often not elements, but are simply symptomatic, superficial and almost always protective manifestations. They are far more numerous than the sixty-odd old chemical elements, being the variable outward expressions of a fundamental disturbance of metabolic equilibrium and of nature's efforts to heal.

It is the old story of the objective method as opposed to the subjective; of function *vs.* form; of biologic laws opposed to empiricism. It is significant that a true interpretation of symptoms has been the best means of improving therapeusis. We are, at best, only beginning to understand that most symptoms are protective and should be encouraged rather than suppressed until the true cause of the underlying disturbance has been found. Think of the efforts to treat fever faints and inflammatory swellings as though they were enemies instead of friends!

There is no field in all medicine more vivid with the truth of all this than that of the diarrheas. Let us urge that all diarrheas and constipations be looked upon as due to an exogenous cause until proved to be endogenous. Exogenous causes are either congenital or acquired. In our experience failure of fusion and departure from the normal migration of the cecocolon play a more important part than the acquired conditions, for they are transmitted by the same laws of hereditary which govern transmission or other dominant characteristics. The common mesentery which results from non-fusion may permit of 180 degrees mesodorsad rotation upon adventitious bands which often support a cecocolon from the parieties constricting the ascending colon and causing a tadpole-like deformity with intermittent partial obstruction, as occurred in one of our cases recently. Such bands are doubtless manifestations of nature's efforts to compensate for the hereditary deficiency. No more potent argument is at hand in support of extensive undergraduate study of comparative anatomy and of research surgery on the lower vertebrates than this. For every graduate should know that from a common ancestor we may inherit departures from our conception of the normal; as, for instance, a mobile duodenum or mesogastrium, such as are found in the dog; non-rotation, non-fused mesentery; an herbivorous type of cecum; infantile cecum; megacecum; absence of sigmoid (quadrupeds have no sigmoid according to Henscher & Bergstrand in Ziegler's Beiträge 56, 1913) or of cecum, and a host of other variants, explicable only by heredity. The teaching of these fundamentals seems to us of far greater use than an ingrinding of the pharmacopœia or of descriptive anatomy.

Bayliss and Starlings "law of the intestines" or myenteric reflex is of great importance in the surgical physiology of the alimentary canal. It consists in the production of a relaxation with inhibition of movements aboral to the spot at which a mass of food is collected and an increase of tone together with more powerful contractions oral to the spot, thus moving the contents onward.

The recent papers by Keith recording the presence of hitherto unknown intestinal ganglia also help to explain many things. But there are certain observations which come to the surgical student of the alimentary canal, who studies his cases from a biological standpoint, which seem to us of special interest and which are not as yet widely recorded.

We have for years contended that death from duodenal or jejunal obstruction is due to an interference with the internal secretory function of the epithelial cells of the gut itself rather than to bacteriotoxic causes This hypothesis is now accepted by most investigators. Now, if this is true of complete obtructions, what diversity of symptoms may not be caused by incomplete obstructions occurring at different levels! Doubtless the complexity of duodenal enzymes or hormones is much greater than that of any other part of the canal, though the subject is far from settled as to details; and this may explain the relative gradation of symptoms and the well-known fact that their intensity varies as the square of the distance from the duodenum or thereabouts. Moreover, what has been accepted for the duodenum may be true also of the colon. This at least affords a working hypothesis to explain the immediate relief from certain types of arthritides, as occurred in one case of our series after developmental reconstruction, and in several reported by Bottomley. We are not sufficiently advanced in a knowledge of the internal secretions to say how important a disturbance of these may be in

the colon, nor, indeed whether they exist, but if we are to believe Pick, even the lowly connective-tissue cell of the colon secrets an enzyme called tyrosinase, which has the property of converting aromatic substances into a pigment closely resembling melanin in appearance. Thus Pick would account for pigmentation of the colon.

Furthermore, this matter of internal secretion of the gut may have an important bearing upon the phenomena which we have noted after ileostomy when there occurs a most marked change in the physical well-being of the patient as sudden and as profound as we have noted in the arthritides after colonic reconstruction.

Previously the clinical changes observed after this operation have been explained wholly on the ground that the proteolytic anaerobic bacteria which Combe and his school have credited with so prominent a part in intestinal toxemia were unable to thrive on the acid media of the terminal ileum, and it is on this assumption that Metchnikoff popularized the value of the fermented milks. Here may be another point of similarity between the physiological mechanism at the beginning and end of digestion. The acid ileac chyme discharged into the alkaline cecum may stimulate the outpouring of enzymes in the lower gut as in the upper. What has been proved true of one is perhaps true of the other and there may actually be an internal secretion of the cecocolon which becomes perverted and autotoxic when motility is disturbed.

Next to be considered is what applied surgery can do for intestinal toxemia.

It is accepted that a definite number of patients suffering from the syndrome of intestinal toxemia have been benefited or cured by operation, after other methods have been tried. What are the procedures which have been in general use? First, ileosigmoidostomy. Second, cecosigmoidestomy. Third, appendicostomy. Fourth, ileostomy. Fifth, plication of the cecocolon and repair of the cecal valve. Sixth, total "Colonic exclusion." Seventh, colectomy. Eighth, developmental reconstruction or right ileo-colectomy. The very multiplicity of procedures is in itself a certain index of our ignorance. What can be said of these operations?

Ileosigmoidostomy has undoubtedly benefited a goodly number of cases. But what are its drawbacks and dangers? We have shown in a previous paper that a dominant anastalsis is often the physiological basis for the symptom constipation. All operations must be planned so as to minimize the effects of this symptom of aberrant physiology and if possible to counteract it. The foremost advocates of this operation admit that because of anastalsis in 10 per cent. of cases a subsequent colectomy is a necessary corrective measure. Further, although we may learn to recognize sigmoidal anastalsis before operation, who can say that it may not develop as a result of this operation itself? The technique, therefore, has a much higher mortality than is usually ascribed to it because of these secondary complications, and is rightly falling into disuse.

Cecosigmoidostomy is deficient both theoretically and in practice. Its employment leaves out of consideration the law to which we have referred, viz., that intestinal contents tend to follow the normal direction of the canal, irrespective of lateral stomata. We again wish to emphasize the importance of this law. We have recently demonstrated a vicious circle in five out of six cases. The following case history is illustrative of all:

Patient referred by Dr. Robert M. Brown of Saranac Lake, New York. Cecosigmoidostomy was performed for the relief of intestinal toxemia eighteen months ago by a thoroughly competent surgeon. After the operation the symptoms were aggravated and *x*-ray examination showed that material lay in the distended loops —for an interminable time. This patient was made to realize the severity of secondary operation but expressed the positive conviction that she preferred death to her existing state, being at the time unable to correlate mentally. Indeed the mental symptoms were more serious than the physical. Operation revealed an immensely distended sigmoid and cecocolon, each communicating with the other through a stoma which readily admitted *four fingers*. The technical part of the previous operation had been perfectly performed, but the functional result was a failure. In order to restore normal conditions it was necessary to resect that portion of the sigmoid containing the stoma, to anastomose the sigmoid, to resect the terminal ileum and the colon as near to the splenic flexure as could be reached. An unusual amount of traverse colon had thus to be sacrificed because it was dilated as a result of the previous operation to the thinness of tissue paper and could hardly have been expected ever to regain proper tone. The ileum was then anastomosed to the extreme left transverse colon in the usual way. Result very satisfactory.

Appendicostomy is safe though insufficient in most cases. One important fact in its favor is that it places the stoma oral to the entire colon. This is in keeping with our observations, viz., that a stoma to be effective must be oral to the infected area.

Ileostomy.—This new procedure first intentionally employed in this country by us has limited and definite indications, but is of proven worth. It was devised and employed by an Italian some twenty years ago. In connection with our observations upon severe colonic infections we will deal with this procedure in a subsequent paper.

Plication of cecocolon may benefit, but it is questionable whether the results are permanent, and this coincides with our animal experimental work. The technical defect may be that the coaptation is peritoneal rather than muscular. We have now under consideration an adaptation of the autolytic pentagonal suture which we have long used experimentally. This introduces the problem of segmental resections, the most important work upon which has been done by W. Howard Barber.

Plication of the Bauhinian sphincter is said to be beneficial. We have had no experience with it; first, because our *x*-rays in the healthy humans show frequent leakage after enema, and, second, because we have shown experimentally that the mechanical action of all "valves" is of small value compared with the neuromuscular forces about them.

What of the cured developmental reconstruction cases in which the "valve" is excised?

Total colonic exclusion is a new operation, just described by Strauss. It will afford additional opportunities for study and may come to have a place in the operative therapeusis of the future, but its principles are quite at variance with the conclusions reached by us experimentally, and upon human beings twelve years ago.

Colectomy has a place but it is a small one because of the mortality and of the removal of omentum and the terminal colon which is active in elimination. Lardenois, however, demonstrated to us in Paris that it is possible to leave the omentum. Colectomy is indicated in diffuse polyposis, papillomatosis, diverticulitis, and in certain malignant tumors.

Of the many operations which have been suggested that of developmental reconstruction has proved very satisfactory in certain carefully selected cases. The writers have applied this term to

the ordinary operation of resection of the terminal ileum, the cecocolon, and the oral part of the transverse colon, because it exactly describes the procedure. The colon is reconstructed to the primitive or developmental type seen in the adult dog, or in the human fetus just following rotation, the great gut beginning in the right hypogastrium, there being no true cecum or ascending colon. We have felt that there may be a definite relationship between the symptomatic improvement in human beings after developmental reconstruction, and the fact that more primitive forms, like that of the dog, are free from colonic disease. We have called attention to the fact that this last formed portion of the colon is more liable to disease than the older aboral portion. As in the case of other organs which have become diseased and dangerous to the economy this organ, its function destroyed, should be removed.

One word in regard to colonic vaccines. There is this to be said in favor of the vaccine treatment: that it usually helps, it is free from danger, and if an operation becomes necessary subsequently it places the patient in the best possible condition to withstand it. It is valuable postoperatively.

Rectal feeding has long been a satisfying and comforting necromatic rite. It was ancient history when Hippocrates was a boy. Of all the delusions of grandeur ever inherited by the profession this was the most mythical. At last, however, we have arrived at something definite, viz., the use of amino acids. Urinary studies prove this. These final products of protein digestion occur in the blood, dialyze readily, and are the logical postoperative sustaining agent of the future.

One cannot consider the field of colonic surgical therapeusis without being convinced that the future holds out great things. And perhaps the greatest of these is the hope that physiological surgery collaborating with medicine may help us to find the true cause of the toxemia, and with it a cure which will not be operative.

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THE DANGERS AND COMPLICATIONS OF TONSILLECTOMY.

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SPEAKING of pyelography, Clark says: "When a new method of diagnosis or treatment is suggested, there is immediately a wave of enthusiasm, which, in its intensity, temporarily overlooks the dangers and disadvantages incident to such a method. For a time these procedures are applied indiscriminately to all varieties of cases irrespective of indications, until the more conservative members of the profession strenuously object by presenting concrete examples of mishaps which have occured due to our inexperience and poor judgment. All new procedures seem to pass through this stage, and then finally settle down to their own proper level." These remarks can be appropriately applied to the theories of infective foci as causing so-called sequential constitutional diseases, and also to tonsillectomy as a therapeutic measure in the treatment of these systemic diseases, as well as in many local conditions of the nasopharynx.

The writer has recently observed a case, demonstrating the dangerous results of ill-advised removal of the tonsils. The medical literature of the last few years, during the period of the great popularity of tonsillectomy, is pregnant with untoward complications following this surgical procedure. This collection of cases, showing the risks and possibilities of the promiscuous use of this operation, is submitted to those who are interested in the subject.

The history of the case which concerned the writer is as follows:

In 1910 the patient suffered from an attack of polyneuritis, resulting from acute arsenical poisoning. A complete recovery was the ultimate outcome. In August, 1915, a mild recurrence of the neuritis reappeared in the posterior tibial regions of both legs. At that time he had an attack of acute coryza and bronchitis. Although by January, 1916, the condition was much improved, accepting the advice of physicians, he had the tonsils enucleated. The Slude-Ballenger tonsillotome was used and the operation was performed under local anæsthesia. The tonsils were successfully and completely removed, but the procedure was of a painful nature, due no doubt to the great pressure of the plate of the instrument pressing forcibly on the posterior pillars of the pharynx. One would presume that rupture of the fibers of the palato-pharyngeus muscles frequently accompanies the employment of this particular tonsillotome. Some non-toxic local anæsthetic injected into the posterior pillars would probably diminish the pain, when the Sluder-Ballenger guillotine is employed. Within four days after the operation the neuritis became widespread, involving nerves of the thighs, back, both forearms and arms, neck, feet, and chest. He was, of course, forced to go to bed, where he still remains seven months after the tonsillectomy. The patient had had one attack of tonsillitis in thirty years. The pathological report of the tonsillar specimens, made by competent bacteriologists and pathologists of the University Hospital, showed that a very small amount of tonsillar tissue really existed, and what was there displayed no areas of ulceration or suppuration. Streptococci were found in the culture taken from the tonsils, but this is nothing unusual, in fact, the rule. The amygdalae, therefore, showed no areas that could be interpreted as infective foci, from which so-called sequential disease could arise. The Wassermann reaction, taken twice, was negative. Indican was found in the urine.

In the experience of neurologists an individual, who has once been a victim of polyneuritis, regardless of the original cause, will be susceptible to a

recurrence at some future time from multifarious agencies. Sherwood[54] has written an interesting article on recurrent multiple neuritis. So far as the above case is concerned, regardless of the possibility of contributory factors, as intestional autointoxication, it cannot be reasonably denied, that the general invasion of the neuritis was the result of the tonsillectomy.

The amygdalectomy and infective-foci enthusiasts will no doubt suggest that the tonsils with incarcerated areas of infection, were the original cause of the neuritis, as following the operation, they will pertinaciously insist, bacteria and toxins are poured out from the tonsillar crypts and adjoining lymphatics, which being absorbed into the system, are carried to their destined tissues, thus justifying the theories of electives localization and specificity of streptococci, and thereby demonstrating beyond argument the law of cause and effect.

As above stated the tonsils pathologically showed nothing significant. The theory of the flooding of the body with tonsillar toxins, immediately after the excision *in toto* of those organs, is hardly compatible with the direction of the blood and lymph currents following the operative procedure. Hemorrhage and venous cozing continue for many hours, resulting in a thorough and complete autogenetic douching of the tonsillar fossæ, and it would appear to be a difficult and supernatural feat for intangible toxins without any *vis a tergo*, to combat with a blood current, which frequently becomes alarming in its intensity and occasionally results in death. Moreover the expert laryngologist in performing tonsillectomy enucleates the organ and its toxins *in toto*, at least partially encapsulated, a somewhat formidable condition and barrier to ambitious and hostile streptococcic toxins. In thyroidectomy and breast amputation, the situation is not parallel; toxins and cancer cells may be absorbed, for hemostasis is immediate, postoperative sloughing is rare, the operation is prolonged, manipulation is forcible in areas of freshly opened blood and lymph channels; cancer has no capsule, while in thyroidectomy occasionally the capsule is incised; and repeatedly portions of both structures remain to eliminate substances in a propituous and extensive field for absorption.

Posterior oral surgery is peculiarly handicapped, because of the inability to render the operative field sterile of the perennial presence of pathogenic bacteria, therefore sloughing occurs in practically all operative cases and often a severe local and an occasional general sepsis results. The throat is especially prone to gangrenous and other septic inflammations. Hence, what happier and more hospitable portal of entry for bacteria and their toxins could maintain a corporal existence than the sloughing postoperative throat bathing the freshly opened blood vessels and lymph channels, and accompanied by the sympathetic septic inflammation of the palate? By tonsillectomy a chronic tonsillitis or a normal state of that organ is converted into a condition of marked acuity of a week or longer duration in most cases. Instead of removing a focus, a source of infection is created. In many of these cases if only nature had been left alone she would have dealt with metabolic problems through a *vis medicatrix naturæ*.

Therefore, is it unreasonable to entertain the hypothesis that local reactions in joints, nerves, and other tissues, following tonsillectomy, result from a mild general bacteriemia or intoxication following absorption from the sloughing throat which invariably appears after amygdalectomy, the toxins in the blood stream attacking and irritating an already existing *locus minoris resistentiæ*? Such spot, regardless of its original cause, would respond to the irritation from the toxins absorbed from any source. For instance, if any individual with articular rheumatism, in his convalescence should be attacked by enteric fever, would not the joints, their resistance being lowered previously, or in fact still inflamed, probably manifest their invasion by the typhoid toxin through the clinical evidence of pain, swelling, etc.? A so-called typhoid rheumatism has been reported many times. Such a theory denies a specificity of tonsillar toxins for chronic rheumatic conditions. This hypothesis can run *pari passu* with the specific germ origin of *acute* rheumatic fever that the tonsil may be the portal of entry of the streptococcus rheumaticus or some other microorganism of that affection. For acute articular rheumatism, evidenced by rapidity of invasion and sthenic phenomena, suggests an infective bacterial etiology. But with chronic rheumatism, an indefinite term representing a disease involving multitudinous tissues, and furthermore characterized by various pathological changes even in the same structure, a specific bacterial etiological factor, seems, at least in the light of our present knowledge, not probable; otherwise a cure of the rheumatic condition, following tonsillectomy would be the rule, which is decidedly *not* the case.

Possible neurological reactions in some cases of the so-called sequential diseases will explain the renewed activity of these constitutional diseases after tonsillectomy. Habit spasm, a pure neurosis, is practically always made worse after amygdalectomy.[48] Furthermore, chorea, although possibly associated with rheumatic diseases, occuring in those with unbalanced nervous systems, is frequently exaggerated after tonsillectomy.[17 43 85] Fright in these cases does the same thing.

Perhaps general nerve shock, lowering the vitality of a chronically diseased area, as a joint, or of normal tissue, as a nerve, and thereby permitting a toxin already in the blood to act deleteriously thereon, where under normal conditions no harm would result, might explain some of these reactions. Intestinal autointoxication and syphilis might be such factors.

Therefore, it might be said, that the widespread general polyneuritic phenomenon following the tonsillectomy, in the above case, was possibly due to either shock alone, or shock increasing the susceptibility of nerve tissue to an already existing toxin in the blood, or some reaction in metabolism, or a bacterial toxin elaborated in the throat, perhaps from the sloughing postoperative areas, but certainly *not* from a tonsil free of infective foci.

The extravagant and odd claims of those who believe in the theories of the specificity and elective localization of streptococci still remain unconfirmed by reliable bacteriologists, and wise physicians had best wait until competent investigators verify these statements, before the profession in general adopts them. If the tonsil is proven an excretory organ, as the work of Henke,[50] Pybus,[55] and Blum[55] suggests, the partisan of the above theories, however attractive, might meet with a certain amount of embarrassment.

Toxins expressed from the tonsils through manipulation, and thereby producing reactions in

joints, etc., must be of infrequent occurrence, otherwise intestinal colic, acting on the wall of the bowel in cases of enteritis, or the application of Bier's hyperemia treatment with the use of the Esmarch roller, or massage of the prostrate gland, would repeatedly cause such constitutional upheavals.

Multifarious complications have followed tonsillectomy, a surgical procedure, which is looked upon by many physicians as nursery surgery in more senses than one, but which in truth, as Joseph H. Bryan, the laryngologist, says, "is always a major operation."

Hemorrhage.—Many cases of alarming primary and some cases of secondary hemorrhage have been reported. A number of fatalities, due to this cause, are recorded. The writer knows of a case of death at the University Hospital from hémorrhage following tonsillectomy. The patient had erythremia. A colleague of Dabney"s reports a fatal case in a young girl, who swallowed quietly the steady ooze from the tonsillar cavity till exsanguinated. Crockett[2] reports twelve fatal cases and many serious hemorrhages occurring within a year and a half in and around Boston. Sewell[3] found reports of nineteen deaths and fifty severe hemorrhages. Stucky[4] records a death after operation from hemorrhage and nine cases of secondary bleeding which required ligation and suturing of the pillars. Schuchardt[5] reports a case, in which the court found a verdict, that death was due to hemorrhage, strangulation, or shock. Roe[6] speaks of a case of fatal hemorrhage, six hours after operation, the patient probably being a hemophiliac, the mother having died of uterine hemorrhage. Brown[7] reports a case of severe hemorrhage following tonsillectomy for chronic rheumatism, the patient nearly dying, the bleeding being difficult to control on account of sclerosed arteries. Ballenger[8] records a number of cases of hemorrhage. Price[9] reports a case of fatal hemorrhage. Shurley[10] records a case of serious hemorrhage. He was threatened with a suit for damages. Chenery,[11] Beck,[12] and Iglauer[13] report cases of alarming hemorrhages. Thompson[14] records a case of serious hemorrhage in a child, who swallowed the blood. Still[15] speaks of a death from hemorrhage following removal of the tonsils. Williams[59] has had a case of fatal hemorrhage in a child six years of age following amygdalectomy. Dickie[55] reports nine cases of serious hemorrhage. Dutrow[56] records five severe hemorrhages. Hopkins[57] reports two cases of secondary hemorrhage following tonsillectomy, one occurring on the ninth day, after operation, and the other on the fifth, tenth and twelfth days. Burack[58] records three dangerous hemorrhages. Agnew[61] reports a case of recurrent hemorrhage which lasted for days after the tonsillectomy. Following an amygdalectomy upon himself, a medical friend of the writer's had to summon the operator to check a hemorrhage, which at least to the patient's mind had the earmarks of fatality connected with its continuance. In Blum's[35] series there were four deaths and thirty-five cases of hemorrhage.

Nervous and Muscular Diseases.—Following tonsillectomy the neurological complications reported are usually functional in nature, but not always. A case of amyotrophic lateral sclerosis in an apparently healthy patient, which manifested itself shortly after amygdalectomy performed for arthritis, was reported to the writer by a member of the neurological department of the University Hospital. Pfingst[15] writes of a case of hemiplegia lasting four months resulting from this operation; also of a patient who had repeated attacks of hysterical strangulation and spasmodic flexion of the thighs (Bergh). Dabney reports a case of spasmodic laryngitis following the removal of the tonsils. A case of hysterical mutism reported by Hall[16] was interesting. This patient, a boy, had been acting queerly ever since witnessing the bombardment of Hartlepool. This condition had been accentuated after viewing a gunpowder explosion to which his father had been exposed. His symptoms had been attributed to enlarged tonsils and adenoids, and tonsillectomy was advised. The question of the correct diagnosis was disputed by the mother, who remarked, without being asked, that "he did not snore, he did not breathe through the mouth, and he did not speak thickly." However, medical persistency mastered medical prudence and conservatism and it was decided to operate. When so informed the boy became very much terrified and remained so up to the date of the operation, from which latter period through the following six months he was absolutely mute, never uttering a sound. Sewell[3] reports two cases of tonsillectomy, where trachectomy was necessitated on account of prolonged glottic spasm with collapse and cyanosis. Also one of torticollis following this operation. Hedges of Plainfield, N. J., records two cases of torticollis. Chorea resulting from tonsillectomy has been reported. Layton[17] refers to three cases of chorea, which began after operations on the throat. Analyzing observations made in the children's medical department of the Massachusetts General Hospital, Young[45] says that definite conclusions cannot be drawn from few cases; the occurrence of chorea after tonsillectomy in twelve out of twenty-one cases strongly suggests that removal of the tonsils does not offer the protection against chorea, and the always present possibility of endocarditis, that many have heretofore believed. Blum[35] reports three cases of chorea following amygdalectomy. Under septic complications will be noted the case of facial paralysis recorded by Stucky following enucleation of the tonsils. Dunbar Roy[26] reports a case of partial paralysis of the soft palate following the removal of the tonsils and adenoids. The writer knows of a case of severe backache accompanied by great weakness, which lasted several months, after amygdalectomy had been performed. It was due probably to a neuritis or myositis. Another case, reported to the writer, is being treated in a sanatorium for some post-operative psychical condition resulting from the removal of the tonsils. Still[15] has known tonsillectomy in a child subject to habit spasm to markedly aggravate the condition, and in other children following amygdalectomy to fall into a state of morbid nervousness, from which they did not recover for many weeks. The writer knows of a case in a normally cheerful and buoyantly spirited woman, where a prolonged depressed state followed tonsillectomy.

Sepsis.—Sontag[18] reports a case in which death ensued from general infection on the seventh day. Dean[19] records three cases of sepsis; one patient died on the sixth day; the second recovered, but suffered from a septic phlebitis involving the internal jugular vein and extended along the cerebral sinuses to the orbital veins, accompanied by thrombosis of the latter vessels on the left side and perhaps of the left cavernous sinus. Such was his belief, as there was exophthalmos with panophthalmitis on the left side and optic neuritis on the right side. Levy[54] says

that pyemia and septicemia with exophthalmos may follow the removal of adenoids, the infection passing from the pharyngeal plexus to the facial and ophthalmic veins. The third patient of Dean's also recovered after an illness due to gangrene of the muscles of the neck. Ballenger[20] reports two severe cases of streptococcic infection, and Pierce[21] records a case of infection resulting in a permanent torticollis following tonsillectomy. Deane[22] reports two cases of severe sepsis following the same surgical procedure. Bourak[23] records a death from gangrene reported by Terkenle. Stucky[4] refers to three cases of cellulitis, one with facial paralysis of five weeks' duration. Sewell[3] reports two cases of paresis of the soft palate. Bauchacourt[24] records a case of edema of the glottis with death following removal of the tonsils. Koplik[25] divides septic cases following tonsillotomy or enucleation into three classes; first, a form running a fever for several weeks without endocarditis or other lesion; second, cases of pyrexia combined with endocarditis, which may have a fatal issue; third, a form of sepsis in which infection is severely hemolytic, and causes destructive blood changes with signs of sepsis, such as profuse hemorrhagic ecchymotic areas on the skin, severe hemorrhages from the bowel, and areas of bronchopneumonia. Koplik must have seen many cases of postoperative sepsis following amygdalectomy so to classify this condition. Ballenger[8] reports another case, of a physician, from whom he removed the tonsils, who had general septicemia, and took six months to recover. Freer[27] records two deaths from pyemia. Martin[26] reports two deaths from septicemia following this popular operation. Still[48] speaks of a death apparently due to sepsis following amygdalectomy. Dickie[53] reports a case of retropharyngeal swelling, and Vanderhoof[50] records an abscess under the angle of the jaw following tonsillectomies. Blum's[85] series showed a death from edema of the glottis.

Endocarditis.—H. L. Ulrich of Minneapolis told the writer of a case of acute ulcerative endocarditis which resulted from amygdalectomy. Koplik[25] has published reports of cases of heart disease following tonsil operations.

Diphtheria.—Wagner,[28] Caillé,[29] Levenstein,[30] and Kolbrak[31] report cases of diphtheria following immediately upon removal of the tonsil; the patient of the last-named physician died.

Bronchiectasis.—Lilienthal[69] records a case of bronchiectasis following tonsillectomy.

Pulmonary Abscess.—Wessler[82] reports eight cases of lung suppuration following tonsillectomy under general anesthesia. Richardson[33] records two cases of pulmonary infarct, one necessitating an opening to drain a lung abscess. Scudder[65] calls attention to lung abscesses following tonsillectomy. Beck[12] reports a case of pulmonary abscess following amygdalectomy. Manges[81] records nine cases of abscess of the lung after tonsillectomy.

Pulmonary Embolism.—LaPlay[32] reports a case of pulmonary embolism following amygdalectomy.

Hyperpyrexia.—Richardson[33] and Wishart[34] report fatal cases from hyperpyrexia. The latter's patient's temperature went as high as 107°.

Emphysema.—Richardson records a case of subcutaneous emphysema following amygdalectomy. Parrish[35] reports a case of emphysema on the face, neck, and chest after removal of the tonsils.

Pneumonia and Pleurisy.—Crockett[2] refers to patient of his own, who died from ether pneumonia, followed by empyema, acute mastoiditis, and meningitis. A number of other cases are reported, but it would be difficult to assign the tonsillectomy or ether as the real cause. Dickie[53] records a case of bronchopneumonia following amygdalectomy. Blum in his report says that tonsillectomy increases respiratory affections, instead of preventing them. Particularly severe lesions have supervened in the cases cited—as mastoid, ear trouble, and asthma.

Rheumatism.—A number of cases have been ascribed to tonsillectomy. What improvement in this condition follows the therapeutic removal of the tonsils for this affection has been assigned to the abolition of a specific etiological factor. Possibly this can be explained, as suggested above, by the removal of a general, not specific, irritating influence. Dickie[53] reports a case of acute articular rheumatism following tonsillectomy. Young[13] records two cases where immediate recrudescence occurred after amygdalectomy.

Status Lymphaticus.—Packard[38] reports a case of probable death from this cause, although an autopsy was performed to confirm the diagnosis. Harris[39] records a death from status lymphaticus following tonsillectomy. The necropsy revealed an enlarged thymus gland, which weighed eighteen grams. Dickie[53] reports the death of a child, age seven, probably from status lymphaticus.

Amygdalotomy Rash.—Dickie[53] reports scarlatiform rashes developing after tonsillectomy. Wingrave[37] records thirty-four such cases. Forsyth reports similar results. Richardson[33] explains this phenomena as due to the autointoxication from the blood, which is swallowed during the operation. Beck[12] records a similar case to the above.

Dryness of the Throat.—Winslow[40] reports this condition as following tonsillectomy. Richardson[49] has many cases who come to him in the hope of being relieved of the faucial dryness due to amygdalectomy. Blum[85] speaks of similar cases.

Appendicitis.—As time goes on, more cases of this complication of tonsillectomy are being reported. Still, Lockwood, Pavy, and Bramwell mentioned the not infrequent association of tonsillitis with appendicitis during the discussion of Lockwood's[41] paper, entitled "Acute Abdominal Inflammation in Children." Metcalfe[41] reported two cases of appendicitis following tonsillectomy. An inflamed appendix was removed on the fifth day after the amygdalectomy in one case, and a gangrenous appendix was operated upon on the eighth day subsequently to the tonsillectomy in the other case.

Local Results of Tonsillar Operations.—Stucky[42] reports various cases of adhesions of the pillars, impairment of the voice, difficult swallowing, and one case where there was matting down of the anterior and posterior pillars, causing traction around the fossa of Rosenmüller, resulting in a partial closure of the Eustachian tube with subsequent tinnitus. Roe[6] refers to two cases of impairment of the voice following attempts at tonsillectomy by other operators. Both cases had the tonsils left behind, but complete adhesions of the soft palate to the pharynx as result of the mutilation. Sewell[3] reports a case of retropharyngeal abscess following tonsillectomy. Bauchacourt[24] and Martin record three cases of edema of the glottis following amygdalectomy. Lederman[44] refers to a hematoma of the fauces after the same operation. Huber[45] reports a lateral pharyngeal abscess due to the same procedure. Many cases have been recorded of injuries to the pillars, accidental removal of the uvula, cicatrices in the palatine arch, impairment of

movement of the vela curtain, and adhesions of the pillars. Cases of tonsillectomy affecting the singing voice are reasonably frequent. Balfour[67] says that statistics from the New York public schools show that in 10 per cent. of children operated on there has been mutilation of the soft parts surrounding the tonsils. Thompson[53] reports several cases of injury to the soft palate and uvula in tonsillectomies. Laceration and cicatrization render the voice nasal; rapid formation of granulations requires weeks for removal' Pfingst[15] reports fifteen cases where the pillars were buttonholed during the operation. Delavan[16] has noticed severe inflammatory conditions of the throat and nose following tonsillectomy, when the operation was performed during acute inflammation of the throat and even during convalescence from grippe. Sheedy[47] found forty deformed throats out of fifty cases operated upon elsewhere; of these 5 per cent. complained of difficulty in using certain words, and had nasal intonation, and two had practically lost the singing voice. Wishart[52] reports three cases of irregularity in the palate arch resulting from contracture, and a bad effect on the singing voice in another case. Dickie[53] reports cases of scarring of the soft palate and fusion of the pillars. Stucky[4] refers to a case of limitation of tone production after the operation. Blum[55] notes injuries to the soft palate and uvula, impairment of speech, cicatricial bands causing discomfort, and contraction of the pillars. Roe[9] has devised plastic operations for the relief of postoperative conditions following tonsillectomy.

Infection of the Middle Ear.—Still[48] has found acute otitis media to follow tonsillectomy. Dickie[53] reports twelve cases of acute suppurative otitis media following amygdalectomy. One led to a fatal meningitis. Blum[55] reports similar cases.

Cervical Adenitis.—Dickie[53] reports a case of cervical adenitis following tonsillectomy. Cervical adenitis is not cured by amygdalectomy (Blum[55]).

Anesthetic Fatalities.—Sheedy[60] reports four deaths following the use of cocaine and adrenalin solutions in tonsillectomy. Still[48] speaks of two cases that died under the anesthetic, and Dickie[53] reports a case of death following amygdalectomy, the probable cause being delayed anesthetic poisoning.

Shock.—Still[48] speaks of another case, in which death appeared to be due simply to shock, and he further states, "I could quote other cases from my own experience in which life was all but lost through this operation."

Lucemia.—Ireland, Baetzer, and Ruhrah[56] report the case of a boy, who following an attack of tonsillitis had the tonsils removed. For a month or more following this, he complained of abdominal pain, diarrhea, and nosebleed. A diagnosis of lymphatic leucemia was made upon the evidence of an enlarged spleen and lymphatic glands, and the blood picture.

Enuresis.—Still[48] has known tonsillectomy to aggravate this condition. Swartz's[57] series shows no connection between adenoids and tonsils and enuresis, where the operation was performed for the relief of the incontinence.

Diabetes.—L. H. (U. of Minn. Hosp., 8754), female, admitted May 22, 1916, with the diagnosis of diabetes mellitus. The patient complained of polyuria and general weakness. Urine showed glycosuria (7 per cent.) and acetonuria on admission. On treatment the sugar quickly disappeared, she practically not manifesting any glucosuria up to the date of her tonsillectomy, which was performed, under local anesthesia, on June 28. The following day a large amount of sugar in the urine was reported, and, notwithstanding treatment, the sugar failed to diminish in quantity during the rest of her stay in the hospital, which she left on July 7. The patient blamed the tonsillectomy for her postoperative condition.

Miscellaneous Results.—Specialists reporting to Blum[55] speak of the following conditions as having followed tonsillectomy: tendency to become overfat, development of signs of hyperthyroidism, recurrence of adenopathy, nephritis, prolonged depression in adults, increased colds, epileptiform convulsions, failure of relief of secondary infection, and acidosis. As to the thyroid gland it is interesting to note that Theisen[95] reports six out of seven cases in young women of thyroiditis as occurring with or directly after an attack of tonsillitis. The glands in all cases were previously healthy and two developed permanent goiters subsequently.

The above cases have been reported by a *few* eminent specialists, who in the main are clever operators and men of sound judgment. If they record so many cases as complicating tonsillectomy, we can only conjecture how many hundred fatalities and sequelæ have followed the promiscuous employment of this surgical procedure by the general practitioner, the pseudospecialist, the quasispecialist, and specialist. Death and postoperative adhesions probably seal the mouths of their patients.

Canines are muzzled because of their potential power to transmit rabies; typhoid carriers are quarantined; chloroform, because of the fatalities following its use, has been discarded in many localities, and "Dämmerschlaf" following a very low fetal mortality ascribed to its employment has been prohibited by the board of directors in at least one hospital in the United States; but tonsillectomy, with its fatalities, dangers, and complications goes on unmolested.

Amygdalectomy[92] is not a recent addition to our surgical procedures. Writing in the year 10 A.D., Celsus says, "Tonsils which remain indurated after inflammation if covered by a thin membrane should be loosened by working the finger around, and then torn out, but when this is not practicable they should be seized with a hook and then excised with a scalpel." We are now reaping the whirlwind, the result of the momentum of ages, which was sown centuries ago by the immortal but radical Celsus.

Every intelligent physician recognizes the necessity of the removal of the tonsils and adenoids under certain legitimate and well-recognized conditions. Still,[48] whose views are always sound, recommends tonsillectomy under the following circumstances: (1) Recurrent earache, and still more the slightest degree of deafness. (2) General ill health; the child is pale or of pasty complexion, caused by defective aeration of the blood and insomnia due to hypertrophied tonsils and adenoids. (3) Hypertrophied tonsils with recurrent attacks of acute tonsillitis, which can be cured only by the removal of the tonsils. But a slight tendency to nasopharyingeal catarrh or an occasional attack of tonsillitis is not *per se* a sufficient justification for operative interference. (4) Catarrh starting in the nasopharynx spreads to the bronchi repeatedly, so that it may be necessary to remove adenoids. (5) Asthma and laryngitis stridulosa, only when there are other reasons for removing accompanied hypertrophied tonsils and adenoids. (6) Deformity of the chest resulting from throat obstruction. (7) In rheumatic affections, whether the removal of the tonsils can prevent this trouble has yet to be

determined. (8) Remove the tonsils in cervical adenitis in a child of a tubercular family or of a known tubercular tendency, but judgment is to be used in the tonsillar removal if these glands are inflamed or caseous, as irritation of the glands following the tonsillectomy might extinguish the last chance of the subsidence of the glandular inflammation. (9) *The mere presence of adenoids and tonsillar hypertrophy is not sufficient ground for operative interferenee.* (10) Tonsillectomy does good in certain cases of epilepsy.

Richardson,[49] speaking of the local indications for the removal of tonsils suggests operating upon hypertrophied tonsils, or those which are the seat of chronic lacunar infections, or of follicular tonsillitis or abscess formation, or tonsils which are painful on swallowing or tender on pressure. But he says[93] that "tonsillectomy may be at times attended by serious, even fatal, complications. With such knowledge, is it proper or wise to suggest this operation, as is so often done by the internist with insufficient and inaccurate data from a local standpoint as a prophylactic measure?" Further on he states, "I believe that a few general conditions probably have their portal of entry into the general system through the tonsil, but I would demand that, in every individual case, the tonsil be first proved to be guilty before it is sacrificed. One must hold steadfastly in mind the fact, when suggesting such a procedure under such conditions, that we by this operation are placing the patient in danger of his life, probably a greater danger to his life than the probable remote infection."

The fact that certain good results, temporary at least and perhaps permanent in some cases, have followed the removal of infective foci for the benefit of certain so-called chronic sequential systemic diseases is no reason why this procedure should be employed without reason or limitation. It is its promiscuous use that is deplorable. To remove a tonsil, in the light of our meager present knowledge, because no other cause can be found, is both unsound and unscientific. Wise physicians will not expect too much from the removal of infective foci. As a sovereign remedy for many chronic constitutional diseases, its Cheynes-Stokes respirations will soon be forthcoming, notwithstanding a certain limited number of apparently beneficial results, suggesting its reasonable and restricted applications.

Concerning the function of the tonsil, during the last two years, Henke[50] and Lemart have injected the nasal mucosa with solid particles in suspension, and have found a direct lymphatic communication exists between the nose and the tonsils. A similar communication exists between the mucous membrane covering the alveolus of the upper jaw and the tonsil. These lymph currents pass through the tonsils to its free surface and act as a powerful defensive mechanism. The function of the tonsil is comparable to an ordinary lymph-gland, and having a large free surface, they offer an exceptional opportunity for the excretion of foreign substances. It follows that tonsillitis alone or in association with rheumatism or endocarditis is the result of lymphatic infection, the portal of entry being in most cases the nose, the accessory sinuses, or the mucous membrane of the mouth (Fraser[1]). Schoenemann[51] regards the tonsil as submucous lymph glands, and acute tonsillitis as due to infection reaching the tonsils from the area which it drains; that is, the lower part of the nasal cavity. Pybus[52] says, like other lymph glands, the tonsil no doubt produces lymphocytes; that it receives lymph from the nasal cavities and acts as a filter in infections of this region; pigment granules injected into the nasal mucosa may be extruded on to the free surface of the gland. By a process of absorbing organisms and toxins, the tonsils may act as immunizing agents to the body as a whole (Pybus[55]). Blum[85] injected chemicals and bacteria into the cervical glands and recovered them in the tonsil and mouth. He, therefore, contends that the tonsils are excretory organs. Brieger, Goerke, and Stohr observed the emigration of lymphocytes from the center to the periphery of the tonsil, thus suggesting that the tonsils, as modified lymph glands, may combat infections.[55] Makuen[61] considers that the tonsil is beneficial to voice production, as it improves the resonance of the voice, and by keeping the pillars apart gives direction to their action in voice production. This seems a reasonable suggestion as so many singers' voices are injured by tonsillectomy. Ashurst, Wright, Swain, and Blum believe that the tonsils are eliminative organs for systemic diseases, including scarlet fever and diphtheria, Ashurst, for the waste products of dentition (Wright); and tubercle bacilli (Swain and Blum[85]). As dryness of the throat is a frequent complication of tonsillectomy, possibly the normal tonsil encourages the accumulation of saliva in that region. The suggestion that operative injury to the tonsillar branches of the glossopharyngeal nerve causes dryness and pain is not established (Shambaugh).

The operation of tonsillectomy has become unrestrained and apparently unlimited in its application. A physician in general practice, to the writer's knowledge, recently recommended within five minutes amygdalectomy to the first three patients, whom he had seen in his office that afternoon. Such röntgenological vision on the part of some physicians is really remarkable in view of the fact that the best laryngologists agree that the question of a diseased tonsil is often a difficult one to decide from mere inspection.[62]

The public has been unfortunately educated to have their tonsils removed. A vicious result of a promiscuous procedure. Nearly every laryngologist has patients who have diagnosed their own cases and come to the physician's office requesting a tonsillectomy. Forty boys within one month have had their adenoids and tonsils removed, and seventy-five more are scheduled for the same operation at a training school in Minnesota because the "medical fraternity finds that these organs are largely responsible for delinquency in the young." A specialist[63] at the Massachusetts General Hospital, discussing the results of tonsillectomy at that institution, writes as follows: "Of the fifteen cases in which the reason for removal is not known several were no doubt operated upon because they were under an anesthetic for adenoid operation and it was thought just as well to get the tonsils out, too, without considering *whether there were good reasons for their removal or not.*" This statement reminds the writer of the three indications for cesarean section at a large eastern maternity hospital; they are, pregnancy, the patient cannot speak English, and is anesthetized. Specialists' replies to Blum[85] questions, resulted in the following conclusions: Sixteen laryngologists performed tonsillar enucleation about 10,014 times; 7,486 before, and 2,528 after fourteen years of age. Among the indications for tonsillectomy given by these special-

ists were malnutrition, systemic poisoning, chronic hypermeia of fauces, endocarditis, nutritive disturbance, obscure stomach trouble, retarded development, anæmia, asthma, focus of infection, foul breath, anorexia, restless nights, and so-called bilious attacks. Only one specialist objected to the promiscuity with which tonsillectomy is performed. One operator showed a baby to Blum in whom he had removed healthy tonsils "because the baby being anesthetized for adenectomy, he thought he might as well remove the tonsils and so avoid future trouble." Another operator from 1906-1914 had performed 8,000 tonsillar enucleations, equivalent to nearly three operations per day in one man's practice.

Barnes[7] advocates tonsillectomy for the cure of quinsy during the acute attack, and Harrison[70] favors amygdalectomy during the acute stage of ulcerative endocarditis. These physicians apparently prefer individuality in surgical practice. Another laryngologist,[10] in discussing the selection of the period for tonsillectomy in emergency from danger of suffocation, in cases of diphtheria and certain septic conditions, suggests that amygdalectomy should be the rule and not the exception. He says that no harm can possibly be done by removing the local focus of infection and thoroughly swabbing the nasopharynx with iodine or peroxide. But why cause further local reaction and constitutional shock, when intubation and tracheotomy run on all fours with experience and common sense? Diphtheria being an acute septic process, thrombi already present, may become dislodged from the surrounding inflamed tissue through manipulation. Rare indeed would occasion arise when indications would suggest tonsillectomy in preference to intubation or tracheotomy in these cases. Perhaps where there existed a pharyngeal diphtheria and the swollen tonsils were actually obstructing respiration, tonsillectomy as a life-saving procedure would be indicated. The resulting hemorrhage would probably relieve the local congestion.

In 1912 in Philadelphia there were 37,000 recommendations to parents that their childrens' tonsils receive immediate attention. In response to letters to several specialists in New York written by the school department in trying to set some standard for operative interference, no two laryngologists agreed.[66] Sanger[76] is quite enthusiastic over tonsillectomy, saying that the tonsil operation in a case in which the removal is indicated is really a life-saving proposition.

The writer has recently investigated the annual reports for the last three years of various hospitals in the large cities of this country concerning the number of tonsillectomies performed at these institutions. The examination gave the following results. The reports of the out-patient departments are not included.

In 1912 there were 693 tonsillectomies performed in one hospital.

In 1913 there were 6,441 tonsillectomies performed in nine hospitals; the greatest number for this year was 3,152, and the smallest number 55, operated upon in one institution. The average number in each of the nine institutions for the year was about 715.

The total number for 1914 was 7,998 in fifteen hospitals. The maximum number in one hospital was 3,313, and the minimum number was 59 tonsillectomies. The average number for each of these fifteen hospitals was about 533 operations.

In 1915 there were 11,054 amygdalectomies performed in fourteen hospitals. The maximum number for this year in one institution was 4,750, the minimum number being 44 operations. The average number for each of the fourteen hospitals was about 789.

All of these institutions over the period of three years showed a remarkable increase in the number of tonsils removed except one hospital, a large Philadelphia institution, which reported a considerable decrease in the number of operations.

The writer would not attempt to give even an approximate number of amygdalectomies performed in this country based on the foregoing figures. These hospitals are all large institutions and their reports are only a suggestive index in regard to the total number of tonsillectomies performed throughout the United States.

Considering, however, the fact that there are over 7,000 hospitals in this country, to say nothing of hundreds of dispensaries, physicians' offices, and private homes where amygdalectomies are being performed; also from the consideration that probably at least one physician in every locality of a population of 1,000 and up is doing amygdalectomies, it is probably not an extravagant statement to make *that there are several hundred thousand tonsillectomies performed in the United States yearly, with the number greatly on the increase.*

Perhaps it may also be said, compatible with reason, that the usefulness of this surgical procedure, suggested by indications for its performance, based on our scientific knowledge of disease and the proven results of such surgical interference, has been greatly exaggerated and that therefore the justification of the majority of the above tonsillectomies has not and cannot be demonstrated. However, it is refreshing to note that among eminent authorities on this subject a decided and happy reaction has begun to see the light of day. Layton[37] of Guy's Hospital in a recent paper registers a plea for fewer tonsil and adenoid operations. He considers that they form a very important line of resistance to microorganisms, which invade the body through the nose and mouth. The hypertrophied tonsils may be the result of a surrounding inflammation. Therefore the original source of inflammation should be removed. Layton speaks of many cases of hypertrophied tonsils becoming of normal size after the teeth had been treated and nasal breathing exercises were taught (Pybus).[65] The late Eustace Smith drew attention to the mucous disease of the second dentition. Layton holds that this complaint resembles adenoids, *e.g.* cough and enlargement of lymphoid tissue, so by treating the dyspepsia, operation with its attendant risks of hemorrhage, choking, and death under an anesthetic may be avoided. *"The complete removal of the tonsils does not prevent further attacks of rheumatism"* (Layton).[37] Henke[50] claims that the frequency with which the tonsils form the portal of entry for many diseases has been much exaggerated. Still,[68] referring to relationship between tonsillectomy and rheumatism, says that "from clinical notes kept for some years of cases bearing on this point, the evidence only proves that the ordinary partial removal of the tonsils *does not prevent the recurrence of rheumatism* in a child who has previously had rheumatism." Richardson[69] states that numerous instances can be given of *acute and chronic rheumatism and rheumatoid arthritis where tonsillar enucleation has been followed by total failure to ob-*

tain relief. The writer knows of a young physician who was recently carried on a stretcher to the Hot Springs, Va., suffering from recurrent acute articular rheumatism. His tonsils had been removed several years ago. Comroe[68] and Richardson[49] agree that there appears to be a marked reaction in certain sections against the indiscriminate removal of tonsils. Comroe hopes that the tonsils will escape unnecessary and undeserved slaughter, and recalls the successful escape of a somewhat similar fate of the ovary, appendix, and the inferior turbinate. Richardson remarks that it has been stated that no adult should possess tonsils, nor even the site from which tonsils had ceased to exist." A prominent internist in Minneapolis has recently stated "that the tide has turned against the slaughter of the tonsils."

Young,[41] at the Massachusetts General Hospital, referring to the value of tonsillectomy in the rheumatic child as a preventive of recurrence of infection, says that his experience has been far from encouraging *since in more than half of the cases relapse has occurred.* Fredreich, Layton,[17] and Semon agree that the pendulum has now swung too far in the direction of operation, and that cases are often sent to them for tonsillectomy to cure all sorts of diseases. Balfour[67] of the Mayo clinic, in a very recent paper, remarks that it is still unsettled to what extent the tonsils should be held responsible for various forms of arthritis, lesions of the gastrointestinal tract, infections of the gall-bladder, tuberculosis, or exopthalmic goiter. Williams,[71] deploring the crippling effects in early childhood of rheumatism, suggests three important points in treatment: (*a*) rest, (*b*) "keep warm and dry," (*c*) good food. No mention is made by Williams of tonsillectomy. Richardson[49] objects to the frequent removal of tonsils which show no macroscopic evidence of disease, and the fact that the possessor of this type of tonsil may be the subject of an infection that cannot be accounted for, does not justify the removal of the tonsil. McKisack[74] does not consider that a convincing case has been made out for the view that a septic state of the mouth is a common cause of remote disease, although he admits that it is always a source of danger. He thinks that the extreme views which have prevailed on the subject are now becoming moderated. Blum[55] says that no single case of endocarditis has so far as he is aware been positively proved as emanating from the tonsil. McKenney[75] attacks the enthusiastic tonsilar operator. G. Hudson-Makuen[77] sounds a warning to the men who operate on the tonsil for the most vague reasons imaginable.

It is Hudson-Makuen's firm conviction that the tonsil rarely is the focus of severe general infection. He deprecates the wholesale manner in which patients are "tonsillectomized" in clinics as unsurgical in every sense. Blum[55] claims that "tonsillectomy" has become more than a therapeutic procedure; it has become a menace. He further states that there are too many patients operated on without positive indications and that this operation should not be performed in infants, and only rarely up till eight years of life. Laboratory theories are frequently silenced by the final verdict of clinical results.

What suggestions does the literature recording the experience of eminent operators offer in regard to the indications for tonsillectomy, and the methods to pursue to reduce as much as possible the unhappy results? Shurley says "that tonsillectomy in one case of pernicious anemia or acute leukemia is sufficient to impress the surgeon with the value of blood examinations in all suspected cases of anemia. One case of hemophilia is sufficient to establish the value of a routine examination to determine the coagulation point. One death from chloroform is a life-long lesson in the value of ether."

1. The remarkable number, regardless of its popularity, of fatalities and complications following tonsillectomy is astounding.

2. Thousands of unnecessary amydalectomies are being performed yearly. A great many are being done on meager theoretical conclusions, the latter not being borne out by fact.

3. Tonsillectomies, being major operations, should be done in hospitals and the operator should be a specialist, experienced in this work. Manges[51] says that three days in a hospital should be the shortest stay demanded of them.

4. Hospital internes should be instructed in the control of postoperative hemorrhage. The use of the compressor, cautery, artery forceps, ligature, suture of the pillars, and the employment of adrenalin and silver nitrate, should be explained to them.

5. Unless absolutely necessary, operations at the home, dispensary and the physician's office should be abandoned. Sepsis and hemorrhage is too frequent a complication.

6. All patients and parents should be informed that there are possible dangers and complications following removal of the tonsils.

7. Levy[54] says that in all cases the surgeon should make sure before operation that there has been no recent case of illness in the house.

8. Cocaine and adrenalin injections should not be made into the soft tissue surrounding the tonsils. Such a procedure is dangerous (Sheedy[60]).

9. Singers should be informed that tonsillectomy may injure the voice.

10. When possible, a pathological examination should be made of all tonsils removed. Many will probably be found to be normal.

11. Conclusions as to tonsillary hypertrophy should not be made immediately after an attack of acute tonsillitis. Inflammatory enlargement may subside several months later (Still[48]), and operative interference may be unnecessary (Layton[17]).

12. The tonsil should be viewed as normal and not guilty until proved abnormal and guilty. The standard of surgical interference should be the avoidance of operation when possible, instead of razeeing the tonsils out on the slightest pretext. Intelligent surgeons are now preserving tissue as much as possible, as the prepuce, ovaries, tubes, chronically inflamed appendices, gall-bladders, inferior turbinates, and in military surgery, the limbs.

13. The conservative laryngologist should always be the one to judge of the local condition of the tonsil. Physicians in general, unless they have been especially trained in nose and throat work, will not have had sufficient experience to pass on the pathology of the tonsil. The laryngologist would be wise, however, to consult an experienced internist, who has medical equipose, when the question of tonsillitis in reference to constitutional diseases presents itself for decision.

14. Still's[48] indications for tonsillectomy are sound. *Mere uncomplicated tonsillar hypertrophy does not call for operation.* Practically complete tonsillar involution takes place in the majority of children about the age of puberty.

15. Take a nose and throat culture in all cases before operation, as the patient may be a carrier, as diphtheria has occurred immediately following tonsillectomy, even in cases where only a throat culture was taken and found negative, the culture from the nose being neglected.

16. In all cases test the coagulation time of the blood. Perform no operation on any one when the clotting time registers beyond one minute and a half. Thrombokinase, as used at the Manhattan Eye and Ear Hospital, which acts on the fibrin ferment of the blood and forms a clot, is useful in controlling oozing. Also in these cases of delayed clotting time administer caloium lactate for several weeks prior to the operation and then test the clotting time of the blood. Use calcium lactate especially in cases of the lymphatic type. Wilson[72] has proved by the coagulometer that the blood-clotting time in adults can be reduced from seven minutes to one minute after the administration of 120 grains of calcium lactate. Fonio's[93] "separierende methode" determines which of the elements of the blood is lacking in the individual case. Fonio's "coagulen" (blood platelets) is a valuable hemostatic. Horse or rabbit serum can be tried. Hess[94] uses "tissue extract" as a hemostatic, applying it locally in cases of hemophilia. It has been used after tonsillectomy. The injection of human blood or serum, preferably familial, or diphtheria antitoxin, can be employed. Transfusion, by the multiple syringe method, may be used.

17. It appears to be a good plan to test the bleeding time of blood by the Duke's blotting-paper method. The bleeding point is independent of the coagulation time, so that it may be normal in a case of jaundice in which the coagulation time is very much delayed, or in a case of hemophilia. If the platelet count is diminished, then a delayed bleeding time indicates a hemorrhagic diathesis. Normally it is 1 to 3 minutes. It is delayed where the platelet count or the fibrinogen content of the blood, either occurring separately or at the same time, are excessively reduced. Constitutional purpura is characterized by prolonged bleeding time with normal coagulation time.

18. Ligate and stop all bleeding points after tonsillectomy, as in all other surgical procedures. Thompson's[14] test, keping the child on its side near the edge of the table, the foot of the latter being elevated, is a good one. Any bleeding comes out of the mouth and is discoverable.

19. Avoid shock by using ether in most cases. The effect of ether is exerted wholly through its action on the suprarenals.[91] Coagulation processes are hastened by ether anesthesia.[91]

20. The wisdom of the prophlactic removal of tonsils appears to be very questionable. *Results, thus far by competent observers, have not justified the indications in most cases.*

21. Operate on no patient with an elevated temperature, as the patient may be in the incubation stage of measles, scarlet fever, or diphtheria (Layton[17]). Richardson,[33] however, reports a subacute case, which after the patient had been running an elevated temperature for several months, the fever disappeared following a tonsillectomy.

22. Operate in no case where the constitutional or local condition is acute, as in arthritis, neuritis, coryza, tonsillitis, habit spasm (Still[45]), or when the patient is still convalescing from influenza. The reaction might be worse than the presence of the tonsils.

23. If avoidable, never operate in the winter months. Bronchitis is more apt to follow such a procedure (Still[45]). Layton[17] of Guy's Hospital performs no operations on the out-patients during the winter.

24. Perhaps it would be a good plan for laryngologists to take up the question again of the local treatment of chronic tonsillitis[77] and tonsillotomy. Pybus[85] says, where the symptoms are only mechanical, partial removal may suffice. Comroe[86] expresses the hope that many tonsils may be rescued from unnecessary and undeserved slaughter.

25. The snare or dissection method (Balfour[87]) probably surpasses any guillotine method. Finger dissection helps to avoid severe hemorrhage (Richardson[33]).

26. When the diphtheria bacillus, in carriers, is once lodged in the tonsillary recesses, causing repeated attacks of diphtheria, it is difficult to get rid of; the tonsils should then be enucleated (Pybus[85]). Malignancy is, of course, an indication for their removal.

27. The "follow-up" system of recording results should be instituted wherever possible.

28. More attention should be paid to oral asepsis, before and after tonsillectomy. Treat diseased gums and carious teeth prior to the operation. No abdominal surgeon would operate for chronic appendicitis with a furuncle in his line of incision.

29. Inquire into the history of jaundice, hemophilia, purpura, erythremia, the anemias, and diabetes before operating. Hemophilia is rarely dangerous after the twenty-fifth year.[89] As the skin and cellular tissue in diabetics are readily invaded by the microbes of suppuration, and as the multiplication of these microbes is singularly favored by the presence of sugar in the tissues (Bujvid), it would appear unwise to perform tonsillectomy upon a diabetic. Those suffering from diabetes stand all operative procedures badly.

30. Look for other foci besides the tonsils, and other etiological factors, and then try generally accepted treatment for the various chronic systemic diseases, before attacking the tonsils.

31. Tonsillar inflammation in those subject to occasional attacks of tonsillitis becomes more infrequent and may disappear altogether when middle age is reached.

32. Tonsillectomy for arteriosclerosis and heart disease, in the light of our present knowledge, is absolutely unjustifiable. Sclerosed arteries retract and contract with difficulty and severe hemorrhage is frequent in these cases and difficult to control.

33. Tincture of iodine (Marquis[54]) applied to the tonsillar fossæ after the operation, throat gargles, and compound tincture of benzoin, when used in the postoperative period, are useful applications to be made to help the disagreeable postoperative condition.

34. Perhaps the postoperative sloughing can account for some of the sequential systemic reactions in joints and other tissues. Systemic absorptions of toxins is the rule from acute septic areas.

We offer our argument against promiscuous tonsillectomy chiefly to the pliant intellect of youth, whose minds are not sclerosed, and who are not beyond the pale of regenerative thought. They are capable of molding their professional judgment upon a safe and sane basis, and we therefore present our appeal, regardless of the extreme ideas already inculcated in them, the product of what might be called bizarre teaching.

The tonsil has become the germ of medical hysteria, and by the indiscriminating and immoderate employment of tonsillectomy this operation has blossomed into the jester of therapeutic measures, and the clown of surgical procedures—but a prince of financiers nevertheless.

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THE SYPHILIS PROBLEM AMONG CONFINED CRIMINALS.

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PREVIOUS to the introduction of the Wassermann test in the State Board of Health Laboratory, it was recognized, in treating inmates of our prison, that syphilis was very prevalent, but the exact proportion of them affected was unascertained. The urgent need of knowing the ones suffering of the malady was frequently felt, as when they were admitted to the hospital for treatment, or when we were asked to pass upon them before assignment to the kitchen; so as soon as possible we began sending the blood of those suspected, either by reason of their history or clinical picture, to the laboratory for diagnosis.

Between May 4 and December 1, 1915, one hundred and thirty-five specimens were sent, and of these sixty-nine showed I +* to 4 + reactions, or a percentage of 51.11 per cent. positive and 48.85 per cent. negative.

Since December I, 1915, all admissions have been subjected to the test unless they had been at Sing

* I+ cases are included as positive, because after provocative treatment the larger proportion returned positive.

Sing. During the five months following there were 279 admissions, of which 47, or 16.8 per cent., showed positive reactions. During the fiscal year of 1914-1915, 1,025 new inmates were received in the prison. The admissions increase each year, but even at the above rate we can expect at least 173 men (168 per cent.) admitted each year suffering from syphilis.

In addition, the test has been made on the whole population of the Women's Prison. One hundred and twenty-seven specimens were sent from there; of these, 84 were reported negative, and 43 positive, or 33.8 per cent. positive. The total population averages about 110. There are then about 38 of them in this prison at all times syphilitic. I will not include this number, however, in this discussion, but give these facts because of their possible interest. It seems to me that the above facts present a moral as well as economical duty for the State to perform. The moral side I do not wish to discuss, but the other I do.

Statistics show that a large proportion of those who have had the infective organisms of syphilis in their systems for a number of years without showing frank clinical symptoms, are potential paretics or tabetics. With this in mind, two tables were prepared which were intended to show concisely the physical findings in the 47 cases above mentioned showing positive Wassermanns, and also 50 selected indiscriminately that had negative Wassermanns. These tables were made up from the careful routine physical examinations made on admission by Dr. Frank L. Heacox, Prison Physician.

Of the first series, with positive Wassermann: 38, or 80.85 per cent, showed stigmata of degeneracy; 27, or 57.44 per cent., presented abnormalities of the alimentary system; 34, or 70.21 per cent., presented abnormalities of the respiratory system, including the nasal passages; 11, or 23.41 per cent., presented abnormalities of the circulatory system; 27, or 57.44 per cent., glandular enlargement, including 14 with epitrochlear glandular enlargement; 26, or 55.32 per cent., presented defective vision; 11, or 23.40 per cent., presented neurological symptoms, dizziness, headaches, convulsions, paralyses, etc.; 20 had chancres over 3 years ago; 11 had chancres less than 3 years ago; 31 admit chancre, but only 8 show scars; 16 deny chancre, but 3 show scars. Of the 50 showing negative Wassermanns: 39, or 78 per cent., presented abnormalities of the alimentary system; 47, or 94 per cent., presented abnormalities of the respiratory system; 47, or 94 per cent., presented abnormalities of the circulatory system; 28, or 56 per cent., presented glandular enlargement, including 6 with epitrochlear enlargement; 30, or 60 per cent., presented defective vision; 4, or 8 per cent., presented neurological symptoms; 7 gave histories of chancre.

Comparison of these groups, because of both the small number of cases and the little difference in the clinical findings, gives nothing that is conclusive, but it is rather suggestive that 23 per cent. show neurological symptoms in the first group and 8 per cent. in the second.

However, from the first group the following conclusions can be drawn: 36 per cent. would have been overlooked if histories alone were considered; 42 per cent. would have been overlooked if glandular enlargement alone were considered; 76 per cent. would have been overlooked if scars alone were considered; 57 per cent. would have been overlooked if all physical findings alone were considered.

Now, of all of these 47 cases none presented frank symptoms of tertiary involvement, and 20 have suffered from the disease for over three years. Then 20, or 7.5 per cent. of all admissions, we may say are potential paretics, tabetics, etc., or future wards of the State.

Granted that the State wishes to protect itself from this future expense, it should furnish, first, the necessary money for treating these cases; second, a workable method for treating so many cases for at least two years; and third, medical men expert enough to administer the treatment thoroughly.

Let me elaborate slightly on what these items mean. It is generally accepted that salvarsan or neosalvarsan is essential to proper treatment. At least five doses should be given. Salvarsan, when obtainable, costs $2.50 a dose. In conjunction with it, mercury should be administered intermittently until the cure is effected, but the expense of this is slight, comparatively, unless the bibromate is used as may be necessary in these cases. Finally, the iodide of potassium must also be given at intervals to make the mercury effective, and this is at present $6 a pound. It will require about one pound per patient a year. Summed up, then, the minimum cost per patient a year would be:

Salvarsan	$12.50
Mercury	7.50
Potassium iodide	6.00
	$26.00
And for 175 patients	$4,550.00

The expense the second year will be nearly doubled, for 175 new sufferers will be added each year.

It is easy to see that the problem of treating so many patients over a period of at least two years, many of whom, as shown by past experience, are delinquent if left to themselves, is a big one. At the rate of 175 a year there would be an average of 14 a month to be treated, necessitating the administration of 75 doses of salvarsan a month, to say nothing of the supervision of the iodide treatment and the injections of mercury. This is special work in a class with special treatments of the eye, ear, nose, and throat, or the work of the other specialties, and cannot be expected of the regular prison physicians.

Therefore, to fill the third requirement, a trained syphilologist should be furnished.

Summary.—1. 16.85 per cent. of the males and 33.85 per cent. of the females of Auburn Prison are found to have given a positive Wassermann.

2. 7.5 per cent. of all admissions are potential sufferers from paresis or tabes, or some other form of nervous syphilis, and, consequently, future wards of the State.

3. It would cost the State of New York approximately $9,000 a year to treat properly all the cases of syphilis at Auburn Prison.

4. History, glandular enlargement, and physical findings in general, are further proven to be lacking as evidence of the presence of syphilis.

5. Epitrochlear gland enlargement is not pathognomonic of syphilis.

Cutireaction in Gonorrhea.—Neisser spares no pains to obtain cultures of the gonococcus from urethral pus, but since in certain cases inconclusive results are obtained, he makes use of a vaccine from the doubtful culture for a scratch test, which he makes also on gonorrheal and nongonorrheal controls. Absence of reaction after forty-eight hours excludes gonorrhea.—*Berliner klinische Wochenschrift.*

LUPUS ERYTHEMATOSUS AND TUBERCULOSIS:

A SURVEY OF THE LITERATURE.

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In the following résumé of the literature regarding the relationship of lupus erythematosus to tuberculosis, reference is made to the chronic form of the former disease only. It presents itself clinically as a patch of dull red color, with a somewhat raised border, dilated follicles, and tightly adherent scales. The usual and by far the commonest location of the affection is on the nose and the surrounding parts of the cheeks, presenting very often a butterfly form. Somewhere in the patch atrophy can be found.

Since the early work of Cazenave and Hebra distinguishing this disease as an entity, its clinical picture and histology have been carefully studied, and as a result many views have been propounded to explain its origin. Among these views the following might be mentioned: It has been looked upon as an angioneurosis; as a disease of the sebaceous glands; as due to a neoplasm; as an expression of tuberculosis, due either to the bacillus itself or to the toxin. Most of these hypotheses have been lost by the wayside, but one still is the topic of lively discussion, dividing dermatologists into two camps. This one view is the relationship of the disease in question to tuberculosis. It has its supporters and its opponents.

Jadassohn in his masterly monograph in Mracek's Handbook covered all the work done up to the year 1904, and as a result of the study of all the material arrived at the conclusion that there was no positive evidence of the tuberculous etiology of the disease.

Civatte in 1907 published an article in which he grouped the views of leading dermatologists into three divisions:

1. Those which held the disease to be of tuberculous origin. There were 17 members of this group, mostly of the French school, and they gave the following grounds for their belief: (*a*) There was a distinct family history of tuberculosis, or there was a tuberculosis present somewhere in the body; (*b*) Tuberculosis of the skin or tuberculides were present (*c*) Cases were seen in which a lupus vulgaris had become a lupus erythematosus; (*d*) The combination of glandular tuberculosis and lupus erythematosus was very common, and Darier narrated a case of lupus erythematosus which had its origin in the scar following extirpation of tuberculous glands; (*e*) Positive local tuberculin reactions were obtainable in some cases; and (*f*) It was possible to show histologically tuberculous tissue in patches of lupus erythematosus.

2. Those who held the contrary view. There were 25 members of this group and they claimed that (*a*) The occurrence of lupus erythematosus and tuberculosis in the same individual was not a common one, and that such a combination with so common a disease as tuberculosis could very well be a coincidence; (*b*) Some cases going to autopsy showed no focus of tuberculosis in the body; (*c*) In most cases a local reaction after tuberculin injection did not occur; (*d*) Animal inoculation experiments gave negative results; (*e*) The histological picture was not that of tuberculosis, and the therapeutic methods were not those of value in tuberculosis.

3. Those who took a middle standpoint, *i. e.* they felt that in some cases tuberculosis was present and that in others it was not. There were 7 in this group.

This work of Civatte's left the question no nearer a solution than did the critical review of Lewandowsky made in 1912. And yet in the literature of the last few years the casual relationship of lupus erythematosus with tuberculosis has become more frequent.

There are two main ways by which the relationship between the two diseases could be worked out: (1) Many cases of lupus erythematosus would have to be examined in order to find out whether they show any signs of tuberculosis clinically, by reaction, or by laboratory methods. (2) The attempt would have to be made to produce experimentally with the tubercle bacillus a dermatosis which would be identical both clinically and histologically with the disease in question. This method was attempted by Gougerot and Laroche in 1908. They introduced cultures of the tubercle bacillus into the skin of guinea-pigs. The result was an eruption which, the experimenters stated, looked clinically very much like lupus erythematosus and showed an almost identical histological picture.

The following reports of the relationship of lupus erythematosus to tuberculosis of the internal organs are of interest: Robbi in Jadassohn's clinic at Berne reported 87 cases of lupus erythematosus of which 51.6 per cent showed tuberculosis, the others giving no evidence of the disease. Ullman claimed that tuberculosis was demonstrable in from 80 to 90 per cent of his cases. Among Bernhardt's 27 cases only three were free from tuberculosis. Bunch, on the other hand, found the opsonic index to tubercle bacillus normal in seven of his ten cases. Only three showed tuberculosis of some internal organ.

Of greater frequency is the combination of lupus erythematosus and glandular tuberculosis, especially of the glands of the neck. The literature has numerous observations on this point. Of all of them Delbanco's case is perhaps the most important. The lupus erythematosus of his patient disappeared when a tuberculous neck gland was removed, and reappeared when another became affected.

Among other tuberculous affections with which lupus erythematosus can be associated, lupus vulgaris must be mentioned. The association is not met with often enough to point absolutely to a common causative factor, and yet is is not exactly uncommon enough not to arouse the suspicion that they may be related. In this connection Kyrle reported a very interesting case of two symmetrical patches on the face. These patches were diagnosed clinically as lupus erythematosus, but the microscope showed one of them to be lupus vulgaris and the other lupus erythematosus. Ehrman gave a description of a clinical lupus erythematosus which microscopically showed typical tubercle formation. The reverse condition has been described by Hoffman.

There have been many reports of the combination of lupus erythematosus with papulonecrotic tuberculide, also with erythema induratum of Bazin.

Much use has been made of the tuberculin reaction in the attempt to solve the problem. From figures already given it seems plausible that the general reaction would be obtained in the majority of cases. But this would be of no value unless the local reaction was also obtained. Relative to the

latter point Ravogli claims it to be fairly common. About a half a dozen workers have obtained a local reaction by rubbing tuberculin ointment and old tuberculin into the lesions.

Now and then a report has made its appearance in which lupus erythematosus was said to have been cured or improved by tuberculin injections. But since the majority have not been improved, no deduction of any value can be drawn from this.

Many have attempted to find the bacillus in the diseased area by examining stained sections and macerated tissue, by cultures, and by animal inoculation. There has been no success with the Ziehl method of staining sections, but eight positive bacillary findings have been reported, all of them obtained by the antiformin method.

Before taking up the last factor in relating the disease with tuberculosis, namely, animal inoculation, the main view of the opponents to the tuberculous etiology should be spoken of. They claim that the autopsy of individuals with lupus erythematosus does not always show the presence of a focus in the body. For this statement to be of value they must show that the lupus erythematosus area itself is not tuberculous, for it is possible that the infection might be exogenous and not endogenous. They also claim that the histological structure is not that of tuberculosis. Here again it is possible that a special soil might react atypically to the bacillus, or that there might be a special variety of the bacillus producing an atypical reaction.

Up to the time of the experiments of Bloch and Fuchs there were three positive animal inoculations with pieces of lupus erythematosus tissue. The first, a case of Gougerot, showed typical patches on the scalp. Guinea-pigs, inoculated with pieces of the tissue, were killed after five months and showed tuberculosis of the liver, spleen, and lungs; also of the glands nearest the site of inoculation. The second case, also one of Gougerot, produced in the guinea-pig tuberculosis of the liver, spleen, and lungs; also cheesy degenerated lymph glands in which bacilli were found. Gougerot was thus the first to show that Koch's bacillus could be the cause of a typical lupus erythematosus. The third reported case was that of Ehrman and Reines. Inoculation of a guinea-pig caused miliary tuberculosis of the lungs, liver, and spleen. This case also gave a general and local reaction after the injection of one milligram of tuberculin.

The greatest credit is due Bloch and Fuchs for their epoch-making experiments. According to their way of thinking there were exactly two methods by which the relationship of the two diseases in question could be determined, and these two methods were: (1) Obtain a corpuscular free extract of the diseased tissue, and by placing this extract into the skin of individuals who react to tuberculin produce changes of a specific nature, namely, epithelioid and giant cells, and also caseation. (2) Produce positive animal inoculations with pieces of the tissue.

To avoid all possibilities of error, the experimenters first examined in serial section all tissues used, and made use of such only as showed nothing histologically that might pass as tuberculosis of the skin.

In order to test out the first method they prepared an extract as follows: A piece of the tissue, including the subcutis, was excised, freed of the upper layers of the epidermis, cut up very finely, and rubbed up for several hours in a mortar with sterile quartz sand until a homogeneous mixture resulted. To this mixture eight to ten c.c. of sterile distilled water was added, and the whole shaken in a sterile bottle by means of a shake machine for twenty-four hours and then placed in an ice-chest over night. The next day the mixture was filtered through a Chamberland filter and the filtrate evaporated *in vacuo* at a temperature not over 30° C. to about 0.5 c.c. The result was either a clear or slightly opalescent yellowish liquid. With this extract they vaccinated cases of manifest tuberculosis, such as lupus vulgaris, tuberculides, lichen scrofulosorum, etc., using a control extract made from healthy skin of the same patient from whose skin the lupus erythematosus extract was made, and succeeded in every case in obtaining a reaction to both the Pirquet and the intradermal methods. The papules resulting from the intradermal method were examined histologically and showed the tubercle structure.

For their animal inoculation work they used pieces of lupus erythematosus tissue, placing them, under aseptic precautions, in the peritoneal cavities of guinea-pigs. Partial success also crowned these efforts, positive results being obtained in some of their inoculations. It was found necessary to carry the inoculations into the second and third series before positive findings would result. This might very easily explain the many failures in this direction, because in lupus erythematosus we may be dealing with a bacillus of such low virulence that its passage through a number of hosts might be required before enough virulence is attained to produce characteristic changes in the guinea-pig.

In conclusion, the work of Bloch and Fuchs might give grounds for their belief that lupus erythematosus of the chronic type may be due to an infection with the tubercle bacillus, perhaps of lowered virulence or of another variety, upon soil which in the majority of cases reacts in an atypical manner.

206 State Street.

A NEW SYNDROME.

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SINCE the study of ductless glands has become so universal many are the therapeutic claims advanced for their secretions, but few are the real virtues thus far elicited by the mere doctor. They are often heralded as the future medicines—the great panaceas for all illnesses, especially those, the cause or pathology of which is not definitely understood. It seems that the neurologist has had more dealing with these glandular extracts than most physicians because he sees so many cases which all kinds of specialists have designated as either incurable or undiagnosable. It is for this reason that the writer takes the liberty of suggesting an entity which may be regarded as new in that as a symptom-complex it is up to the present not described in the medical literature.

It must not be called "Old Maids' Disease" because the patients would not return for treatment so for the present at least, "Block's Syndrome" is good enough. Before the condition itself is described it must be remembered that many cases of so-called neurasthenia, hysteria, functional neuroses, headache, eyestrain, border-line psychoses, etc., must be included in this description. The report is founded on personal experience and corroborated by a good number of men in several of the specialties.

Definition.—A disease of women ranging in age from the full development of puberty to the menopause. Most of the cases occur between twenty-five and thirty-five years. Characterized by sleeplessness, a melancholic tendency, peculiar idea of personality, attacks of crying, general nervous irritability, sexual hypersensitivity, either loss or gain in weight, lassitude, and pigmentation of the skin.

Etiology.—This condition seems to occur mostly in temperate climate and its manifestations are the most marked in the transition seasons just after the hot summer or the cold winter. It seems that the morning is the worst time for these persons, although sleepless nights are very common.

The condition seems to be definitely associated with sexual development and the age of the sufferers varies just as does the height of sexual life in the human family. One thing is positive, that is that the center of sexual activity is the age at which the symptoms are the most pronounced. The vast majority of the cases the writer has seen were in unmarried girls between twenty-four and thirty-five years of age. Many cases of young widows, divorcées, or wives of men long away from home, as seamen, etc., have a similar series of symptoms.

It seems to be either a sexual disorder, causing an improper functioning of most of the ductless glands, especially those associated with the adrenal system; or, a disorder of these glands causing some sex aberration. The former seems more rational.

Pathology.—The only pathological changes thus far noted are *pigmentation.* This is brown in color and varies from an almost invisible to a deep, well-defined, deposit. It may occur in any part of the body, but is usually found on one or both sides of the face just back of the malar eminences. The next most frequent place for this deposit is on the forehead, more often lateral than central in location. This chloasma, as it is termed, is more marked during the menstrual epochs. It also stands out quite pronounced after great excitement.

There always seems to be some edema of the feet and ankles, but the urine is usually normal.

Symptoms.—Those patients claim to be tired, easily fatigued, and are always impatient and restless. They are very self-centered and easily insulted. They think that others are talking about them or scheming to take advantage of them in some way. This they resent and so make their presence in a family very undesirable. Statements are misconstrued and cause much worriment to the patients. Their inability to carry out a prolonged work completes a picture resembling that of neurasthenia with a mild case of Krapelin's paranoia combined with a few hysterical symptoms.

As in hysteria we can usually elicit some areas of either anesthesia or hypesthesia. At times we get hyperesthesia in some spots, but these do not occur very often. As in hysteria also the skin over the ovaries, mammæ, etc., is especially sensitive. There may be hyposensitivity of the palate.

As in neurasthenia we have the fatigue, the inability for prolonged work, insomnia, lassitude, etc.

Resembling paranoia we have continual doubt as to what is intended by certain statements, exaggerated ego. Self-conceit and the ego are not so marked as in the psychosis of Krapelin, but this is distinctly one of the most prominent symptoms. Memory for insignificant details, with the absence of thoughts about the important things of life, make the resemblance to this psychosis quite complete. The arguing, the desire to prove the point from weak premises, etc., make another parallel line of thought with the psychosis.

The patient worries greatly over her condition and tries various remedies for a cure. She is too stout and tries to get thin, or she is too thin and tries to get more flesh. She has her superfluous hair removed, her wrinkles taken out, her tonsils removed, her turbinates treated; she takes iron for her blood, she must go on a diet, etc. She becomes of a very jealous disposition, loses many of her friends, and her symptoms increase.

The reflexes are all exaggerated. Constipation is the rule, causing a coated tongue and a foul breath. Whether the last symptom has any connection is unknown. There is frequently too much urination, but this is simply one of the symptoms of the neurotic condition. Various habits, as scratching the skin on different parts of the body, or even mild forms of a tic as eye-blinking, or eating mannerisms may occur. Peculiar tastes as special desire for pickles, herring, etc., develop.

Sexually these persons seem to be hyperirritable. Actual consummation of the sexual act does not bring relief, except in a few cases temporary amelioration of some of the nervous symptoms may occur. These soon, however, reappear. Sexual perversion often is found in such cases. Those persons always wish for something which they cannot put in words, and the inability to get this something causes much sorrow. They are very susceptible to flattery, hence they become good material for all kinds of sharpers—financial, sexual, or otherwise. The quack doctor, the religious healer, and all sorts of faddists are met with open arms.

Treatment.—This disease is primarily a disorder of the internal secretory glandular system and the treatment must be divided into two distinct divisions; general and specific.

The general treatment which seeks to remove the cause of a few of the symptoms consists in a change of surroundings and a modification of the daily routine from which the patient obtains great but temporary advantage. Likewise change of diet is of value. Persons who before were meat eaters should live on a vegetarian diet while undergoing the treatment. Friends, especially so-called bosom-friends, should for a time be kept away. These persons are inclined to have a rather small circle of acquaintances and removal from these seems to work much good. Instead of the regulation three meals each day a smaller meal every few hours has its advantages.

A definite time fixed for rising and going to bed is of value. In fact our "clock-life" is well used here. By "clock-life" we mean a *definite* hour for everything, even for the toilet, using enemas if no other way will bring about the desired result.

Medication.—The specific medication in these cases is a combination of extracts of ductless glands. Just which glands are necessary depend upon the case. Extract of the whole ovary, together with some adrenal and thyroid extract, dosage varying with each case, makes a good general combination to start with.

It is a curious fact that although many of these glands act physiologically in opposing ways, when given in combination the results of the combination are positive instead of neutralizing, as one might expect. The cells of Leydig, from the ovary, work better in a few of the cases than the whole ovary. In one case, in the sister of a physician, nothing

except adrenal cortex, and thyroid extract gave any result. In another case only a fresh preparation, in capsules, showed results. Stock tablets were entirely without value in this case. Once a week we received fresh pituitary and ovarian extract, but added strychnine sulphate. Under this treatment a large chloasma disappeared, there was a gain of ten pounds in weight and the lady who had been regarded as an eccentric became normal. Among some of the changes noted were in one case that a woman who had been a man-hater changed and became a wife; her demeanor became quite feminine, although she had been formerly a very masculine type. Again a stenographer in a large insurance company who had been leading a life of immorality abandoned it for a decent one. The wife of a physician from another city who had a feeling of hatred toward her only little daughter was of a peculiarly neurotic disposition; her case had been diagnosed as dementia precox by several examiners. She has returned home now and is quite normal in her affections. This lady had two large pigmented areas on her right thigh.

In conclusion it may be said that by expert use of these glands many of our former impossible cases are relieved of a life of misery not only for themselves, but for all with whom they come in daily contact.

848 GREENE AVENUE.

ALBINISM, LEUCODERMA, VITILIGO.

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THERE is little hope of securing relief from many of the extravagant absurdities of dermatological nomenclature and classification. Confusion of new and rare diseases, such as occurred with pityriasis rubra pilaris and lichen ruber acuminatus, is of course unavoidable, when such cases are described by individual observers in different countries; and we cannot expect to uproot from a language firmly implanted names, like anthrax, which have wholly different meanings in different languages. Perhaps, too, long names may be temporarily useful in describing new diseases. "Erythrodermie pityriasique en plaques disseminées," and the more recent "glossite losangique médiane de la face dorsale de la langue," are excellent examples of Brocq's admirable powers of description, but they fall haltingly from any other than a French tongue, and are a heavy load for any disease to carry indefinitely.

However, even if these are more or less necessary evils, it seems hardly necessary to perpetuate a lack of uniformity of names, applied to fairly well defined conditions, among dermatologists using the same language. This lack of uniformity exists to a considerable degree in the application of the terms albinism, leucoderma, and vitiligo, by English and American writers. In some cases the terms are also very loosely defined.

The purpose here is to illustrate the existing confusion, and to suggest, not a new terminology (quod di omen avertant!), but the adoption of the French one, which is definite and consistent. Definitions have been taken from some of the more recent books with no attempt at making a complete collection.

Albinism.—All dermatologists define albinism as a congenital affection, characterized by absence of cutaneous pigment. Most of them subdivide it into complete and partial albinism. Some limit the term to "the congenital conditions of achromia induced by *universal* absence of cutaneous pigment."[1] There seems to be no good reason for thus limiting it, and for departing from a usage which is generally accepted.

Leucoderma and Vitiligo.—Leucoderma and vitiligo are used as synonymous by most English and American writers. Here again there are some exceptions, for leucoderma is occasionally used "to designate the pigment-atrophy which is *partial* and congenital."[2] This also seems to be an added confusion and a departure from the generally accepted terminology. Vitiligo is also sometimes used exclusively to apply to the conditions for which most writers use both vitiligo and leucoderma.[3] If these two affections are to continue to be confounded, there is an advantage in discarding "leucoderma," as it is rarely used in this sense except in English, and is much rarer than vitiligo.

Leucoderma and vitiligo, when used as synonymous, are variously defined. "Vitiligo is an acquired pigmentary affection characterized by variously sized and shaped whitish patches with hyperpigmented borders."[4] "Leucoderma is a loss of pigment in the skin, probably due to some toxin."[5]

"The name leucoderma is given to affections of the skin characterized by the absence of pigment. This change in the skin may be primary or secondary, and it is to the *primary* form that the name leucoderma or vitiligo is given. It is *always* associated with increase of the pigment around the white spots . . . . There is a special variety affecting the neck of women suffering from syphilis."[6]

"An acquired disease of the skin, characterized by the appearance of white patches with convex outline extending at the periphery, surrounded *usually* by hyperpigmented skin.....All are agreed that there is no pigment in the epidermis of the leucodermic area, but there is a difference of opinion as to whether the pigment is increased in the surrounding skin or not. Increased it may be in some cases, but it *certainly is the exception* rather than the rule."[7]

German Usage.—By German writers albinism is used to mean either complete or partial congenital absence of pigment. Vitiligo is usually employed to represent the conditions for which both leucoderma and vitiligo are used by English writers, leucoderma being usually reserved for secondary achromic affections, and being rarely used without the addition of some qualifying word, as syphiliticum or psoriaticum.

French Usage.—In the French terminology albinism is used in the same sense as by German and the majority of English writers, signifying complete and partial congenital achromia. Leucoderma and vitiligo are not used as synonyms, and the two represent two different conditions, clearly distinguished from each other.

Leucoderma is an acquired achromia, characterized by a diminution or absence of pigment in the affected area, without any increase of the normal pigment in the surrounding skin.[8]

Vitiligo is an acquired achromia, or dyschromia, characterized by the development of one or more sharply limited spots of depigmentation surrounded by a more or less extensive hyperpigmented border.[9]

Neither the pigmentary syphilide nor the leuco-

melanoderma of Fournier is included; nor are any affections which show other than pigmentary changes. The simplicity and clearness of this grouping is apparent.

The confusion of the English terminology will be made more evident by placing some of the inconsistencies side by side.

Albinism is universal or partial congenital achromia.
is not partial congenital achromia.
Leucoderma is vitiligo.
is not vitiligo.
is partial congenital achromia (Albinism).
is not partial congenital achromia.
Leucoderma or Vitiligo (synonyms)
is acquired achromia.
is always associated with increase of pigment.
is usually associated with increase of pigment.
may be associated with increase of pigment, but this is certainly the exception, not the rule.
is made to include the pigmentary syphilide of the neck.
is loss of pigment in the skin, probably due to some toxin.

The differences in spelling may also be noted; leucoderma, leukoderma, leucodermia.

The simplicity of the French classification recommends it, and the clinical difference between leucoderma and vitiligo is sufficient to make distinctive names desirable. In addition to this there is accumulating evidence which seems to be tending to prove that vitiligo is a syphilitic manifestation. If this should prove to be the case, it will furnish a further reason for no longer confusing the two affections.

Milian asserts that "vitiligo is a purely syphilitic manifestation," and that though it is doubtful whether it can be cured by antisyphilitic treatment there is no doubt that it can be arrested by such treatment.[10]

Hudelo says that "the opinion that tends to attach certain cases of vitiligo to syphilis is becoming general."[11]

Joltrain found the Wassermann reaction positive in eleven out of eighteen cases of vitiligo. Two of the seven reactions which were negative were in old syphilitics, who had had the disease more than fifteen years before.[12]

Leucoderma is, of course, frequently a syphilitic manifestation, but it is also frequently due to other causes.

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RESEARCHES IN TRICHINOSIS.

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THE following experiments were undertaken particularly with the idea of ascertaining (1) whether the isolation of *Trichina spiralis* in the feces of patients suffering from trichinosis can be depended upon in the diagnosis of this disease, as preached in the textbooks, and whether the views of H. M. Hayberg,[1] J. Chatin,[2] and others who believe that the parasites discharged living in the feces constitute a factor in the spread of the disease is correct.

I am indebted to Dr. Edward Buxbaum for the autopsy material which came from a young woman. The muscle tissue employed in these experiments contained numerous living muscle trichinæ. This tissue was cut up in small pieces and fed to albino rats. The rats as a rule became very sick ten to twenty minutes after feeding; they would not move around, although they were very lively previous to feeding, their heads would droop, they refused nourishment, the breathing became very rapid, and they would begin to waste away. These symptoms lasted about four days, when the rats began to recover, and in two or three days appeared apparently normal.

The weight of the rats was between 100 and 150 grams. The amount of muscle tissue fed was between 4 and 8 grams. The method employed in searching for trichinæ was to make a saline emulsion of the fresh feces upon a slide and examine with the low and high powered lens of the microscope.

RAT I—Feb. 29, 1916. Fed with muscle tissue infected with trichinæ. March 2, 1916, again fed with the tissue. No trichinæ found in the feces. March 3, 1916. Made 56 spreads of feces, but was unable to find trichinæ. March 4, 5, and 6, 1916. Feces show no trichinæ. On the last day obtained the following blood count: Polymorphonuclears, 55 per cent.; eosinophiles, 1 per cent.; small lymphocytes, 40 per cent.; morphonuclears and transitionals, 4 per cent.; unidentified cells, 3 per cent. Red cells show metachromatophilia. Made daily examinations of feces, but found no trichinæ. We finally autopsied the rat on March 9, 1916.

Preparations were made of the skeletal muscles, diaphragm, heart, lungs, liver, spleen, kidneys, brain, and cord, but no trichinæ were found. No trichinæ were found in the stomach, but scrapings from the mucous membrane of the small intestine showed a moderate number of pregnant worms. Scrapings from various parts of the large intestine showed the presence of no trichinæ. There were also none in the fecal content of the large intestine.

RAT II.—Was fed on the very same days and with the same amounts of infected muscle tissue. Daily examinations for trichinæ were made from the feces, but none were found.

On March 7, 1916, the following blood count was obtained: White blood cells, 20,000; polymorphonuclears, 80 per cent.; small lymphocytes, 14 per cent.; large lymphocytes, 3 per cent.; eosinophiles, 3 per cent.; red blood cells, 9,100,000; hemoglobin, 95 per cent. Rat was autopsied March 9, 1916. The result of the autopsy was identical with that of rat No. 1.

RAT III.—Fed with infected muscle March 2, 1916. Daily examination of feces showed no trichinæ. Blood counts were made on the following dates:

	Mar. 6, 1916. Per cent.	Mar. 16, 1916 Per cent.	Mar. 18, 1916. Per cent.
Polymorphonuclears	69	55	57
Eosinophiles	2	1	1
Small lymphocytes	21	43	42
Large mononuclears	..	1	..
Transitionals	8	..	..
Normoblasts	..	5	19
Hemoglobin	90	..	100

Total white, 26,800; total reds, 7,990,000.

Rat autopsied March 20, 1916. Examined pieces of muscles of all four extremities, diaphragm, liver, spleen, lungs, heart, heart's blood, brain, cord, kidney, but found no trichinæ. No trichinæ in scrapings from gastro-mucosa or its contents. Found numerous adult pregnant trichinæ present in scrapings of mucosa of the entire small intestine. No trichinæ was found in scrapings from the large intestine or in the feces.

Rat IV.—Fed infected muscle March 2, 1916. Made daily examination of feces, but found no trichinæ. Blood examinations were made on the following dates:

	Mar. 16, 1916. Per cent.	Mar. 18, 1916. Per cent.	Mar. 24, 1916. Per cent.
Polymorphonuclears	55	50	55
Eosinophiles	8	4	4
Lymphocytes (small)	35	46	41
Mononuclears and transitionals	2	..	..
Total leucocytes	..	18,400	13,200
Total erythrocytes	..	8,960,000	8,300,000
Normoblasts	4	..	3
Hemoglobin	..	100	..

Autopsied rat March 28, 1916. Searched diligently for trichinæ in all organs and tissues, including scrapings from the gastro intestinal mucosa and its contents, but failed to find parasites *anywhere*.

Rat V.—Fed with infected muscle March 2. Made daily examination of feces, but found no trichinæ. Blood examination was made on March 16, showing the following: Polymorphonuclears, 76 per cent.; eosinophiles, 2 per cent.; lymphocytes (small), 21 per cent.; mononuclears and transitionals, 1 per cent.; total reds, 12,899,851; normoblasts, 10; hemoglobin, 100 per cent.; polychromatophilia present.

Conclusions.—At no time were trichinæ found in the feces of rats. Upon autopsy although trichinæ were found in the small intestine none were found in the large intestine or in the feces. Evidently the trichinæ undergo destruction in the fecal mass. Therefore, to judge by the experiment on rats, the finding of trichinæ in the feces is a myth and the feces play no rôle in the spread of this disease. One must not confuse the various parasites found in the feces which bear some resemblance morphologically to trichinæ spiralis.

In view of the fact that in the autopsy material mentioned above, numerous trichinæ were found in the muscle tissue while none were found in the liver, it would appear that F. Flury's explanation[3] (that the reason why trichinæ seek muscles is because they need glycogen) is insufficient, because if that were so one certainly would expect to find numerous trichinæ in the liver.

The cerebrospinal fluid in this case contained a moderate number of trichinæ.

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Sepsis After Gonorrhea.—Pflanz reports a case of acute anterior gonorrhea of three weeks' duration, apparently cured by a silver salt. Prostatic massage and irrigation were followed by local abscesses and fatal sepsis. Bacillary finds negative.—*Medizinische Klinik.*

Medicolegal Notes.

Medical Books as Evidence.—In an action for personal injuries received in a railroad collision, the North Carolina Supreme Court makes the following rulings with regard to the use of medical works in evidence. The opinions of scientists as to producing cause of locomotor ataxia, recorded in their works and not introduced under oath, with no opportunity for cross-examination, are inadmissible in cross-examining a physician as to such disease. Medical works are not admissible in evidence, and, when not alluded to in direct examination cannot be got before the jury, over objection, on cross-examination, nor can this be done by indirection in assuming their supposed teachings. The opinion of an expert witness cannot be contradicted by showing on cross-examination what some author has said. When an expert has given an opinion and cited a treatise as his authority, the book cited may be offered in evidence by the adverse party, as impeaching testimony, but unless the book is referred to in cross-examination it cannot be used for this purpose. Questioning a physician on cross-examination who had testified as to cause of locomotor ataxia, by reference to stated opinions in medical books being inadmissible as substantive evidence, cannot be justified on the ground that it was to test the qualifications of the witness, where it was not so restricted at the time nor in the charge.—Tilgham v. Seaboard Air Line Ry. (N. Car.) 89 S. E. 71.

Reference to Medical Authorities Disallowed—Expert Evidence as to Hysteria.—In an action for damages for shock from a fallen electric light wire, the plaintiff, on cross-examination of the defendant's medical witnesses, elicited testimony that the plaintiff was not suffering from an organic disease or injury to the nerves or nerve centers, or any molecular change therein. It was held as evidence that witness knew it was claimed by some medical authorities that there might be a molecular change in the nerves from electricity, and that the contrary was also claimed, and that the question was undecided, thereby importing into the case the theory of some authority to refute the testimony of the defendant's witnesses, was reversible error.

It was also held admissible to ask a medical witness whether or not there was an element of deception and dissimulation mixed up with their ailments, either always or some of the time.—Sykes v. Village of Portland, Michigan Supreme Court, 159 N. W. 325.

Alcoholic Insanity as a Defense to Homicide.—The doctrine is almost universal that alcoholic insanity or mental incapacity produced by voluntary intoxication, existing only temporarily at the time of the commission of the homicide, is no excuse or defense in a prosecution therefor. Drunkeness is one thing, and the disease of the mind to which drunkenness leads is a different thing. Temporary insanity occasioned immediately by drunkenness does not destroy responsibility for crime, where the defendant, when sane and responsible, voluntarily makes himself drunk. To constitute insanity caused by intoxication a defense to an indictment or information for murder, it must be insanity caused by chronic alcoholism, and not a mere temporary mental condition.—Perryman v. State, Oklahoma Criminal Court of Appeals, 159 Pac. 937.

Revocation of License for Unprofessional Conduct.—The Washington Supreme Court, in proceedings to revoke a license to practice as an osteopath holds that the provision stating unprofessional conduct for which license may be revoked to embrace all advertising of medical business intended or having tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public morals or safety, is not unconstitutional, as so vague and uncertain as to leave the determination to arbitrary personal opinion of the medical board; nor is the provision as to advertising medicine to regulate or establish menses unconstitutional as vague and uncertain.—State Board v. Macy (Wash.) 159 Pac. 801.

Expert Opinion as to Ptomaine Poisoning.—In an action against café keepers for serving tainted food it was held competent for a physician of long experience in general practice, in reply to a question sufficiently hypothesizing the plaintiff's evidence to give his opinion that ptomaine poisoning may be caused by eating impure food or tainted meats, that the eating of tainted chicken may cause such poisoning to a human being, and that such taint in meat may be detected by its odor or by the microscope.—Glenwood Café v. Lovingood, Alabama Supreme Court, 72 So. 354.

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POLIOMYELITIS AFTER-CARE.

THE aftermath of the poliomyelitis epidemic is replete with important medical and social problems which the community, as well as the medical profession, are resolved to meet squarely. Of the total of over nine thousand cases reported in New York City about one-fourth died, a considerable percentage escaped with light or no consequences, and about five thousand have come out crippled. Very many of the children have suffered paralysis of the lower limbs and approximately 75 per cent. of these come from families who must depend upon charitable medical relief. The factors of age, economic condition, and inability to walk created the immediate problem of transportation of patients to dispensaries for treatment. This had become a matter of first importance and two organizations had made it their business to attend to it, when recently the city has taken over the burden. All the other phases of the problem remain to be dealt with by private agencies.

The most important agency in the field is the New York Committee on After-Care of Infantile Paralysis Cases, which came into existence in August at the instance of the Health Commissioner of the city and with the financial support of the Rockefeller Foundation. The committee set itself to work immediately, but because of the newness of the problem and its perplexity and for various other reasons it started with work along the periphery. It devised a large number of forms for the tabulation of statistical information which will, no doubt, prove of real value provided medical treatment given by the dispensaries of the city, which forms the basis of the statistics, is up to a certain standard of efficiency.

The main problem, therefore, is the problem of organizing the medical and dispensary forces in such a way as to bring the largest results with a minimum of waste. The After-Care Committee should take it upon itself to see that the opportunities of the dispensaries which undertake after-care work should be of the highest possible order and all the assistance needed for the equipment and the necessary corps of workers should be forthcoming. The necessary funds should be raised by the Committee and divided among the individual institutions on the basis of quality and quantity of work. A careful system of supervision should be instituted and provision should be made for the home treatment of cases which, because of their condition, cannot be properly designated as ambulatory cases. It is, moreover, difficult to expect that mothers who have more than one child and upon whom devolve all the home duties would be able to give a few hours several times a week to taking the afflicted child to a dispensary for treatment and to keep this up for years. Means should be provided for taking care of children whose home conditions are such as to make it impossible for them to be seen in a clinic as often as is necessary. Visiting masseurs and nurses may, in a large measure, meet the situation.

The After-Care Committee has many hard and complicated problems before it and it is to be hoped that, with the cooperation of the profession and the hospitals and dispensaries which should be given unstintingly, it will be able to solve these problems to the best interests of the afflicted children and of the community.

NASCENT OXYGEN IN THE TREATMENT OF INFECTED WOUNDS.

WITH regard to the treatment of infected wounds, and practically all wounds of war are infected to a lesser or greater extent, there is among those who have studied the question at first hand a somewhat remarkably wide divergence of views. Some surgeons, whose reputations are deservedly high, hold that antiseptics are of little or no use to check the progress of sepsis, while others whose opinions are entitled to equal consideration contend that every infected wound should be treated antiseptically. Again, there is no unanimity of opinion as to the kind of antiseptic to be employed, although as the result of clinical experience, one or two chemical products appear to stand out. However, the comparative merits of the various antiseptics in use on the battle fronts and in the military hospitals can hardly be brought within the limits of an editorial article and besides they have already been adequately dealt with previously in these pages. The object here is to call attention to one means of checking the infection of wounds which has been somewhat largely used and very well spoken of by many European army surgeons. Of course, oxygenation, the method to which reference is made, is by no means a new procedure, but it has been brought into special prominence during the war.

The forms of wound infection over which oxygenation exerts the greatest effect are those of the anaerobic type, a type which has been especially prevalent during the war, owing to the conditions of warfare and to the nature of the soil in that part of France in which much of the fighting has been going on. The land of the north of France and of Flanders is intensively cultivated and therefore thickly manured, and in consequence the anaerobic spores teem in the soil, and it may be said that there are few wounds incurred in the locality which are not more or less infected by them. The object, then, of effective treatment is to get rid of these spores or to prevent them from multiplying.

Burghard, Leishman, Moynihan and Wright, in a memorandum published in the *Lancet* last spring, stated that the rational line of treatment of infected wounds consists in checking at the earliest possible moment the anaerobic infection of the discharges. The wound should be freely opened up and then carefully cleansed with an antiseptic solution, all foreign bodies, sloughs, and blood clots being carefully removed. Kenneth Goadby in the *Practitioner* for May, 1916, points out that free oxygen prevents the development of the anaerobic germ. Mr. A. G. Foulerton recommends the method of continuous oxygenation in the treatment of anaerobic infections. The cavity of the wound or some part of the wound must become free from oxygen before the spores can become bacilli and before the bacilli can vegetate. The wounded tissues must be deprived of oxygenated blood before their invasion by the bacilli is possible.

French and German surgeons concur with British surgeons in their views as to the effectiveness of oxygenation in preventing the spread of anaerobic infection. Indeed the fact is too well known to need emphasis, and the question has been rather how best to apply the method. It can be applied in two or three ways, but the easiest and in the opinion of many authorities an effective mode of application is by means of frequent or, if possible, continuous irrigation of the recesses of the wound with a solution of hydrogen peroxide. Moreover, such a solution is said to possess the further advantage of breaking up blood clots and generally facilitating the disinfection and cleansing of the wound.

While oxygenation is especially indicated in the treatment of anaerobic infection, it goes without saying that it is of value in all wound infections. Its main value possibly rests in its preventive properties, that is to say that anaerobic wound infection will be checked by the early employment of oxygenation and on the good old principle that "a stitch in time saves nine" whenever the form of infection is suspected it will be as well, if feasible, to employ the method. These, at any rate, appear to be the views of many surgeons of the Allied forces on the western war front and of the French surgeons in particular, who from the first have made wide use of oxygenation in the treatment of infected wounds.

RE-EDUCATION OF CRIPPLED SOLDIERS.

ONE of the most difficult problems presented by the European war is how to render the numerous maimed and crippled soldiers more or less independent and self-supporting members of the community. From all points of view a solution or as good a partial solution as possible of the problem is not only desirable but essential. The methods of warfare now in use have crippled, are crippling, and will cripple a very large body of men, and of men too who physically and mentally are of the best. It is necessary for their own well-being and for the well-being of the nation to which they belong, as also for the preservation of their own self-respect, that every effort should be made to re-educate these men in order that they may be enabled to earn their living by honest work.

France, as in so many spheres of human endeavor, is leading the way in the vocational re-education of disabled soldiers. Dr. Bourillon in the *Revue Philanthropique* of some months ago discussed this question at some length. He pointed out a phase of this matter which is apt to be overlooked—that it is not only the grave mutilations, such as the loss of limbs, which disable the soldier, but other injuries which, while not so arresting, are equally serious in their results. Such are paralysis, joint stiffness, the severing of tendons and nerves, all of which exert an important influence on the well-being of the individual in his relation to society. For instance, a man who has been a bookkeeper and who loses a leg in the war can earn his daily bread in the line that he followed formerly. On the other hand, a professional piano-player or a typewriter who has lost even a single finger will be handicapped so far as carrying on the vocation in which he had become an expert is concerned. Thus the situation must be considered from the point of view of the future of the invalided; it is the relation between his disability and his occupation which is the essential factor.

First of all, the disabled soldier must be aroused from the condition of moral inertia which is so frequently the outcome of the disablement. And this object can be well accomplished only by teaching him how to use to the best advantage, the physical qualities and mental abilities which have been left to him. If these cripples are allowed to lapse into a state of mental lethargy, it goes without saying that the ultimate consequences will be appalling. Work is the sole means by which they can be saved from this pit. But in order to be able to work so as to be of economic service to the State and to preserve the independence of their families and themselves, the large majority of disabled soldiers must undergo a course of re-education. They must not, however, be practically thrust into the workshop. They must be carefully examined so as to be sure that their physical condition is such as to allow of their following the proposed trade. Mind and body must first be subjected to functional readaptation.

A great deal of this repairing work can be done by the surgeon and the orthopedist. From the medical point of view, physiotherapy by massage, medical gymnastics, mechanotherapy, baths, douches, etc., go to cure or ameliorate paralysis, ankylosis, muscular atrophy, or other injuries caused by or following wounds received in war. Functional readaptation is of the highest importance from the moral and economic standpoint. From the moral aspect, it is of the greatest moment that the crippled soldier shall be self-supporting and self-respecting. If he does not work he will be something of a menace, for the idle man is dangerous to the nation, to himself, and to his family. From the economic aspect the idle crippled soldier will be a burden in place of a source of prosperity to the State.

PRODROMAL SYMPTOMS OF CEREBRAL HEMORRHAGE.

THIS subject is of perennial interest because some of the leading internists and neurologists assert that there are no prodromes and produce statistical material to sustain the claim. The great number of alleged prodromes tends to confuse the subject and proceeds as a rule from men of limited experience. Some clinicians believe in the Raymond type of apoplexy which is characterized by paresthesia in one hand but such cases are to say the least extremely rare. The neurologist lays the chief if not the sole emphasis on the presence of an increase in intracerebral tension due to a hypertrophic heart, but the latter cannot produce hemorrhage in the absence of certain vascular changes. Retinal hemorrhages occasionally serve as a true prodrome. Apoplexy in the obese is nearly offset by apoplexy in medium and thin subjects. It has been stated over and over by pathologists that there can be no typical apoplexy in the absence of certain miliary nodular swellings in the smaller arteries, and that these are practically congenital. The longer a man lives the greater the liability of these to rupture. The sudden increase in tension which causes the hemorrhage cannot be explained. Other stable factors, as hypertrophy of the heart, are doubtless present, and the determining causes show great variation and are often emotional.

In an article by Kisch cited in *Il Policlinico* September 17, the author enumerates as prodromes of apoplexy, permanent marked elevation of blood pressure with enlarged heart, beginning changes (sclerosis) in the vessels—notably in the brain and kidneys—and finally certain associated intestinal disturbances. In the plethoric form of acquired obesity the gain in weight is closely followed by a rise in blood pressure. The tendency of the fat is to accumulate in the abdomen—mesentery, omentum, the perirenal region, etc., with resulting disturbance of the abdominal circulation. If the subjects have indulged freely in tobacco and alcohol the vessels suffer more in proportion. The enlarged heart results from increase of blood pressure. Prodromes of apoplexy must therefore be sought in the loss of arterial elasticity, contractility, and permeability. The author here enumerates the evidences of cerebral arteriosclerosis as they are described in standard works of reference. Albuminuria is also a valuable prodromic indication, along with evidences of sclerotic kidney.

The intestinal disorders which the author has already termed of prognostic value are of the most varied kind, and are believed to be due to changes in the abdominal circulation. Of determining causes are mentioned excessive physical effort, running, mountain climbing, over-distention of the stomach, excesses in beer, sexual excesses, straining at stool, violent emotions (pleasurable or painful), weather variations, etc. Immediate prodromes are headache, vertigo, vomiting.

Kisch's views have no bearing on forms of apoplexy in the thin subject, the senile subject, and certain other types. He has done no more than call attention to the fact that men with cardiorenal disease, arteriosclerosis, and obesity often owe their deaths to cerebral hemorrhage. Evidences of these diseases are not to be construed as prodromes in the correct sense of the term. Apoplexy of this type is rather to be regarded as a complication or sequel of cardiovascular disease, or as a mode of death.

RHACHIALBUMINIMETRY.

THE present war has greatly increased the research of the spinal canal for albumin—in cases of cerebrospinal commotion, trephining, suspected syphilis, and metasyphilis, etc. Some advocate lumbar puncture in every case of commotion. Sicard and Cantalouse, writing in *La Presse Médicale*, are in favor of precipitation of the albumin with heat and trichloracetic acid (1:2). A special graduated tube, known as the rhachialbuminimeter, is used, and from 8 to 10 c.c. of cerebrospinal fluid is withdrawn for a test. Four c.c. of fluid is turned into the tube (it should be taken from the top) and the latter should be heated to 80° or 90° C. Then 12 drops of acid are added, the mixture allowed to cool off, and the tube is occluded with a rubber stopper. It must now stand perfectly vertical for five hours, when a reading is taken. (If there is no haste, it may be allowed to stand 24 hours, when the precipitate will have settled to a straight line.) Normal standards must, of course, be known. The precipitate may be followed up in cerebrospinal syphilis, tabes, and general paralysis, in order to mark the evolution of the disease. An increased amount of albumin, as shown by the tube, is a hyperalbuminosis which is prominent, for example, in cerebral syphilis. After 24 hours' standing, an albuminosis is quickly seen to be pathological, or the reverse. A residual albuminosis is perceived in hemiplegic cases after the subsidence of symptoms, and may be due to a persistent lymphocytosis. The authors term this the equivalent of a scar in solid tissue. As the height of a precipitate in a tube is only a rough measure of the amount of albumin present, the authors, by control solutions, in which albumin is weighed, are able to calculate values which have the force of actual weight.

PITUITARY EXTRACT IN POST-ABORTION CURETTAGE.

THIS use of pituitary extract, as suggested by H. D. Furniss (*Surgery, Gynecology, and Obstetrics*, September, 1916), seems such a logical procedure that one wonders at not having seen the suggestion made in print long before this. Furniss administers one cubic centimeter of pituitary extract hypodermically before curetting for incomplete abortion, and has found that the most favorable time to give the pituitrin is 15 minutes before the actual curettage is begun. When the interval between injection and operation has been less, the resulting contraction has not been so pronounced. Among the advantages which accrue from the preliminary injection of pituitary extract are that it produces firm contraction of the uterus, so that the curetting is almost bloodless, and much more easily done; and that because of the contraction the uterine cavity is small and the contracted walls present a resistance to the curette which makes their cleansing less difficult, and also lessens the risk of uterine perforation. Furniss states that as yet he has not had any excessive postoperative bleeding following the use of pituitrin; but, realizing that such a possibility exists, he advises packing uterus and vagina with iodoform gauze, which is to be removed at the

end of 24 hours. While Furniss' article refers to the use of pituitrin only before curetting for incomplete abortion, there seems to be no good reason why it could not be used to advantage under certain other conditions; for example, when curetting forms part of the operative treatment in those types of cases in which the uterus is relatively large and flabby, or when curetting is done in the case of an individual whose menstrual flow is habitually excessive. It would seem, therefore, that Furniss has called attention to a therapeutic resource that will ultimately be found valuable in a far more extended field in gynecological surgery than that covered by the original suggestion.

News of the Week

Civil Service Examinations.—The United States Civil Service Commission announces open competitive examinations to be held in various places on December 13, 1916, for the purpose of filling vacancies in the following positions:

Physician, male, in the Indian and Panama Canal Services, at salaries in the former from $1000 to $1200 a year, and in the later, $1800 a year. Applicants must be graduates of or senior students in recognized medical schools, between the ages of twenty-one and forty, and citizens of the United States.

Dental interne, male; a vacancy now exists in Saint Elizabeth's Hospital, Washington, at a salary of $600 a year and maintenance. In addition to the clinical work, the interne is given an opportunity for study and for experimental and research work in the pathological, histological and other laboratories of the institution. Applicants must be graduates of or senior students in regularly incorporated dental colleges, twenty years of age or over, unmarried, and citizens of the United States.

Further particulars and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from local secretaries of United States Civil Service Boards.

Opportunity for Pathologist.—The New York Municipal Civil Service Commission will shortly hold an examination for the purpose of filling a vacancy in the position of pathologist in the Kings County Hospital, Brooklyn, at a salary of $1,500 per annum. The examination will be open to citizens of the United States who are graduates of a reputable medical school. Applications will be received up to December 5, at the offices of the Municipal Civil Service Commission, Room 1400, Municipal Building, New York.

Diet Experiments.—Twelve employees of the Chicago Department of Health began on November 22 a two weeks' experiment intended to demonstrate that a person can be suitably and sufficiently fed on an expenditure of forty cents a day. Throughout the two weeks the diet squad will pursue their ordinary occupations and will endeavor to keep conditions as nearly normal as possible.

Sydenham Hospital.—The annual report of Sydenham Hospital for the year ending October 1 shows that during that time 2057 cases were treated in the hospital and 32,971 in the dispensary, of these 14,186 received free treatment. The deficit for the year was only $6,680.64, the lowest annual deficit since the organization of the hospital fourteen years ago.

Hospital Ships Sunk.—The White Star liner *Britannic*, the largest British ship afloat, which has been in use as a hospital ship, was sunk by a submarine torpedo or a mine, in the Aegean Sea on November 21. There were no wounded aboard at the time, and the loss of life was small. The British hospital ship *Braemar Castle*, bound from Salonica to Malta with wounded, also was sunk in the Ægean on November 23; it is not known whether the ship was torpedoed or was mined. The loss of life was slight.

Harvard Doctors Sail.—Another detachment of the Harvard Medical School unit, consisting of six surgeons, one dentist and twenty nurses, sailed from New York on November 20 for Liverpool. The group will take the place of the doctors and nurses now on duty at the British base hospital in France. This makes a total of 117 surgeons and dentists and 184 nurses who have been in the service of the unit since it was organized in June, 1915.

After-Care of Paralysis Cases.—A campaign was begun last week to raise $250,000 for a year's care of the 5600 children who were left paralyzed as a result of the poliomyelitis epidemic last summer in New York, and at a meeting held at the Hotel Manhattan to formulate plans for the work addresses were made by Dr. John S. Billings, Dr. John W. Brannan, Dr. Thomas J. Riley and Dr. Virgil P. Gibney.

Clinics at Lebanon Hospital.—Dr. Parker Syms and Dr. M. R. Bookman will hold surgical clinics at Lebanon Hospital, New York, on Wednesdays at 3 o'clock, from November 1 to March 1, to which the medical profession is invited. The hospital is most conveniently reached by the subway, West Farms division, to Jackson Avenue station. A bulletin of the operations scheduled is posted at the Academy of Medicine.

United States Census.—The United States Census Bureau estimates that on January 1, 1917, the population of the country and its possessions will have reached 113,309,285, as against 111,579,952 in 1916. The population of the continental United States at that time is estimated at 102,826,309. The State of New York leads with an estimated population of 10,366,778; Pennsylvania is given 8,591,029; Illinois, 6,193,626; Ohio, 5,181,220; Texas, 4,472,494, and Massachusetts, 3,747,564.

Dr. **Charles A. Powers** of Denver has returned after six months of service as surgeon at the American Ambulance Hospital of Paris. He will resume work there on April first.

Dr. Simon Flexner, director of the Rockefeller Institute, spoke before the Brooklyn Academy of Arts and Sciences on November 23, on the recent epidemic of poliomyelitis, and warned his hearers that the plague might visit New York again, and that physicians, unaided by laymen, were powerless to prevent its vigorous recurrence.

Dr. John Shelton Horsley, surgeon in charge of St. Elizabeth's Hospital, Richmond, Va., has been awarded by the Southern Medical Association a medal for original work in the surgery of blood vessels and intestines.

Fined for Substitution.—For substituting aspirin for phenacetin when compounding a prescription calling for the latter drug, a druggist of First Avenue, New York, was recently fined $100 in one of the city courts.

Medical Society of Virginia.—The forty-seventh annual meeting of this society was held in Norfolk, Va., on Oct. 24 to 27. Officers for the ensuing year were elected as follows: *President*, Dr. George A. Stover, South Boston; *Vice-presidents*, Dr. Charles

S. Webb, Bowling Green; Achilles L. Tynes, Staunton, and William B. Barham, Newsoms; *Secretary*, Dr. Paulus A. Irving, Framville; *Treasurer*, Dr. Mark W. Peyser, Richmond. Roanoke was named as the next place of meeting.

Gifts to Charities.—By the will of the late Mrs. Wheeler H. Peckham of New York, bequests of $10,000 each are made to St. Mary's Free Hospital for Children, the Sea Breeze Hospital and the Morristown Memorial Hospital and All Souls Hospital, Morristown, N. J.

Deaths Abroad.—Dr. Eugene Louis Doyen of Paris, whose method of treating cancer by the injection of a serum attracted widespread attention a few years ago, died at his home after a brief illness on November 21, aged 57 years.

A recent dispatch from Sir William Osler announced the death of Miss Louisa Parsons, a trained nurse who was for many years connected with the Johns Hopkins Hospital. Miss Parsons was trained under Florence Nightingale, and had seen service in Lord Wolseley's Egyptian Expedition in 1882 and in the Spanish-American and Boer wars.

Court Reinstates Physician.—By an order of the District Court of Denver, Col., the name of Dr. Floyd W. Noble of that city, whose license to practise was recently withdrawn, has been restored to the list of practising physicians, and the cancelled license will be reissued. Dr. Noble was charged with murder in connection with the death of a woman in Denver, and was tried and acquitted of the crime by a jury. While he was still under charges, however, his license was revoked by the State Board of Medical Examiners.

Brooklyn Medical Library Association.—The annual meeting of this society will be held on Monday, December 4, 1916, at the Library Building, Medical Society of the County of Kings, 1313 Bedford Avenue, at 8.30 P. M. Dr. Edward E. Cornwall will deliver an address on "Medical Notes of Early New England, 1620-1650."

The Private Pavilion of the Montefiore Home and Hospital was opened with appropriate ceremony on November 20, having been in process of construction for two and a half years. The cost of construction, with suitable equipment, amounting to a quarter of a million dollars, was contributed by four of the directors of the institution. The medical director of the home was responsible for the idea of this special hospital for well-to-do chronic invalids who will there find the comforts of a hotel in addition to treatments which have proven effective in chronic cases, such as hydrotherapy, electrotherapy, mechanotherapy, thermotherapy, and manual massage as well as such medical or surgical care as the case may require.

Rockingham County (N. H.) Medical Society.—The annual meeting of the Rockingham County Medical Society was held in Portsmouth, N. H., on November 9, when the following officers were elected: *President*, Dr. Herbert C. Day, Exeter; *Vice-president*, Dr. George H. Towle, Newmarket; *Secretary*, Dr. Ralph S. Perkins, Exeter; *Treasurer*, Dr. Walter Tuttle, Exeter.

Obituary Notes.—Dr. James D. Wagner of Selma, Cal., a graduate of the medical department of the University of Nashville, in 1873, died at Long Beach, Cal., on October 16, from cerebral hemorrhage, aged 72 years.

Dr. Carl Buttner of Orange, N. J., a graduate of the University of Würzburg, Germany, in 1867, and a member of the Medical Society of the State of New Jersey and the Essex County Medical Society, died at his home on November 16, aged 67 years. Dr. Buttner had been City Physician in Orange, was one of the organizers of the first Board of Health there and was formerly a member of the staff of the Orange Memorial Hospital.

Dr. Thomas Joseph Dunn of New York, professor of clinical medicine at Fordham University, and senior physician to the Fordham Hospital, died at his home on November 23, aged 52 years. Dr. Dunn was graduated from New York University Medical College, New York, in 1888, served for two years as an interne in Bellevue Hospital and later studied in Vienna. He was a member of the American Medical Association, the New York State Medical Society, the Bronx County Medical Society, the Bronx Medical Association and the Society of the Alumni of Bellevue Hospital, president of the Bronx Sanitarium and attending physician to St. Laurence Hospital.

Dr. Marcus M. Franklin of Philadelphia, a graduate of the Jefferson Medical College, in the class of 1870, died on November 6 at the age of 74 years. Dr. Franklin was the first interne appointed to the German Hospital of Philadelphia, and later was visiting surgeon to this institution for fourteen years. He was a member of the Medico-Legal Society of Philadelphia, the Philadelphia Obstetrical Society, the Philadelphia County Medical Society, and the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. Frederick L. Grander of Scranton, a graduate of the Jefferson Medical College, in the class of 1885, died on November 4 at the age of 55 years.

Dr. Milton S. McMurtry, Sr., of Clovis, Cal., a graduate of the Missouri Medical College, St. Louis, in 1877, died at his home on October 3, from pneumonia, aged 60 years.

Dr. William Lander Settlemyer of Gaffney, S. C., a graduate of the Kentucky School of Medicine, Louisville, in 1892, died at his home on October 8, aged 49 years.

Dr. William Stiles, Jr., of Philadelphia, Pa., a graduate of the Hahnemann Medical College and Hospital of Philadelphia, in 1875, died at his home on October 7, from uremia, aged 74 years.

Dr. Isaac D. Jones of Murdock, Neb., a graduate of the University of Nebraska, College of Medicine, Omaha, in 1895, and a member of the Nebraska State Medical Association and the Cass County Medical Society, died at his home on October 10, of nephritis, aged 52 years.

Dr. John A. Seapy of Geddes, S. D., a graduate of Bennett Medical College, Chicago, in 1900, and a member of the American Medical Association, the South Dakota State Medical Association, and the Charles Mix County Medical Society, died in St. Mary's Hospital, Rochester, Minn., recently, aged 42 years.

Dr. Edward O. Plumbe of Chicago, Ill., a graduate of the New Orleans School of Medicine in 1869, died at his home on October 22, aged 78 years.

Dr. Elijah Smith Ellzey of Blue Mountain, Miss., a graduate of the Kentucky School of Medicine, Louisville, in 1876, and a member of the Mississippi State Medical Association and the Tippah County Medical Society, died in a hospital in Ripley, Miss., on October 13, aged 68 years.

Dr. EDWIN ELLIOTT of Chesaning, Mich., a graduate of the Detroit College of Medicine and Surgery in 1894, and a member of the Michigan State Medical Society and the Saginaw County Medical Society, died at his home on September 23, from angina pectoris, aged 52 years.

Dr. JOSEPH R. BROWN of Seward, N. Y., a graduate of Albany Medical College in 1868, and a member of the American Medical Association, the Medical Society of the State of New York, and the Schoharie County Medical Society, died at his home on October 13, from arteriosclerosis, aged 68 years.

Dr. CHARLES WESTLY LESTER of Guthrie, Tex., a graduate of Vanderbilt University Medical Department, Nashville, in 1880, and a member of the American Medical Association, the State Medical Association of Texas, and the Todd County Medical Society, died at his home on October 11, from cerebral hemorrhage, aged 58 years.

Dr. ISAAC R. GODWIN of Fincastle, Va., a graduate of the Medical College of Virginia, Richmond, in 1860, and a member of the Medical Society of Virginia, and the Botetourt County Medical Society, died at his home on October 1, aged 79 years.

Dr. JOHN CAMPBELL SPENCER of San Francisco, Cal., a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1885, and a member of the American Medical Association, the Medical Society of the State of California, the San Francisco County Medical Society, and the American Urological Association, died at his home on October 19, aged 55 years.

Dr. LEE WALTON VERDERY of Augusta, Ga., a graduate of the Medical Department of the University of Georgia, Augusta, in 1911, died suddenly at Fort Sam Houston, Tex., on October 29, aged 28 years. Dr. Verdery was a lieutenant in the hospital corps of the United States Army.

Dr. CHARLES EDWIN STONE of Lynn, Mass., a graduate of the College of Medicine of the University of Vermont, Burlington, in 1906, and a member of the Massachusetts Medical Society and the Essex County Medical Society, died at his home on November 6, after a short illness, aged 48 years.

Dr. HUGH R. GREEN of Delaplane, Va., a graduate of the School of Medicine of the University of Maryland, Baltimore, in 1867, died recently, aged 74 years.

Dr. GEORGE D. STANTON of Stonington, Conn., a graduate of Bellevue Hospital Medical College, New York, in 1865, and a member of the Connecticut State Medical Society and the New London County Medical Society, died on November 4, aged 77 years.

Dr. EMIL HESSEL BECKMAN of Minneapolis, Minn., a graduate of the University of Minnesota Medical School, Minneapolis, in 1901, and a member of the American Medical Association, the Minnesota State Medical Association, the Olmsted County Medical Society, the American Surgical Association, the Western Surgical Association, and the American College of Surgeons, died at his home on November 7, from blood poisoning, aged 44 years.

Dr. PHIL C. NAUMANN of Burlington, Iowa, a graduate of the State University of Iowa, College of Medicine, Iowa City, in 1887, died near his office on October 16, from cerebral hemorrhage, aged 55 years.

Dr. RICHARD H. PARSONS of Mount Holly, N. J., a graduate of the department of Medicine of the University of Pennsylvania, Philadelphia, in 1880, and a member of the American Medical Association, the Medical Society of New Jersey, the Burlington County Medical Society and the American Medico-Psychological Association, died in the Mercer Hospial, in Trenton, on November 12, from pneumonia, aged 57 years. Dr. Parsons had been medical superintendent of the Burlington County Hospital for thirty years.

Dr. FRANCIS J. BOCK of Lancaster, Wis., a graduate of the Hahnemann Medical College and Hospital of Chicago, in 1906, and a member of the State Medical Society of Wisconsin and the Grant County Medical Society, died on October 18, aged 41 years.

Dr. CLARIUS CONFUCIUS BIRNEY of Mason City, Iowa, a graduate of Rush Medical College, Chicago, in 1874, died at his home on October 21, from nephritis, aged 69 years.

Dr. JOEL V. SAMPSELL of Elyria, Ohio, a graduate of the Jefferson Medical College of Philadelphia, in 1877, died at his home on October 20, aged 65 years.

Dr. FRANCIS J. KEANY of Boston, professor of dermatology in Tufts College Medical School, and a trustee of the Boston City Hospital, died at his home on November 23, aged 48 years. Dr. Keany was graduated from the Harvard University Medical School, Boston, in 1892, and was a member of the Massachusetts Medical Society and the Suffolk District Medical Society.

Dr. WALTER S. SUTTON of Kansas City, Mo., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1907, and a member of the American Medical Association, the Kansas Medical Society, the Missouri State Medical Association, the Jackson County Medical Society, American Association of Anesthetists and the American College of Surgeons, died on November 11, following an operation for appendicitis, aged 39 years. Dr. Sutton was Associated Professor of Surgery in the University of Kansas, School of Medicine, Lawrence and Rosedale.

Dr. CHARLES H. TODD of Owensboro, Ky., a graduate of Tulane University of Louisiana, School of Medicine, New Orleans, in 1861, and a member of the American Medical Association, the Louisiana State Medical Society, and the Daviess County Medical Society, died suddenly at his home on November 12, from heart disease, aged 78 years.

Dr. ALBERT CRANDALL WAY of Perry Center, N. Y., a graduate of the Department of Medicine of the University of Buffalo in 1895, and a member of the American Medical Association, the Medical Society of the State of New York, and the Wyoming County Medical Society, died at Evergreen Lodge, Saranac Lake, on November 5, from tuberculosis, aged 46 years.

Dr. GUERT M. TINKER of Sharon, Pa., a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1894, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Mercer County Medical Society, died at his home on November 9, from blood poisoning, aged 47 years.

Dr. ARTHUR S. TOWNSEND of Bennettsville, S. C., a graduate of the Medical College of the State of South Carolina, Charleston, in 1887, and a member of the South Carolina Medical Association and the Marlboro County Medical Society, died at his home on November 12, aged 53 years.

Dr. HENRY K. LEAKE of Dallas, Texas, a graduate of the Kentucky School of Medicine, Louisville, in 1869, and a member of the State Medical Association of Texas and the Dallas County Medical

Society, died at his home on October 29, from nephritis, aged 69 years.

Dr. JULIUS H. EICHBERG of Cincinnati, Ohio, a graduate of the Miami Medical College, Cincinnati, in 1889, a member of the American Medical Association, the Ohio State Medical Association, and the Hamilton County Medical Society, and professor of materia medica, pharmacy and therapeutics in the University of Cincinnati, College of Medicine, died at French Lick Springs, Ind., on November 2, from heart disease, aged 57 years.

Dr. HENRY H. WHITAKER of Hilliardston, N. C., a graduate of the School of Medicine of the University of Maryland, Baltimore, in 1883, and a member of the Medical Society of the State of North Carolina and the Nash County Medical Society, died at his home on October 12, from cerebral hemorrhage, aged 55 years.

Dr. ROBERT C. WESTPHAL of Yorktown, Texas, a graduate of the Starling Medical College of Columbus, Ohio, in 1902, and a member of the American Medical Association, the State Medical Association of Texas, and the Dewitt County Medical Society, died in Cuero Hospital on October 21, after an operation, aged 46 years.

Dr. SILAS F. ROBERTS of Glencoe, Ohio, a graduate of the Hospital College of Medicine, Louisville, in 1895, was killed by a train at a grade crossing in Glencoe on October 26, aged 47 years.

Dr. JOHN SALTENBERGER of Millstadt, Ill., a graduate of the Washington University Medical School, St. Louis, in 1864, died at his home on October 20, from heart disease, aged 84 years.

Dr. WILLIAM H. DUKEMAN of Los Angeles, Cal., a graduate of New York University Medical College in 1880, died suddenly on October 22, from heart disease, aged 61 years.

Dr. WILLIAM H. CONIBEAR of Lakeland, Fla., a graduate of Rush Medical College, Chicago, in 1876, and a member of the Illinois State Medical Society, the Florida Medical Association, and the Polk County Medical Society, died at his home on October 25, from carcinoma of the liver, aged 73 years.

Dr. WILLIAM DAVID ALDRICH of Albany, N. Y., a graduate of the Albany Medical College in 1910, died on September 28, aged 33 years.

Dr. NEAL L. BURGESS of Sumner, Texas, a graduate of the Memphis Hospital Medical College, Memphis, in 1909, and a member of the State Medical Association of Texas and the Lamar County Medical Society, died at his home on November 1, from cerebral hemorrhage, aged 39 years.

Dr. JULIUS D. ABBOTT of Bethel, Ohio, a graduate of the Cincinnati College of Medicine and Surgery in 1874, died in Christ Hospital, Cincinnati, on October 22, aged 71 years.

Dr. PRICE PATTERSON of Maysville, Okla., a graduate of the Memphis Hospital Medical College, Memphis, in 1901, and a member of the American Medical Association, the Oklahoma State Medical Association, and the Garvin County Medical Society, died suddenly at Maysville on October 28, aged 53 years.

Dr. JOHN D. MCCOLLUM of Alpharetta, Ga., a graduate of Atlanta Medical College in 1884, died at his home on October 16, aged 55 years.

Dr. JOHN JAMES MASON of New York, a graduate of Bellevue Hospital Medical College, New York, in 1869, died at his home on November 22.

Dr. MARIE F. ROSE of Harvey, Ill., a graduate of the Hahnemann Medical College and Hospital of Chicago in 1896, died at her home on October 11.

Correspondence.

HEXAMETHYLENE TETRAMINE AS A FUEL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—There are many times when the physician needs a small, hot, sootless flame such as produced by an alcohol lamp, when he is out of reach of any such article. It is not generally known, I believe, that hexamethylene tetramine will give exactly this kind of flame when ignited. Two five-grain tablets such as are often carried in the physician's medicine case, will give a clean flame of sufficient heat to boil 5 c.c. of water in a test-tube within 30 seconds, and of sufficient duration to keep it boiling for two minutes. For boiling needles or small instruments, sterilizing water for hypodermic injections, testing for albumin by the heat-and-acid method, and many other similar purposes, this "extemporaneous technique" may be found useful.

LOWELL C. FROST, M.D.

LOS ANGELES.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

NOTIFICATION—REPORT OF ROYAL COMMISSION—COMPULSION—AUSTRALIAN PLAN—DANGER OF DRIVING MEN TO QUACKS—EFFECTS DISASTROUS—DIFFICULTIES OF PREVENTING ILLEGAL PRACTICE—MEDICAL SOCIETY OF LONDON'S MEETING.

LONDON, October 28, 1916.

THE general subject of notification of venereal diseases is freely discussed in the Report of the Royal Commission. Among the diseases compulsorily notifiable by the medical attendant, smallpox, scarlet fever, typhoid fever, diphtheria, etc., are to be also reported by the householder. This last duty has not been strictly enforced—in fact, it hardly can be, for it can seldom be proved that the householder knew what the case actually was. If a similar system of notification were applied to gonorrhea or syphilis, it seems obvious compulsion to report could scarcely be enforced against either the patient or the householder; concealment would be so easy and even if brought to light ignorance of the special character of the ailment could almost always be successfully pleaded. If notification is to be enforced it must be against the doctors who are treating the cases. In view of the strong motives for concealment and the relationship of medical men to their patients it is probable that compulsion would not be really effective in more than a very small minority of the total cases. Here the question arises that if all cases passing through a doctor's hands were reported, *cui bono?* The patient is already under medical care and presumably receiving the treatment best calculated to render him rapidly free from infection. In Australia a modified system of notification is being tried and the reports of it deserve attention. The doctor is required to notify under a number and initials only, but if the patient discontinues treatment before he is cured, the doctor must give his name and address to the medical health officer of his district. It is hardly likely that this scheme can be carried out in these islands. If attempted it would probably drive many patients to irregular practitioners. The chief difficulty in eradicating venereal diseases and preventing their consequences, is to overcome the reluctance to consult a doctor. If the patients knew that he was obliged to report their case to the medical health of-

ficer their reluctance would only be increased and they would resort to quacks in still greater proportion than they now do. It is the great number who at present do so resort, especially in the early stages, that defeats the measures of treatment, as it does those of prevention.

The Royal Commission had before it abundant evidence of the mischief done by unqualified persons. The earlier symptoms of constitutional infection may be so slight that the patient deludes himself into the belief that they are not due to syphilis and only need a little cooling medicine which he gets from a druggist and fondly thinks he is well. But later on he is told that he is "as old as his arteries," he feels himself old, perhaps at fifty and soon afterwards some constitutional disease attacks him. His wife, too, gets out of health and if she becomes pregnant the baby is born dead or if alive, in such a state that its birth is regarded as a calamity. To permit the treatment of these diseases by ignorant persons is to suffer them to carry disablement and death in various directions. The Royal Commissioners have no hesitation in stating that the effects of unqualified practice in these diseases are disastrous and they add that the continued existence of this unqualified practice constitutes one of the principal hindrances to the eradication of those diseases. The medical officer of the Local Government Board suggested that chemists and other unqualified persons should be forbidden to treat these diseases or any disorder of the genito-urinary organs; and the commission in their report affirmed that they would have advocated legal means of preventing it, but for the practical difficulties. One asks here, should they not have devised the means of overcoming those difficulties? Surely they might at least have made some suggestion.

The session of the Medical Society opened on the 9th inst. when the new president, Lt.-Col. D'Arcy Power, F.R.C.S., delivered an address on "John Ward and His Diary," opening it with a quotation from one of the sixteen notebooks in possession of the society, from which Dr. Severn published extracts in 1839. Col. Power has examined the earlier volumes and finds them as it were common place books of a writer living at Oxford from 1652 to 1660, a period when nearly all the original members of the Royal Society were Oxford residents. The president hopes to return to this subject on another occasion.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 16, 1916.

1. Mental Pitfalls of Adolescence. Henry R. Stedman.
2. The Relation of the State Department of Health to the Communicable Diseases of Childhood. Allan J. McLaughlin.
3. Measles and the Public Health. Edwin H. Place.
4. The Etiology of Scarlet Fever. F. B. Mallory.
5. Scarlet Fever. Charles V. Chapin.
6. Report of the Fatal Cases of Diphtheria Occurring in the Connecticut Valley Health District of Massachusetts During 1914. John S. Hitchcock.
7. Diphtheria. William H. Park.
8. Whooping Cough: The Measures to be Taken for Its Control and Prevention. John Lovett Morse.

1. Mental Pitfalls of Adolescence.—Henry R. Stedman gives a clear picture of the most important of these pitfalls, namely, dementia precox, and considers that widespread information on the subject is plainly called for in view of the large number of youths and girls who are annually admitted to state and private hospitals for mental disease, and the ignorance of the general public as regards the special form of the disorder which is peculiar to adolescence. The young are protected by education in physical and moral hygiene, but against mental deterioration and breakdown little or no warning or advice is given him or his parents, until he is placed under care in an institution. Of the 3,264 *new* cases of mental disease admitted to the Massachusetts hospitals in 1915, 804, or over 21 per cent. were suffering from dementia precox. These cases represent one-third more admissions than the combined totals of all patients whose mental condition is due either to alcohol or syphilis—causes which are very rarely operative in producing this form of mental disease. Of all the classified forms of insanity, dementia precox claims by far the greatest number of victims. This mental condition must not be confounded with mental defect or feeble-mindedness proper. The latter has little or no mind to start with, while the dementia precox cases enjoy, up to the time of their breakdown, apparently normal and sound minds. They most frequently display marked intelligence and promise. It is during the period or at the end of adolescence, the most critical period of mental life, ranging in age from 15 to 25, that dementia precox begins. It may originate a little later, though rarely. The disease has been divided into several different sub-varieties, but the simpler form is the one most met with outside of hospitals. These cases are less striking and very insidious in their development. The principal feature is the change in the youth's character, in the shape of a gradually developing mild apathy and indifference. The well-cared-for patient leads a life of indolence varied by times of aimless activity and tends to develop obsessions, antagonisms, and anti-social proclivities. The poorer patient develops into either a tramp, a crank, a criminal, or prostitute in the making. Wilmans found in 127 vagabonds 66 cases of this condition. The first symptom seems to be lapse in power of attention, of mental concentration. A very definite outline of symptoms is given by Stedman and he says the general appearance of the patient is that of apathy or mild depression, except at times of unexpected and transient animation. Lack of energy also is constant, except at intervals. Their tendency to shrink from coping with the world, due to a faulty habit of adjustment, resolves itself into the "shut-in" personality which typifies these cases. Hoch found this type of personality markedly pronounced in 35 per cent. and indicated 16 per cent. out of 72 cases of dementia precox. Another type is the precocious youth who is liable to mental breakdown in adolescence due to the overstimulation of a too active mind. Badly directed education, moral and mental, may give a wrong turn to the tendencies of the nervous child and thus leave him with little defense against the exciting causes of mental disease when adolescence is reached. Overstudy, rapid and excessive growth in height, without corresponding weight and development, are recognized as abnormal. There is not sufficient alimentation provided to meet the demand of the growth of the organism *plus* excessive mental and bodily energy. Contrary to popular opinion, masturbation is almost never the cause of mental defect or disease. Typhoid and other debilitating diseases occasionally leave the patient in a permanently weakened mental condition culminating in dementia precox; also cases of puerperal insanity are really many times cases of dementia precox superinduced by the strain of childbirth. Stedman suggests that the outlook for recovery in these cases is gloomy, but that properly instituted preventive measures may decidedly change the prognosis. Young cases taken at the beginning of the condition and properly treated show marked improvement and many have been able to resume normal life and duties, while others not reaching the normal have at least been able to lead

quiet lives of usefulness. Campbell says that "the researches of Kraepelin, Freud, and Jung of Germany, and Meyer and Hoch in this country, show that under proper control many cases of functional disease and insanity are of such a nature as to be manageable and preventable." Campbell considers cases of dementia precox as the most hopeful and classes 39 per cent. as manageable and preventable. These cases must be given a congenial environment as to mental and physical health and kept from over-exertion and fatigue. Plenty of thoroughly nourishing food and sleep and the companionship of their fellows will do much to ward off or overcome this mental condition. Fresh air should be the breath of life of the young. Sir Thomas Clouston has said that fatness, self-control, and orderliness are the three most important qualities for these patients to aim at. Stedman concludes by stating that during the period of adolescence all boys and girls should be carefully guarded and not allowed to undertake a life beyond their strength and capacity, whether it be social service work, a life of social gayety, or, as in the cases among the poorer classes, too hard work and too little nourishment. Fortunately state prevention and hospitals are doing much to recognize and improve this period of life for the young.

4. **The Etiology of Scarlet Fever.** — F. B. Mallory states that the primary lesion of scarlet fever is located in the respiratory tract, starting usually in or round the tonsils. In severe cases it may extend farther down to the bronchi or esophagus. Study of the lesions of scarlet fever shows the presence in them of a delicate gram-positive bacillus in large numbers. In both smears and culture the bacillus is slighly smaller than the diphtheria bacillus, and varies from coccus-like to large bacillary forms. The organisms isolated are facultative aerobes, and grow best anaerobically upon serum-glycerin (3 per cent.)-dextrose (0.5 per cent.)-agar. Less abundant growth upon other media occurs. After further description of the habits of this bacillus he concludes that it seems reasonable to infer from these observations that scarlet fever may be due to a strongly gram-positive bacillus (*B. scarlatinæ*), which is less virulent than the diphtheria bacillus, but which infects practically the same localities and in severe cases may extend in the same way to adjoining tissues, especially the larynx, trachea, and lungs. The toxin causes necrosis and desquamation of the covering epithelium and leads to an exudation of serum and polymorphonuclear leucocytes. Fibrin formation is usually absent or slight. On this account the primary gross lesions are inconspicuous and easily overlooked. There is usually little membrane formation to call attention, as in diphtheria, to the lesions. The bacillus of scarlet fever usually dies out quickly in the lesions, so that after the second or third day following the eruption it is often difficult or impossible to demonstrate it; but it opens the way for streptococcus invasion and seems to favor its growth.

New York Medical Journal.

November 18, 1916.

1. Birth Control. S. Adolphus Knopf.
2. Compression Fracture of the Fifth Lumbar Vertebra. James K. Young.
3. Diagnosis of Duodenal Ulcer. A. Everett Austin.
4. The Value to the Operating Surgeon of a Thorough Understanding of Therapeutic Agents. Albert Vandeveer.
5. Post Partum Sepsis. Albert M. Judd.
6. The Surgical Staff Conference. Frank E. Adair.
7. Testicular Syphilis. M. Zigler.
8. A Female Medical Clinic. Morris H. Kahn.
9. The Spinal Fluid of Normal Children. Orlando H. Petty.
10. Public Health. Harry Greenstein.

3. **Diagnosis of Duodenal Ulcer.**—A. Everett Austin refers to the difficulties encountered in the diagnosis of this condition, as evidenced by the results of autopsies on cases supposed to have been suffering from duodenal ulcer when the condition was but rarely found. It is conceivable, Austin says, that a duodenal ulcer may spontaneously undergo so complete a cure that the scar tissue which is left may be fully absorbed and hence escape the attention of the pathologist. The operation naturally takes place during the period of activity, and it is surprising the unerring accuracy with which a competent surgeon, with hands incased in rubber gloves, can detect indurations in the duodenum resulting from this form of ulcer. Austin enters minutely into a description of the symptoms of this condition and the results in diminution of symptoms on taking food. For results of his work he refers to thirteen of his own cases which have furnished the material for his investigations. From these results he says that it seems that a diagnosis of duodenal ulcer must be based largely upon the four factors of periodical and characteristic fasting discomfort, if not pain, on the presence of hypersecretion, particularly of the alimentary variety rather than the continuous; on the presence of occult blood in the stool, and on distortions of the first part of the duodenum, as shown by the radiogram. A short perusal of any series of cases will soon show that all of these are never found in any one case. When, however, any two or three are present, we may well forego the presence of the fourth factor. The relative value of the history, of the character of the pain and its intermissions, and the detection at some time of occult blood in the stools, appears to Austin to be of the most importance. On account of the close similarity of symptoms of duodenal ulcer and functional hypersecretion, the former lose much of their significance, and dependence must be placed more upon physical signs than upon symptoms; and as hypersecretion is present, both as a functional disorder and as the outcome of ulcer, the conclusion must be made that occult blood in the stools and the distortion of the duodenum as shown by the *x*-ray examination are the positive signs upon which diagnosis must largely be based. As far as differential diagnosis is concerned, there is probably no condition which so closely simulates duodenal ulcer as cholelithiasis, but one of the most distinctive points of difference is the slight trace of bile found in the urine when the common duct and gallbladder are involved. In typical gallstone colic the pain reaches a severity which is never found with duodenal ulcer. Icterus is common with cholecystitis, while occult blood is more typical of duodenal ulcer. The distinction between gastric ulcer and duodenal ulcer is often impossible, and Austin considers it a mere refinement of diagnosis at times to reach a decision. With reference to this condition and appendicitis much may be said, but the writer considers that the diagnosis of diseased appendix is often made in error on account of the reflex relations of the plexuses involved, and that unless undoubted evidence of disease in the right lower quadrant is present, with other typical symptoms, it is much wiser to let the surgeon make the median incision and examine the region of the duodenum, at the same time removing the appendix if the duodenum is found normal. At least, confusion occurs only with the so-called chronic condition or appendicitis larvata.

4. **The Value to the Operating Surgeon of a Thorough Understanding of Therapeutic Agents.** — Albert Vanderveer, in giving his opinion on this subject before the American Therapeutic Society, considered that in general surgery the men of the future who accomplish success will be those who give the best that is in them to the study of surgical bacteriology. He expresses regret for the tendency of some of the younger men in the profession to lose interest in their cases when once

they have touched upon a surgical lesion and consider the case but fit for the surgeon. In many such instances more persistent investigation would have demonstrated that therapeutic measures following a correct diagnosis would have obviated the necessity for an operation. A study, complete as possible, of all cases, employing every means at hand as an aid in diagnosis, is due the patient from a practitioner. He cites the thoroughness of the examinations of the Mayo clinic before operation is decided upon. Cases are given showing how easily symptoms may be misinterpreted, and how such cases were cured therapeutically, when they might have been sent to the surgeon had not careful study of symptoms detected the true causes. He asks that may it not be said that there will always be a border-line of cases in which both medical and surgical diagnosis may be questioned.

9. The Spinal Fluid of Normal Children. — O. H. Petty, having procured and examined spinal fluids in nearly fifty cases of infantile paralysis, was impressed with the fact that the fatal and severer forms of the disease as a rule showed a lower pressure—that is, fewer drops a minute from the spinal needle—than the apparently milder types of the disease. This fact suggested to him the question of the normal fluid; so, finding no detailed records of a large series of normal fluids, he has begun the study on a series of normal children, comprising so far a few less than twenty. The average results are almost startling. They are as follows: Pressure close to 20 mm. Hg.; cell count approximating eleven cells per cubic millimeter, and the number of drops of spinal fluid a minute usually being above seventy-five. Up to this time the normal pressure has been considered as from 6 to 8 mm. Hg., the number of drops a minute as about twenty, and a cell count above six per cubic centimeter as pathological. After a sufficient number has been studied to determine a constant average, they will be reported in detail, showing pressure as recorded by a mercurial manometer, both with and without general anesthesia, drops a minute with gage of needle used, and cell count.

Journal of the American Medical Association.

November 18, 1916.

1. Results of Recent Studies on Ductless Glands. W. B. Cannon.
2. Some Clinical Studies of the Problems of Cerebral Tone. Charles K. Mills.
3. Useful Drugs. Martin I. Wilbert.
4. Duodenal Cultures in Typhoid Fever as a Means of Determining Complete Convalescence. A. L. Garbat.
5. The Relation of Diet to Beriberi and the Present Status of ur Knowledge of the Vitamines. Edward B. Vedder.
6. Syphilis with Neurologic Symptoms Simulating Other Conditions; Some Cases and Their Treatment. D. A. Haller and I. C. Walker.
7. The Etiologic Rôle of Scar Tissue in Skin Cancer. M. L. Heidingsfeld.
8. The Treatment of Malignant Disease About the Mouth by Combined Methods. George E. Pfahler.
9. Radium in the Treatment of Cancer and Various Other Diseases of the Skin. Frank E. Simpson.
10. Leukemia Cutis, with Report of a Case. S. E. Sweitzer.
11. Weakness of the Soft Palate and of the Tongue a Constant Symptom in Hemiplegia. P. De Long and T. H Weisenburg.
12. Local Reactions of the Pasteur Treatment and Their Time of Appearance. J. C. Geiger.
13. The Clinical Value of Complement Fixation in Tuberculosis. H. R. Miller.
14. Epidemics of Pemphigus Neonatorum in Chicago: Preliminary Report. Frederick Howard Falls.
15. Chloroform in Status Epilepticus, with Report of Cases. Leigh F. Robinson.
16. Two Cases of Congenital Absence of One Kidney. Marcus W. Lyon, Jr.

1. **Results of Recent Studies on Ductless Glands.**—W. B. Cannon states that the studies which have been carried on for the past four or five years in the Harvard Physiological Laboratory with reference to the bodily changes which accompany strong emotions, such as fear and rage, have revealed interesting relations between these emotions and certain glands of internal secretion, and have suggested also a way in which emotional excitement may occasion pathological states. When a cat becomes infuriated the pupils are dilated and the hair is erect from head to tail; the heart beats rapidly and the activities of the stomach and intestines are stopped. Both internal and external changes are due to the passage of nerve impulses to viscera along the nuerons of the sympathetic division of the autonomic system. The relation of the fibres connecting the central nervous system with these neurons is such as to provide for diffuse action on all the viscera that are innervated by this division. He explains the sympathetic control of the suprarenal glands, and that they have found that these glands secrete epinephrin in times of great excitement, also that there is an increased liberation of sugar from the liver so that glycosuria may result, that there is an abolition or prompt lessening of muscular fatigue, and that there is much more clotting of blood. Epinephrin also causes a redistribution of blood in the body, sending it away from the alimentary canal, whose activities are inhibited, to the heart, lungs, the central nervous system and active skeletal muscles; dilation of the branchioles and increase in the number of red blood corpuscles per cubic centimeter are all the result of its action under emotional excitement. These changes are the same in man as in the animals and produce reinforcement for the great power and endurance which are exhibited in times of intense excitement. Physiological activity is accompanied by the presence of an electrical difference which may be observed by connecting an active part with an inactive part of the body through a sensitive galvanometer. Through this method the glandular secretions have been studied and when applied to the thyroid, the positive testimony of the galvanometer is evidence of thyroid secretion, and that the gland is subject to impulses from a part of the sympathetic division of the autonomic system, the cervical sympathetic. Experiment further shows that the thyroid is stimulated by the epinephrin produced by the suprarenals in times of intense excitement. Experiment also showed that the efficiency of epinephrin is not produced if the thyroid glands have been previously removed. Thus a hormone relation between the suprarenal and the thyroid is clearly demonstrated. Two questions have arisen in the course of this work: Why are organs which are disturbed in times of emotional stress not disturbed at other times? It seemed probable that they were protected from interference by a high neuron threshold interposed between the central nervous system and the visceral cells. Consequently only when great excitement is present in the central nervous system is this threshold crossed and the changes in the viscera brought to pass. Why, in certain pathologic cases is there apparently frequent or continuous disturbance of the same viscera? Possibly due to a wearing down of the high threshold here or there from frequent or great emotional experiences. Thus dyspepsia, tachycardia and possibly persistent glycosuria, reported as having an emotional origin, might be accounted for. Experiments are given by Cannon and the evidence presented shows that besides any routine function, the suprarenal gland has an emergency function brought out in times of great excitement. It is not unreasonable to suppose that the thyroid gland likewise has an emergency function evoked in critical times, which would serve to increase the speed of metabolism when the rapidity of bodily processes might be of the utmost importance and augmenting the efficiency of the epinephrin which would be secreted simultaneously.

5. **The Relation of Diet to Beriberi.**—Edward B. Ved-

der, in considering this subject and the present status of our knowledge of the vitamines, says that the consensus of opinion is that beriberi is caused by a dietary deficiency resulting from faulty metabolism caused by the lack of certain accessory food substances called vitamines. He reviews the work of many of the investigators in this field and credits Funk with the application of the name vitamine to the accessory food substance, the lack of which produces this disease. But Funk and Drummond did not succeed in isolating the pure vitamine; but Williams succeeded later by a synthetic method in preparing a pure substance that would cure polyneuritis in fowls corresponding to the pure vitamine. Williams and Seidell have found that a similar isomerism existing in these substances also exists in the vitamine of yeast and is primarily responsible for the instability of these compounds, which has so far prevented their isolation. Adenin is the purin base in yeast, which has this property of isomerism. With regard to the antineuritic vitamine Vedder has proposed the hypothesis that this chemical substance acts as a building stone of the complex structure of the nervous tissue, without which it cannot be repaired. When a deficiency in this vitamine exists the nervous tissue becomes first exhausted and then degenerated until finally the symptoms of polyneuritis appear in fowls or dry beriberi in man. This theory is based on experimental observations in man. The antineuritic vitamine is the only one of the accessory food substances concerning which there is sufficient evidence to even theorize concerning its action in the body, and more work will be needed before any adequate conception of the physiological action of the vitamines will be known. The study of beriberi, scurvy, and other deficiencies has given a working basis that there are a number of different accessory food substances or vitamines and that each deficiency disease is caused by the absence of its particular vitamine. Vedder, from his own experiments and those of other investigators, considers that we must assume that there is a whole group of these vitamines, but that further investigations will be necessary to determine the relation of these various substances to each other. The study of dietetics from the point of view of the vitamines has only just begun, and the exact rôle they play in metabolism has not yet been elucidated, but it has been clearly demonstrated that certain deficiency diseases are due to the lack of certain accessory foods. Pellagra, beriberi, scurvy, and other deficiency diseases are to be controlled or prevented through the administration of the proper foods containing the adequate vitamines. Vedder suggests a number of foods and dietary rules for use in order to prevent these deficiency diseases: In any institution where bread is the staple article of diet, it should be made from whole wheat flour. Rice used in any quantity should be of the brown undermilled variety. Beans, peas, or other legumes known to prevent beriberi, should be served at least once a week. Canned beans or peas should not be used. Some fresh vegetable or fruit should be issued at least twice a week, and barley, a known preventive of beriberi, should be used in all soups. Cornmeal should be of the yellow or water-ground variety, that is, made from the whole grain. White potatoes and fresh meat should be served at least once a week, preferably once daily, as they prevent scurvy and beriberi. The too exclusive use of canned goods must be carefully avoided.

8. **The Treatment of Malignant Disease About the Mouth by Combined Methods.**—George E. Pfahler confines his remarks entirely to the therapeutic side of these conditions, and considers that physicians should give careful attention to the condition of the mouths of patients, insuring proper care to any apparent minor pathological condition from any cause. Syphilitic conditions need special supervision. No single method is sufficient for the treatment of malignant conditions, and four methods are available, namely, surgical removal, local destruction by means of electrothermic coagulation, deep roentgenotherapy, and the application of radium in the mouth. Every case of epithelioma about the mouth should be destroyed locally by electrothermic coagulation, or thoroughly excised surgically, the preference being given to the first method; but when palpable metastatic glands are present in the neck they should be excised surgically even though the disease in the mouth or lips is destroyed electrothermically. Then deep roentgenotherapy should be thoroughly applied over the wound and over the glandular area, making use of as much crossfiring as possible. The surgical procedures are too well known to need mention here. The electrothermic coagulation differs from the thermocautery in that the heat is generated in the tissues and is produced by the resistance offered to the flow of electricity through the tissues, while the thermocautery is merely transmitted heat and produces a more superficial effect. The effect can be thoroughly controlled by varying the relative sizes of the electrodes so that one can make the conductive heat approximate a cone or cylinder. When one of the electrodes is a point the greatest amount of destruction will develop at the point, and then will radiate in a more or less cone shape toward the opposite electrode, thereby giving a zone in which the tissues are heated to the destructive degree for malignancy, but in which healthy tissues will not be destroyed. Pfahler gives the technic of the application and the advantages of the electrothermic coagulation, which are as follows: The disease is destroyed by conductive heat, which gives a zone of devitalization without actual destruction of healthy tissue, hence saving local tissue when necessary. There are no raw tissues to permit the transplantation of malignant cells. There are no blood or lymphatic vessels opened up through which the disease can be disseminated during the operation. There is no hemorrhage to contend with, though, in tongue cases there is some danger of secondary hemorrhage. There are no open wounds and no danger of infection. The disadvantages of this method of treatment are: There is complete destruction of all the tissue between the two electrodes; therefore there is no chance of saving the blood vessels or nerves which are in close proximity to the disease. Sloughing and foul odor are present during the first two or three weeks. Considerable pain is present during the first few days after the operation. An open area of tissue is left which is healed by granulation, but which at times must be followed by a plastic surgical operation to close the mouth or correct some deformity. In deep roentgenotherapy the object is to control or destroy the out-lying cells or metastases in the coagulation process. Hence the treatment must be thorough and given with the understanding that disease may still be present; for if the disease has been eradicated there is no need of this method. This treatment must always be given with the technic used for deep disease. Pfahler believes that the place of radium in the treatment of malignant disease about the mouth is within the mouth and not on the outside. He can see no advantage of radium over Roentgen rays, and much disadvantage because so much less in quantity, and so less definitely controlled when applied externally. When the radium is applied inside the mouth there is no disadvantage in its use, for the radium can easily be brought in close contact with the disease when filtered through at least

0.5 mm. of silver, and when there is applied approximately 600 milligram hours of radium a decided beneficial effect can be obtained. Many cases of relief and cure are cited and following conclusions given: The cases forming the basis of this report, excepting those involving the lower lip, were almost entirely inoperable, and therefore every success is a distinct advance and every failure only a loss of time, energy, and effort. Combined treatment by surgery, electrothermic coagulation, radium and deep roentgenotherpy will cure some patients who are otherwise hopeless.

13. **Clinical Value of Complement Fixation in Tuberculosis.**—H. R. Miller says that it is well known that in most bacterial diseases the body reacts by the formation of antibodies, and when this takes place the presence of these antibodies can be detected in vitro by a number of different methods, and perhaps the most important of all, the various methods of complement fixation. He reviews the work already done in this field, together with his results and concludes that we have, in the complement fixation reaction, a method for the detection of active tuberculosis. 1. The reaction is practically always positive in active tuberculosis: 284 pulmonary cases: positive in 275, negative in nine. 2. Nontuberculous and normal patients react negatively: 144 cases: all negative. 3. The serums of syphilitics who have no clinically active tuberculosis are negative. Two hundred and forty-three positive Wassermann cases were all negative except seven, and in these seven tuberculosis was established in five cases and was not excluded in the other two. 4. The test is, as a rule, negative in arrested cases. Of 113 serums tested, 103 were negative and 10 positive. 5. The von Pirquet and intradermic tuberculin tests and the complement fixation reaction are not identical or similar diagnostic procedures, since the former indicates the existence of a tuberculous lesion whether old and arrested or active, while the latter points clearly to the presence of some active focus. 6. There is evidence to believe that there exists a group of tubercle bacillus carriers who have no manifestations of clinical activity and whose serums contain no antibodies, and yet discharge tubercle bacilli in their sputum. 7. The presence of tubercle bacilli in the sputum is not an absolute guarantee of the activity of the pulmonary tuberculosis. We feel reasonably justified, therefore, in assuming that the complement fixation test with our antigen may be of distinct aid in the diagnosis of early tuberculosis and in the detection of the disease when the condition is obscure. The test should offer a wide field of usefulness in prognosis, since the reaction loses its intensity of fixation as the patient progresses toward recovery. Lastly, in the fixation test the practitioner will have at his disposal a measure for the control of tuberculosis in institutional and private life.

14. **Epidemics of Pemphigus Neonatorum in Chicago.**—Frederick H. Falls states that there occurred eight small epidemics of this condition in Chicago last year. The disease is an epidemic staphylococcic vesicular dermatitis usually occurring in new-born babies from the fourth to the fourteenth day, but capable of being transmitted to older children and adults. The disease is highly contagious and can he transmitted through a third party, not infected, but in contact with patients having the disease. No cases have been reported in babies who have not been exposed directly or indirectly to the cases developed in the hospital epidemics. Prompt isolation with quarantine of the obstetric wards until the last patient has left the hospital, followed by fumigation and painting, etc., is necessary. Special nurses are necessary on these cases. An efficient method of treating the lesions is to rupture the vesicle as soon as it forms and to apply 2 per cent. ointment of ammoniated mercury to the lesion. Prophylactic and curative vaccines in doses of 15 millions are being tried, but their use is too limited to permit of any definite conclusions as to their value in preventing or effecting a cure of the disease.

The Lancet.

October 28, 1916.

1. The Harvein Oration. Thomas Barlow.
2. Penetrating Wounds of the Abdomen. T. Crisp English.
3. The Technique of the Agglutinin Test. P. N. Panton.
4. A Method of Applying the Wassermann Reaction in Large Numbers. P. Fildes and James McIntosh.
5. The Occasional Absence of a Rise of Temperature Following the Administration of Diagnostic Doses of Tuberculin to Tuberculous Persons. Duncan Forbes and Cecil W. Hutt.

2. **Penetrating Wounds of the Abdomen.**—T. Crisp English states that gunshot wounds of the abdomen form a subject of considerable importance, for there has been a decided difference of opinion as to the best line of treatment; some strongly urge operative measures whenever possible, and others believe that for most cases expectant treatment offers the best prospects. Extreme views in either direction will prove to be wrong, but the value of operative treatment under proper conditions is becoming increasingly obvious. English writes from Salonika and says that the only considerable experience of abdominal injuries is that gained in France, and in framing conclusions we must draw largely from that experience, remembering that surgery in France is done under favorable conditions at the present time. It has been suggested that there is a tendency to attach undue importance to these injuries, considering that they form only a small proportion of the total number of wounds. English says, however, that anyone who has come into close contact with numbers of men recently wounded cannot but recognize the importance of the abdominal group; the cases owe this importance to their urgency, their high mortality, and to the fact that many lives may be saved by appropriate treatment. The multiplicity and severity of the lesions make a high mortality inevitable, whatever treatment be adopted; this fact is quickly grasped when one sees the extent of the injuries as revealed on the operating table or in the postmortem tent. Available statistics all emphasize the same fact. From the army statistics English quotes that in 100 cases of abdominal wounds, 65 were instances of penetrating wounds—namely, 30 that died in the field ambulances, and the 35 diagnosed as penetrating cases in the clearing stations; 11 of these ultimately reached England. The mortality up to that stage was about 83 per cent. In civil life operation is the general rule, if conditions permit it. In the early part of this war surgical work was influenced by the South African war traditions, which naturally led surgeons to believe that expectant treatment would give better results than operative treatment. War conditions at the beginning were unfavorable for operative treatment, hence the high mortality discouraged operation. Since the spring of last year, when siege warefare had become established, operative treatment was restarted and every facility that could be devised was supplied. English, from his own surgical experience, divides these cases that are unfit for operation into four groups, those moribund on arrival; in injuries of the liver and kidneys when there was a certainty that the hollow viscera had escaped, operation seemed contraindicated; in the diaphragmatic group in which the projectile appeared to have traversed the top of the abdomen, the diaphragm, and the lower part of the chest, expectant treatment is usually the wisest plan. Cases now reaching the base hospitals have been sent there when apparently con-

valescent from operation, or if without operation when apparently safe from serious trouble. One may assume that the base mortality will be substantially reduced and the total improvement in the mortality reach 20 per cent. over the original. English concludes as follows: 1. Operations for penetrating abdominal wounds are not advisable unless they can be done in good surgical surroundings and by an operator with some knowledge of abdominal surgery; otherwise disasters will be more frequent than successes. 2. Patients with abdominal wounds should be sent to an operating station as quickly as possible, provided that they are fit to travel; their prospects depend mainly on the quickness with which this can be done. 3. Patients who are not fit to travel should be kept absolutely quiet, warm, and under the influence of morphia; saline infusion, hypodermically or otherwise, is most beneficial. They are then transported to the operating station as soon as their condition improves; the question is usually settled by the character of the pulse. If the pulse-rate is 130 or over, it is certainly best to keep them in the place where they are receiving their primary treatment until improvement occurs. 4. On reaching the place where they can be operated upon patients whose condition is good should be dealt with at once, otherwise two to eight hours should be spent in preparative treatment. Operation is never advisable if the pulse-rate is 140 or over. 5. The abdominal exploration must be systematic and quick: the duration of the operation should rarely exceed 45 minutes. 6. When good surgical conditions are obtainable operation is the best treatment in most cases, and must be done as soon as the patient's condition allows it. Be prepared for a high mortality, but know that early operative treatment will substantially reduce it.

5. The Occasional Absence of a Rise of Temperature Following the Administration of Diagnostic Doses of Tuberculin.—Forbes and Hutt report two cases in tuberculous persons where tuberculin was used for diagnostic purposes and no rise of temperature occurred. They say that it is well recognized that a local reaction and rise of temperature following the administration of tuberculin does not necessarily indicate the presence of an active lesion, signs of a focal reaction alone giving any evidence likely to be of assistance in the diagnosis. On the other hand, many believe that active disease can definitely be excluded if the usual diagnostic doses of tuberculin are not followed by any rise of temperature. Their reason for this report is to emphasize the fact that patients suffering from active tuberculosis and who have not been previously treated with tuberculin may have no rise of temperature of even 1° F. above normal following the administration of diagnostic doses of tuberculin. The first was that of a man 44 years of age, and the second was a boy of 2 years. In the first case there were signs only of impaired resonance in the right apex, but history of a cough off and on for the past ten years. Six gradually increasing doses of tuberculin were given at intervals of three or four days. According to four-hourly chart no rise of temperature occurred, except on the day following the one-half and one milligram doses, when the mouth temperature rose to 98.6° and 99.2° F.; but on two occasions prior to the administration of tuberculin a temperature of 99.2° had been recorded. The local reaction was slight. The patient's weight rose steadily and later he was discharged. Fifteen months later he was admitted with decided crepitations in the right apex and tubercle bacilli in the sputum. Again the test was applied on four successive occasions with intervals of about seven days, followed by no increase of temperature, except on two occasions, 99° being recorded on the third day after the one-half and five milligram doses; but a temperature of 99° had been recorded a short time prior to the injections. Case 2.—The patient, a male aged 2, was admitted suffering from spinal caries and healed tuberculous abscesses on the foot. He received ¼, ½, and 1 milligram of tuberculin (T.), the highest subsequent temperature being 98.6° F. Five months later an abscess formed on the dorsum of the foot, broke down, and remained open for some time. In this case the maximum dose administered was 1 milligram, but the child was only 2 years of age. In this connection it is interesting to note that of the animals infected with human tubercle bacilli and tested with homologous tuberculin the following gave a temperature reaction (rises of 0.9° C. over the normal); 107 of 124 calves, or 86.3 per cent.; 6 of 6 goats, or 100 per cent.; 10 of 11 pigs, or 90.9 per cent., and 4 of 4 horses, or 100 per cent. Evidently neither in man nor in animals does the absence of a temperature reaction following tuberculin exclude active tuberculosis.

British Medical Journal.

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1. The Harveian Oration.—Harvey, the Man and the Physician. Thomas Barlow.
2. Meralgia Paræsthetica. W. J. Rutherford.
3. Shell Shock and Its Treatment by Cerebrospinal Galvanism. Wilfrid Garton.
4. Treatment of Meningitis. Walter Broadbent.
5. Collosol Argentum. A. H. Boys.

8. Meralgia Paræsthetica.—W. J. Rutherford describes this condition as one characterized by mononeuritis of the external cutaneous nerve of the thigh, and of infrequent occurrence. Rutherford thinks that it is not so rare as has been previously considered, since he has seen about a dozen cases in the last ten years, five cases in soldiers having come under his care within the last nine months. The condition is of importance from the military point of view, because it is capable of giving rise to disability of longer or shorter duration and may be recurrent. The condition, which may occur in both sexes, may be of bilateral symmetry, but usually one limb is affected. Sensation over the area of distribution of the affected nerve, which as a rule can be strictly delimited, is lost so far as finer sensibility is concerned, for slight touch, for perception of points, for heat and cold, and to a certain extent for pain, while deep pressure can be perceived and a touch on the bare skin is felt as though a layer of clothing intervened. In old-standing cases cutaneous thickening may be made out locally if a fold of skin is pinched up between finger and thumb, and in some cases the skin of the affected area begins to grow bald from atrophy of hair follicles; while cutis anserina is lost locally, so that no goose-skin appears over the affected area, even though the other parts show this distinctly. Perverted sensations are present in the diseased area. Pain is often present and may be severe. The etiology seems to be unknown, but the condition may owe its origin to purely mechanical causes and be dependent on the local anatomical peculiarities associated with the course of the external cutaneous nerve. Cutting down on the nerve has been suggested but as yet not tried. Treatment seems to be of little avail. During an attack rest and such drugs as phenacetin are indicated, while purgatives should be given, as a loaded sigmoid may add pressure in the region of the plexus affecting the diseased area. Warm underclothing must be worn on all occasions, as these patients consider climatic conditions can precipitate an attack. The main feature of the condition is the unreliability of the symptoms and the likelihood of relapse.

3. Shell Shock and Its Treatment by Cerebrospinal

Galvanism.—Wilfrid Garton says that the term "shell shock" is made use of to describe two distinct conditions—one a severe type of traumatic neurasthenia, and the other bearing no resemblance to a neurasthenic condition but characterized by hysterical manifestations. It is for shell shock of the neurasthenic type only that cerebrospinal galvanism is of service as a treatment, for, its use being based on the assumption that neurasthenia is an organic disorder, there is no reason to expect favorable results to follow in a condition of functional disorder. The following symptoms are usually found in this type: Headache, always aggravated by the advent of thundery weather; insomnia, mental depression, loss of memory, nervousness, bad dreams, fatigue without exertion, tremors, wasting, and loss of appetite. Paralysis of limbs or groups of muscles and localized pains may be present. The resemblance between this condition and neurasthenia following severe illness is so striking that a similarity of origin is exceedingly probable. The coexistence of the majority of these symptoms appearing in a series of cases admits of but one explanation, and that is that they are the effect of a common cause—organic disorder of the central nervous system; and, as there is no gross lesion, this is probably a derangement of metabolism. The character and personality of the patient are greatly changed by this condition, and it is inconceivable that such alteration can take place independently of any structural damage or metabolic disturbance in the organism. A possible explanation of the appearance and persistence of the symptoms is that the violent concussions of the explosion produce a partial paralysis of the nervi nervorum. The interference of nutrition of the whole nervous system would prevent the restoration of the nervi nervorum to their normal activity, thus producing a vicious circle. Now, if there is any probability that shell shock of the neurasthenic type is due to a paralysis of the nerves regulating nutrition or a disorder of metabolism, then the use of the galvanic current is a treatment from which one has every reason to expect good results, for the most powerful agent we have for stimulating the nerves to activity is electricity. The apparatus used is a battery of wet Leclanché cells connected to a switchboard on which there are two other resistances, each of 1,000 ohms, one in series and one in parallel with patient and milliampèremeter. The treatment is commenced with no resistance in parallel and full resistance in series. If this apparatus cannot be obtained a battery of twelve dry cells, with cell collector and galvanometer and a resistance of at least 1,500 ohms, may be used. No current derived from the mains or any universal apparatus should ever be used for this treatment. A pad composed of about sixteen layers of lint, soaked in a solution of sodium salicylate in distilled water, is applied to the forehead, care being taken that the pad is evenly wetted and that its center coincides with the middle of the forehead. A metal plate connected with the negative pole is placed over the center of the pad and the whole bound firmly to the head. A similar pad soaked in tap water, covered with a metal plate connected with the positive pole, is firmly bandaged to the lumbar region. The current is turned on slowly, and for the first treatment Garton uses only 10 milliampères for ten minutes, and does not reach the full strength (20 milliampères) till the third or fourth treatment. The patients in the service whom Garton treated by this method did not remain under his care sufficiently long enough to effect a cure, but made rapid progress toward recovery. Several cases with improved results are cited, and Garton concludes that as a result of this method of treatment nearly all cases of neurasthenic type of shell shock would derive great benefit from it and the majority of cases, excepting those of the most severe type, would be cured in under three months.

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Indications for Purgatives in Diseases of the Liver.—Dufourt refers to Louis XIII and his 259 purgations in one year. This period was the zenith of the cathartic, for later scepticism became apparent and certain prominent individuals were thought to have purged themselves to death. But after a period of reaction the custom again gained ground, probably because venesection was being abandoned. Purgatives were believed as a class to stimulate the hepatic cell, to excite peristalsis, and, in general, to detoxicate and disinfect the body. Modern studies have shown that the first stools of purgation abound in microbian intestinal flora, and that on the next day these were reduced to 10 per cent. of the normal. Certain nitrogenous substances, however, like the sulphoethers and indican, have been shown to be innocent of the accusation of being concerned in intestinal putrefaction. In fact, when these substances have reached the urine they are in a state of complete oxidation and are not indexes of intestinal toxicity. Purgation is known to produce nervous depression which at times amounts to syncope; those thus affected may have not in the least been distressed by their constipation. Often but small eaters, they have been urged that there is peril in allowing ingesta to accumulate. Such patients are left prostrated and dejected. Even a spontaneous passage has been known to have the same results. A purge often makes a subject ill all over. He is thirsty, has no appetite, sometimes has mild chills, and subfebrile temperature. In any such case catharsis can hardly have been indicated. The author next takes up in great detail the view that purgatives unburden the liver, with the old conclusion that true cholagogues do not exist beyond all dispute. Not one has ever been proved to increase the secretion of bile, although not a few may perhaps promote excretion of that fluid. In primary icterus due to some deficiency in the function of the hepatic cell cholagogues are useless. On the other hand a flow of bile from the gall ducts only may be brought about even by milk purgatives. Disturbance of the liver is secondarily associated with digestive disorders and diarrhea may be in evidence as well as constipation. Hence the truth of the paradox the purgatives are indicated in diarrhea, while constipation may be overcome in other ways. This doctrine emanated originally from Trousseau and has been upheld by the experience of French colonists. In the tropics diseases of the liver, of such large incidence, are associated with diarrhea, which is treated by sulphates of soda and magnesia. Not every patient is benefited thus, and certain women suffer from purgation in the tropics no less than in the North and irrespective of the indications. Those who benefit chiefly are men, great eaters, often gouty, with distress over the liver, which as a matter of fact is congested or inflamed. Calomel relieves them mightily, although it does not purge them because a small dose is all that is necessary.

Death of a Sword Swallower.—According to Weinert, a reservist who could swallow his side-arm was shot through the chest, the wound healing completely. When he first resumed his sword swallowing, the point of the weapon encountered marked resistance, followed by fatal hemoptysis. The aorta had been perforated as a result of secondary displacement of the esophagus.—*Münchener medizinische Wochenschrift.*

Insurance Medicine.

Medical Selection for Life Insurance.—JOHN L. DAVIS, in presenting this subject before the Section on Life Insurance, State Medical Association of Texas, Galveston, said that life insurance companies are paying Texas examiners about a quarter of a million dollars a year in fees, and that these fees are always cash and never have to be earned twice, as often happens in the doctors' ordinary medical practice; therefore the subject should interest medical men. Life insurance companies are great instrumentalities for promoting thrift, unselfishness, and good citizenship, however, they are not primarily planned to be humanitarian institutions, but commercial enterprises. As such their first purpose is to pay dividends to stockholders. Their funds must be securely invested to earn at least the interest provided by the table on which premiums are based, and their chief profits come from savings in mortality, that is, from having a death loss less than that expected under the experience table; also from gains in interest over the 3½ per cent usually adopted as the company's permanent standard or reserve basis. This savings depends primarily on the care exercised by the medical examiners in the field. If this work is carefully and capably done, other things being equal, the mortality will be well within the tables, and in the newer companies the death losses will be far less than the legal amount set aside for this so that a very substantial balance will remain at the end of the year to be credited as surplus.

As is well known the medical examination covers several general features: the applicant's present physical condition and record of past illnesses; his habits, environments, family record, financial circumstances, etc. Much depends upon the keen medical insight of the examiner, as a physician with experience can tell from general observation of an applicant as to his physical condition. Habits of mental, moral and physical life are portrayed in the countenance and bearing of an individual; but in most cases the examination may proceed along the course provided in the examination blank. One point Davis emphasized, the applicant's attitude toward the examiner, which he states is very different from that of the sick man consulting his physician for relief. Then all details as to physical condition are most eagerly told, while the same individual when examined for life insurance assumes a different viewpoint, and compels the examiner to find out all details, past and present, for himself. The examiner must always allow for the existence of a duplex personality like Dr. Jekyl and Mr. Hyde. Davis offers a few general suggestions as to medical selection: first, the physical build. The standard man at 35 years of age is about 5 ft. 9 in. and weighs 165 pounds; for every inch above or below there is to be added or deducted about 5 pounds. As he grows older the weight slowly increases about half a pound a year. But actual insurance experience has shown that mortality among those under 40 is less among individuals rather heavier than the standard; after middle life the reverse is true, "light weight" old folks live longer. When the abdominal girth is larger than the fully expanded chest, mortality is noticeably increased. Alcohol and its use has both a direct and indirect bearing, for it has exacted a heavy toll from life insurance companies. Anstie's limit, two ounces of alcohol daily, seems to be more than can be ingested day after day without material damage. Reformed drinkers, like many other reformers, are short lived; their mortality is from 50 to 75 per cent. too high for life insurance. These facts should emphasize the need of thorough inquiry into the man's habits, past and present. Another point is that every illness leaves its impress on the body, and while most of these impairments and scars cannot be detected, they are there, nevertheless, and shorten life. A list of diseases which have affected life, though recovery at the time and apparent health was attained, is given by Davis. He includes asthma, albuminuria, bilious colic, gallstones, gout, alcoholic habits, pulse, pleurisy, rheumatism, and syphilis. Regarding heredity, it is well recognized that certain families are long lived; others lack resistance and die early of ordinary diseases. Family resistance to disease is therefore essential in valuing a risk. The inherited proclivity for certain diseases as well as inherited individual habits and traits of temperament are all to be considered as having a bearing on the applicant in question. However, in estimating the weight of hereditary influence one must be broad and equitable, not confining inquiries exclusively to unfavorable features transmitted, for ancestors confer on us not only impairments, but even more positively a tendency to vitality and health, otherwise nature's purpose to perpetuate the race would be rendered futile.

Finally the examiner should have in mind the differing mortality from a given disease at different ages. The serious diseases of young manhood are those of germ origin—as consumption and typhoid fever; they are most common and most disastrous before middle life; after middle age, the death losses come chiefly from degenerative diseases. When examination is completed and careful inspection has been made of the work done and applicant has been given his rating, the examiner should put himself in the place of the medical director and see if all facts are clearly and fully set forth. Sometimes such a review will show the need of further explanation on the part of the examiner. This work is akin to that of a title examiner in real estate, except that this is an inquiry into a title of health. On the recommendation of the examiner a deed is given involving possibly thousands of dollars. Fortunately the grave responsibility placed upon examiners has rarely been misplaced. Davis states that after nearly thirty years of close acquaintance with medical examiners almost from coast to coast, he desired to affirm that for dependability under all circumstances, for efficiency and character, medical examiners rank among nature's noblemen.—*Texas State Journal of Medicine.*

Concealment of Newly Discovered Disease.—The Arkansas Supreme Court holds that, where an insured, after applying for life insurance in one company, but before receiving the policy was told by another examining physician that he had Bright's disease, and he told the physician to make a microscopical examination, which confirmed the diagnosis, and he then arranged for treatment in the city to which he was about to go, his failure to disclose his condition to the first insurer was an intentional concealment of a material fact, which voided the policy.—United States Annuity & Life Ins. Co. v. Peak, 182 S.W. 565.

Book Reviews.

MEDICAL RECORD VISITING LIST AND PHYSICIANS' DIARY FOR 1917. Dated and undated. Newly revised. Price, $1.25 to $4.00. New York: William Wood and Company.

THIS well known visiting list is issued betimes, and, as heretofore, it is compact and useful. It contains the customary visiting list, with special blanks for consultation practice, obstetric engagements and practice, vaccinations, register of deaths, addresses of nurses and patients, and cash account. There is much miscellaneous information at the beginning of the volume. The visiting list has long enjoyed a well deserved popularity, not only on account of its excellent arrangement, but also because it is of convenient size and is handsomely bound.

THE PRACTITIONER'S VISITING LIST, 1917. For Thirty Patients per Week. Price, $1.25. Philadelphia and New York: Lea & Febiger.

THIS popular visiting list contains the usual blank pages for noting the daily calls and charges for the same. The text portion contains a scheme of dentition; tables of weights and measures and comparative scales; instructions for examining the urine; diagnostic table of eruptive fevers; incompatibles, poisons and antidotes; directions for effecting artificial respiration; extensive table of doses; an alphabetical table of diseases and their remedies, and directions for ligation of arteries, etc.

THE PHYSICIAN'S VISITING LIST (Lindsay & Blakiston's) for 1917. Price, $1.25. Philadelphia: P. Blakiston's Son & Co.

THIS is the sixty-sixth year of publication of this useful visiting list. Some new tables have been added, the most useful of which would have been one of the isolation periods in infectious diseases had it been more complete. The dose list has been revised to conform with the new edition of the United States Pharmacopœia. This table would have been more useful had the official drugs been designated and had synonyms been noted; acetanilide, for instance, is given (dose 3 grains), and also antifebrin (dose 5 grains), with nothing to indicate that they are the same drug; similarly acetphenetidin and phenacetin are listed with no hint as to their identity.

CHRISTIANITY AND SEX PROBLEMS. By HUGH NORTHCOTE, M. A. Second edition, revised and enlarged. Price, $3 net. Philadelphia: F. A. Davis Company, 1916.

THIS book is obviously a sincere, if somewhat confused attempt to present sex problems and a solution of them. In its second edition it is enlarged by many references to recent literature on the subject, especially to the writings of Havelock Ellis and Iwan Bloch. The presentation of the problems is as a rule fairly adequate, but his solutions do not seem so convincing. He offers nothing new or beyond the usually presented advice and always emphasizes his belief in the efficacy of religion as a curative agent. The work is confused and inadequate and yet it will serve its purpose to a certain extent. It has often seemed that much of the difficulty from sex problems that vexes us at the present time arises from the fact that we are in a transition period between prudishness and frankness and that our chief sin is hypocrisy. If this is true, any sincere publication aids in the accomplishment of frankness and therefore does good service.

PRACTICAL MASSAGE AND CORRECTIVE EXERCISES. By HARTVIG NISSEN, President of Possee Normal School of Gymnastics; Superintendent of Hospital Clinics in Massage and Medical Gymnastics; for twenty-four years Lecturer and Instructor of Massage and Swedish Gymnastics at Harvard University Summer School, etc. Revised and enlarged edition of the Author's "Practical Massage in Twenty Lessons," with many additions. With 68 original illustrations, including several full-page half-tone plates. Price, $1.50 net. Philadelphia: F. A. Davis Company, 1916.

MR. HARTVIG NISSEN has won a well deserved reputation in this country as an exceptionally able teacher and exponent of the principles and practice of massage and corrective exercises. He thoroughly understands the theory as well as the practice, and is therefore peculiarly competent to write a book on the subject. The book is well worthy of the author's fame and may be commended to the attention of all those who desire to gain a good working knowledge of mechanotherapy.

DISEASES OF THE DIGESTIVE TRACT AND THEIR TREATMENT. By A. EVERETT AUSTIN, A.M., M.D., Former Professor of Physiological Chemistry at Tufts College, University of Virginia, and University of Texas; present Assistant Professor of Chemical Medicine, in charge of Dietetics and Gastrointestinal Diseases, Tufts College; Member of American Gastroenterological Association and American Society of Biological Chemists; Physician to Mt. Sinai Hospital and Berkeley Infirmary, and Assistant to Boston Dispensary; Author of "Manual of Clinical Chemistry," etc. With eighty-five illustrations, including ten color plates. Price, $5.50. St. Louis: C. V. Mosby Company, 1916.

PERHAPS 50 per cent of all patients appearing at a medical clinic complain of "stomach trouble." The percentage in office practice would at least be high. "Stomach trouble" may mean any of the "Diseases of the Digestive Tract" of which Dr. Austin's book treats. Hence the physician should be well versed in the symptoms and methods of diagnosis as well as effective methods of treatment. Dr. Austin aims to meet this need in covering carefully, though in not too great detail, the various diseased conditions which may arise in the stomach and intestine. The book is rather conversational in style. In the parts on analysis of gastric contents and feces this is objectionable as the descriptions of chemical methods are not given in a detail or with a clearness which would be necessary for anyone not already acquainted with the methods used. It is surprising that there is no discussion of the fractional study of gastric digestion as worked out by Rehfuss and his associates. There are two excellent chapters on dietetics and treatment of digestive disorders. Therapeutic values of various foods with reasons for such values are given and numerous suggestions which only a person of wide experience could offer. A continuous study of the food value and chemical value for the special condition to be treated is evident. There is a careful study of those foods which stimulate gastric secretion and hence should not be used in hypersecretion. There are satisfactory discussions of the milk, vegetarian, and salt-free diets and a good section on hydrotherapy in such simple forms as may be carried out by any patient at home. Massage is discussed, but one is surprised to find no place given to active exercises of the abdominal muscles, from which such excellent results may be obtained.

THE DACK FAMILY. A Study in Hereditary Lack of Emotional Control. By MRS. ANNA WENDT FINLAYSON, Field Worker of Warren State Hospital, Warren, Pa. With Preface by CHARLES B. DAVENPORT. Price, 15 cents. Eugenics Record Office. Bulletin No. 15. Cold Spring Harbor, N. Y., May, 1916.

THIS is a very excellent report of a very careful study. The study has been undertaken in a truly scientific manner and the material handled scientifically. The difficulties which Mrs. Finlayson has surmounted can be imagined, for this report involves successful, tactful interviewing of a large number of individuals. That there are numerous other families of which similar studies would be valuable, there can be no doubt, and it is to be hoped that others doing such work may be as well fitted for it as Mrs. Finlayson.

THE EXPECTANT MOTHER. By SAMUEL WYLLIS BANDLER, M.D., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Illustrated. Price, $1.25. Philadelphia and London: W. B. Saunders Company, 1916.

DR. BANDLER'S book is a strange mixture of information to the mother and information to the physician. In fact, at the end one is left in doubt whether it is written for lay readers or for his own profession. Too dogmatic statements of what should be done during delivery are scarcely wise in a book written for the laity. Many obstetricians would not agree with Dr. Bandler that repeated vaginal examinations are either necessary or advisable. And his suggestion of the use of fituition to establish labor or quicken it during the dilatation of the cervix, is scarcely the accepted stand. On the other hand, the book gives much information that the intelligent mother would understand. The discussion of the activities and overactivities of the ductless glands comes under this head, and also those on eugenics and puberty.

Society Reports.

JOINT MEETING OF THE NEW ENGLAND PEDIATRIC SOCIETY, THE PEDIATRIC SECTION OF THE NEW YORK ACADEMY OF MEDICINE, THE NEW YORK STATE PEDIATRIC SOCIETY, THE NEW JERSEY PEDIATRIC SOCIETY, AND THE PHILADELPHIA PEDIATRIC SOCIETY.

Held in Boston, November 4, 1916.

DR. ALEXANDER C. EASTMAN, PRESIDENT OF THE NEW ENGLAND PEDIATRIC SOCIETY, IN THE CHAIR.

A Clinical Day.—As is usual on these occasions the day was spent in visiting various institutions and attending clinics. In the morning members of the societies met at the Harvard Club, which was the headquarters for the day, and from here were taken to visit the following institutions: The Massachusetts General Hospital, where Dr. Fritz B. Talbot spoke on "Problems in Metabolism"; the Boston Dispensary, where Dr. Maynard Ladd discussed "Clinical Cases with Special Reference to Feeding"; the New England Home for Little Wanderers, where Dr. W. R. P. Emerson spoke on the "Problem of the Delicate Child"; the Children's Hospital, at which Dr. John Lovett Morse gave a clinic; the Infants' Hospital, where Dr. Charles Hunter Dunn, Dr. Howell and Dr. Grover demonstrated their method of giving intrasinus injections, and the Baby Hygiene Association, which conducts 13 infant welfare stations and is doing a work entirely preventive and educational. Luncheon was served at the Harvard Medical School and in the afternoon a visit was made to the Massachusetts School for the Feeble-minded at Waltham. Here a clinic was given by Dr. Walter E. Fernald, superintendent of the school.

Evening Session.

Medico-educational Problems in the Treatment of Atypical Children.—Dr. G. HUDSON MAKUEN of Philadelphia read this paper, in which he said that the physician was beginning to realize more and more the importance of treating his patients rather than their diseases, and therefore in his preparation for the practice of medicine he was finding it necessary to study psyhcology as well as physiology, anatomy and chemistry. This was the result of a fuller realization of the fact that there was something which distinguished the human organism from a mere laboratory receptacle or test tube, and this something was obviously the mind or personality of the individual. The close relationship between mind and matter was now generally recognized and we knew that the physical organism of man was the basis of his psychical development. It was well known that the inefficiency of adult life was largely due to the mistakes of childhood, but it was not so well known that many of the actual diseases of later years might be traced to faulty habits acquired during infancy and adolescence. Children were largely what we made them, and the factors that determined their psychophysical condition as well as their personality were heredity and environment. Heredity was an important factor in the development of children, but environment was even more important and it was always subject to change and improvement, and in addition to this it was probably even more responsible than heredity for putting the prefix "a" in atypical as it related to children. Thus the most important feature in the child's environment was his education and training, and the most important and neglected period in the life of any individual was that which came prior to the so-called school age. Teachers claimed that the failures of their pupils were due chiefly to faulty habits formed before their entrance into the schools and colleges. The so-called fixed habits were the early ones formed during the child's physical and mental development in the first years of his existence. The Jesuits had a saying, "Give me the first seven years of a child's life and I care not who has the rest of it." While the mind of a child had a physical basis, yet his mental activities determine to a great extent the character of this basis by regulating its development, and hence it was that the general physical condition of the child might be influenced for good or ill by the character of his mental and emotional activities. Medico-educational methods become real measures of prevention only when they began to be employed during infancy. Medico-educational methods should aim, not to remake the child, but to make the "absolute best" of what had already been made. Nervousness was the most characteristic malady of children and its treatment should be, first, preventive, and, second, curative. Preventive treatment was applicable in the earliest infancy and consisted largely in an attempt to control the child's physical activities through a careful direction of his psychical and emotional activities. If the child was normal physically, this treatment should result in the development of normal physical and emotional faculties, but if the child inherited physical abnormalities, such as cleft palate or other irregularities of structure, surgery or some form of medication might be indicated in addition to the psychophysical training. Punishment should never be necessary except perhaps at the very beginning and before the child was mentally susceptible to medico-educational measures. It was estimated that there were upwards of 300,000 stammerers in the United States alone and, in the speaker's opinion, if this vast army of defectives could have had the right kind of early training there would now be few if any stammerers to contend with, and what was true of stammering was true of similar and allied nervous diseases. The remedial and curative treatment of atypical children was an effort to improve their conditions through their physical activities. The personality of the child was modified and molded through what had been called the reflex influences of its own acts and expressions. To make any act or gesture or mode of speech or motion habitual through deliberate repetition was to stimulate in the personality the appropriate moral quality or emotion of which such an act or gesture was the expression. The Japanese had a theory that for one to be what he would like to be it was only necessary for him to persistently act the part. Doing things with purposeful intent was found to have a greater educational value than doing them carelessly or even in play. The play instinct was an important factor in child development, but it was at the present time the most overworked of them all both in the homes and in the primary schools. What might be called the work instinct was equally important and was now being greatly neglected in the early training of children. The difference between work and play should be clearly understood by the child, and the greater dignity of the latter should be impressed upon him at at early age. The child should be taught to do things not because they were easy, but because they were right, and the greater the difficulty of doing them the greater the educational value. Moreover work and play should not be commingled; they should form two distinct factors in education. Mr. Roosevelt's advice was sound; he said, "When you play, play hard, and when you work, don't play at all." The teaching of correct postural attitudes and good respiratory, phonatory and articulatory habits should have a conspicuous place in all medico-educational methods, both because of their esthetic value and because they tended to give to the individual greater self-respect, self-reliance and self-control.

Intestinal Venous Stasis; Diffusion of Bacteria and Other Colloids.—Dr. FENTON B. TURCK of New York read this paper and gave an exhibition of lantern slides showing the diffusion of bacteria through the intestinal wall. He stated that our ideas of medicine founded upon a morphological or static conception of the living body was being shifted more to the consideration of dynamic properties of life. Synthesis of organic compounds and the rôle of physics of colloids in biology had created a new concept of normal and abnormal conditions of the body. The membrane filter, itself colloidal in character, determined the rate of diffusion of the colloidal suspension that filtered through it. Different factors were involved in the permeability of membranes in the living organism. In the study of the phenomena the passage of colloids, such as the white of an egg, unchanged through animal membrane was surrounded by considerable difficulty because of the obscurity involved in the identification of colloid substances after filtration. The writer had found that emulsion of bacteria, such as the color bacilli, injected into the intestines of a fetal animal and living animals, would rapidly diffuse through membranes and tissues. By appropriate staining methods the rate of diffusion and the route by which diffusion occurred could easily be studied. Previous experiments of the author indicated that the intestinal tube was permeable to the intestinal flora. The degree of this invasion was great-

ly influenced by the splanchnic circulation, which altered the character of the intestinal wall and rendered it permeable to all forms of bacteria. When bacteria were injected into the intestines of the fetus distinct routes were taken from any depot along the entire tube. Microorganisms injected into the intestines of a fetal animal rapidly diffused through the mucous wall of the intestine, between the glands into the areolar tissue and then coursed along the wall of the intestines between the muscle coat and the mucous membrane. At this point many of the microorganisms underwent bacteriolysis. In the newborn there was no barrier, no arrest of passage by the mucosa labyrinth; a wall impervious to bacteria had not yet been sufficiently formed there, nor apparently were antibodies adequately generated, since as yet they had not been needed. As the body grew the tissues became less porous to bacteria. When disturbance of the splanchnic circulation and muscular atony of the wall of the alimentary tract were produced, then a reversion to the fetal state of the intestine followed, and then the body needed to be protected from the "toxins" formed in the "zona transformans" and anti-anaphylaxis was, it might be said, automatically established. The passage of the bacteria took place from the intestinal tract into the intestinal wall between epithelial cells and not through or into the cells and between the muscle cells of the muscular mucosa. As rapid bacteriolyses were seen to take place in this submucous zone, Dr. Turck said he had named it the "zona transformans." The degree of permeability of the intestinal wall in a living subject was increased by a number of factors, namely, (1) Mechanical obstruction of the intestines; (2) an interruption of the circulation sufficient to cause atony; (3) an interference with the nerve supply; (4) a number of pathological conditions. In order to induce permeability fundamental changes in the flora of the individual and in the physiology of the organ must be induced; among the means of bringing this about were thirst, hunger, overfeeding, and shock. Dr. Turck described his experiments with these various factors which supported his proposition that bacteria passed readily through the mucous membrane into the submucous tissue, where they underwent bacteriolysis and created lesions of a non-inflammatory character. Autolysis of the tissues took place following venous stasis with a resulting asphyxia of the cells. The muscle cells underwent the characteristic changes of Zenker's degeneration with atony and dilatation. Feeding experiments by which various lesions, such as ulcers of the stomach and duodenum were produced, were described, and also experiments showing the results of ligatures applied to the intestines at different levels. Ligations of the lower portion of the intestinal tract were not so evident in causing bacterial migration as in the upper segments. No bacteria seemed to enter the blood or lymph vessels. The feeding experiments further showed that fat and fatty acid increased the diffusion rate of the intestinal bacteria through the intestinal wall and hastened the fatal termination. Six monkeys fed with small squares of bread fried for thirty minutes in cottonseed oil, in addition to the usual vegetable feeding, died in from three to six weeks and showed an increase in the filtration of bacteria in the tissues. Lesions resulting from disturbances produced in the upper intestinal tract were shown to be more quickly fatal than those made in the lower intestinal segments. The passage of the living bacteria into the tissues caused a reduction (by absorption) of the protective bodies (antiferments), and resulted in autolysis. A study of the clinical picture as seen in the human being paralleled these findings. Stasis, induced by frequent feeding, causing precipitation and delayed digestion and resulted in fractional digestion and the production of fatty acids. The changes produced in the cells were not due to lack of oxygen or increased carbon dioxide but were due to acidosis, the result of fatigue to the muscle cells and asphyxia of those cells from venous stasis. This resulted in atony and permeability of the muscle wall with diffusion of bacteria and of the fractional protein products. Following bacteriolysis and proteolysis, anaphylaxis ensued or, in other words, a condition of acidosis. The symptoms of this condition in its acute form were shock, distention, prostration, convulsions, etc. The symptoms of the chronic condition were wasting, marasmus, anemia, etc. Treatment must have for its object the reduction of fatigue of the hollow muscle, prevention of fatty acid intoxication, intestinal retention and absorption of intestinal floral; it must also correct the acidosis, reduce venous stasis, increase immunity and maintain nourishment. Thus in the acute cases, gastric and colonic lavage; lavage with weak nitrate of silver, followed by sodium bicarbonate; demulcents and venesection, followed by infusion of sodium carbonate solution, were indicated. In extreme cases the transfusion of autoserum might be indicated and also the continuous bath. In the moderate and chronic cases, gastric lavage and colonic lavage, with gentle pneumatic gymnastics, were indicated together with demulcents, oil of cloves, and vaccines. The food should be reduced to the minimum fineness of particles; the interval between meals should be prolonged to the maximum point within the caloric safety, and regular feeding periods should be established to conform to the curve of muscle work and relaxation. Foods rich in mineral salts should be provided, as vegetables steamed and made into a purée. The intake of fat should be reduced to a minimum; heated and stale fat should be prohibited. No extractives were allowed, though in older children one might give extract-free meat. For a time the total protein intake might be reduced. The medication consisted of alkalies by the stomach and an analgesic mixture. The object of the demulcent, such as Irish moss or liquid vaseline, was to prevent the passage of bacteria through the intestinal wall. Adsorption of the bacteria might be favored by the administration of Fuller's earth, charcoal, or very fine bran. If laxatives were required, phenolphthalein and calomel might be given.

The Epidemiology of Bacillary Dysentery.—Dr. W. G. SMILLIE of Boston presented this paper. He stated that their study had been made in connection with the work of the Floating Hospital. The need of such a study was evident from the fact that the incidence of bacillary dysentery was greater than that of more feared and more widely advertised children's disease, as poliomyelitis, and among children the death rate was equally high. The methods of treatment of bacillary dysentery had long been known, but the mode of transmission of the disease had excited only indifferent or random speculation. The conditions furnished by the Floating Hospital were most favorable to a study of the transmission of bacillary dysentery because of the fact that the victims were usually infants under fifteen months of age, whose activities were limited and who therefore came into contact with comparatively few people and ate but few articles of food. It was comparatively easy to trace the source of infection in a baby under one year of age, but after the child could walk it became most difficult. Other conditions favoring a study of the epidemiology of bacillary dysentery were the fact that the diagnosis was clear cut. There was a definite clinical history; the dysentery bacillus could be isolated from the stools, and specific agglutinins were developed in the blood of the patient. This furnished a good working basis for investigation. The fact that the bacillus was found in the feces only and not in the other secretions of the body made it evident that every case represented some short path between the infected feces of the patient and the mouth of the victim. The incubation period of adult dysentery was from three to seven days. The disease in infants was one with a summer incidence, being most prevalent in July, August and September, and, finally, bacillary dysentery had a preference for the children of the poor. In addition to the above knowledge they had records of all cases that occurred and were reported to the city boards of health, thus bringing out nests of infection in all parts of the city. A spot map was made of all the cases of last year for purposes of comparison with the centers of infection this year. A record was kept of the daily maximum and mean temperature and of the relative humidity for the whole summer, of the nationality of the parents, housing and individual home conditions with reference to sanitation, together with careful investigation of all the activities of the case for a period of two days before symptoms of the disease developed. In all, 79 cases were studied, 49 being house cases, and 26 related cases discovered in the course of the investigation. While 75 cases were obviously insufficient as a basis for drawing definite conclusions as to the influence of temperature and humidity there seemed in this series of cases to be no relation between high temperature, high relative humidity and the case incidence. The case incidence seemed to be more closely related to the incidence of flies rather than temperature, for the hot weather was almost over before there were many cases of the disease and reports of new cases continued to come in well through September,

though the humid weather had passed. The families chiefly afflicted were not the illiterate foreigners, but the neglectful, poorer class American family. This was not attributable to the fact that the foreigners were more cleanly, sanitary or intelligent than American parents, for in truth they were very much less so. It seemed to be due to the fact that most foreigners nursed their infants. Only one of the cases occurred in a nursing baby, and this child was nursed only during the night and was fed with condensed milk mixtures during the day. Though bacillary dysentery was ordinarily a disease of poverty and filth, these were not necessary accompaniments, for the disease might be found in the better portions of the city. For estimating the relation between bacillary dysentery and housing conditions a score card was devised somewhat similar to that used for scoring dairies. In all forty-one homes were scored; the highest score was 94 per cent. and the lowest 15 per cent. The average score for those cases of bacillary dysentery that were due to direct contact was only 48 per cent. The average score of those cases that were a source of infection to others was 41 per cent. The average score of those cases due to infection from food was 59 per cent., and the average for those cases for which no source of infection was found was 71 per cent. The summary of the sources of infection was as follows: Contact with an acute case, twenty-one cases; contact with a carrier, two cases; contact with a house case, four cases; condensed milk epidemic, fifteen cases; ice cream cones, nine cases; flies, six cases; source of infection unknown, fifteen cases; milk, water, and fruit, each one case. An important fact with reference to the contact cases was that many of these cases were in the older members of the family, and in these individuals the disease showed itself in a mild form. Undoubtedly many cases of summer "ptomaine poisoning" were truly bacillary dysentery and, though these sporadic cases were not in themselves serious, they might become a great menace to the community, and particularly to the babies of the community; for, as this investigation showed, a mild adult case might readily infect a baby, with fatal results. As a general rule, it might be stated that in every dirty, careless house which the speaker inspected, and in which the sick child remained for more than one week, there resulted a contact case. There was evidence to show that four babies developed bacillary dysentery in the hospital wards, for each child was admitted with quite a different diagnosis and did not develop the disease until seven to ten days after admission. These were the only contact cases that occurred in the hospital, though virulent bacillary dysentery cases were on board all summer. Since extraordinary care must be exercised to prevent cross-infection, no child with bacillary dysentery should be admitted to a hospital unless all facilities for isolating these cases are provided; the most rigid precautions were necessary, and particularly fly exclusion. A number of the cases cited showed very conclusively that the fly was to blame for carrying the infection. The tenement mother was usually careless to protect her infant's stools from flies, and the diapers were seldom boiled; and since flies were so abundant and screens almost unknown, it was most extraordinary that more cases were not transmitted in this way. It seemed more than probable that some of the fifteen cases that had been tabulated as of unknown source were due to flies. There was a Shiga epidemic last summer that gave an excellent example of the various modes of spread of the "casual case" of dysentery. In this instance the epidemic originated with the two-year-old son of the dairyman in Haverhill. The source of this infection was probably an ice cream cone eaten in Lawrence. The father, mother, and one other child developed diarrhea; the father, being only moderately prostrated, kept on with his work in the dairy. The milk of this dairy was sold almost exclusively to the Deaconess' Home, a fresh air farm for children between the ages of seven and fourteen years. In this institution there developed about twenty cases out of a total of seventy children. This epidemic began on July 22, and on July 27 the children were all sent to their homes. One of these children went to Pine Heights, Dedham, became seriously ill, and after five days was taken to the hospital. This child's brother and two sisters also became ill with the same kind of infection. The dejecta of these children was thrown into an open privy without disinfection. A neighbor who came in to assist in the care of these children carried the infection home to her husband. Within a few days a child living across the street developed bloody dysentery and died within a few days. About the same time three adult members of one family living about 100 yards away developed severe dysentery, which persisted for a few days only. The evidence seemed to point to flies as the carriers in these last two families. A case developed in the house adjoining that in which the first child, the one coming from the Deaconess' Home, lived. The fifteen cases in which the source of infection was traced to condensed milk were interesting. They occurred in widely separated localities, but in each instance the evidence pointed very definitely to a particular batch of a certain brand of condensed milk.

Dr. Henry I. Bowditch congratulated Dr. Smillie on the work he had accomplished and the results he had attained. He said it might be of interest to hear the results of their study of the bacillary cases during the past three summers, since they were especially interested in dysenteries. In 1914 there were seventy-nine cases that came under their observation, of which 68 per cent. gave a positive Flexner organism; in 1915 there were seventy-five cases, 85 per cent. of which showed the Flexner infection; in 1916 there were sixty-four cases (Dr. Smillie had a few additional ones), and of these 88 per cent. showed the Flexner infection. In three-fourths of these cases the bacteria were recovered from the stools and in others at autopsy, and in a certain few the diagnosis was made by finding the agglutinins. At the same time they had constantly tried to see how much of a factor the gas bacillus or the *B. welchii* was in these dysenteries. The *B. welchii* was found not to play an important part. It disappeared quickly in the early course of the illness, and was frequently seen to appear later when other foods were given. In 1914 a closer investigation than usual of the *B. welchii* was made, which resulted in finding it in 11 per cent. of infectious conditions, in 27 per cent. of digestive disturbances, in 28 per cent. of malnutrition cases, and in 28 per cent. of normal cases. The infectious cases were studied closely, while the other cases were picked at random. They felt at present that the Flexner organism was the main etiological factor; that the gas bacillus was a complicating factor, but not the main etiological factor. This was different from the stand taken some years ago. On the Floating Hospital, when a case entered with the clinical picture of dysentery the mode of treatment carried out was to keep the child on water for the first twelve hours and then place it on a food with a high percentage of carbohydrate, and moderate protein, as, for instance, fat 0, sugar 12 per cent., and protein 6 per cent.; this food was usually given in the form of a fat-free milk with sugar added. This was continued if the gas bacilli were not present; but when the gas bacilli did occur the carbohydrates were diminished.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

Twenty-Sixth Annual Meeting—Held in New York City, September 12, 13, and 14, 1916.

The President, Dr. Jefferson D. Gibson of Denver, in the Chair.

President's Address: Some Speculations for the Future.—Dr. Gibson stated that by the plan of treatment which he advocated the death rate from tuberculosis could probably be made in eight years less in the United States than the present death rate from smallpox. He outlined his plan as follows: Make use of the health boards of every city and county. Every child in the public or other school should be examined for tuberculosis and treated, if needed, under the direction of the board of health. The health board or commissioners should set aside and maintain a department for this special school work, known as the Tuberculous Department, and the chief or manager of this department and all assistants needed should devote their entire time to the care, examination and treatment of the school children. Every child that is tuberculous, or shows a reaction or any sign of tuberculosis, should be treated, in addition to the ordinary hygienic and dietic measures, by the *x*-ray for its direct effect on the bacilli and the lung tissue by static electricity, for its direct effect upon the heart, nervous condition, and general metabolism; and by inhalations of an ozonized oil nebula for its effect on the cough. By this method during the past

year he had been able to save from death 92 per cent of all applicants, of all stages and complications of pulmonary and other forms of tuberculosis. Tuberculosis in young children was usually glandular, and most latent or incipient tuberculosis in children was in the bronchial, mediastinal, cervical, abdominal, or inguinal glands. It was in this stage that the disease should be detected, because it was well known that the *x*-rays would cure a tuberculous gland.

The Treatment of Hypertension and Complicating Conditions.—Dr. WILLIAM BENHAM SNOW of New York said he viewed hypertension as secondary only to a toxic cause, and as the actual cause of the resulting arteriosclerosis. If the tension was relieved the labor of the heart would be relieved and the arterial degeneration to a degree arrested. In the treatment the most important factor was the regulation of the diet. In advanced cases all proteins should be eliminated from the diet, and in all cases they should be reduced in amount. In addition to the regulation of the diet, the high frequency current should be employed, by the autocondensation method. The patient was given daily treatments until the pressure fell to normal or recurred to the same figure following each daily treatment. This would be the compensation point for the individual case. At that point a fixed tension would persist despite the treatment, and beyond that it would be impossible to lower the pressure. After finding that point the treatments were given just often enough to maintain the pressure approximately at that lowered point.

Contact in Electrotherapeutic Applications.—Dr. FRED H. MORSE of Boston said this was an important factor in electrotherapeutics. He considered the shapes and sizes of electrodes, the best materials to be used, etc. He described an electrode which had proved very successful in his hands, made of asbestos combined with flexible copper gauze, covered with linen and with a rubber backing.

Roentgenographic Diagnosis of Dental Infections in Systemic Diseases.—Dr. SINCLAIR TOUSEY of New York read this paper and showed numerous lantern slides. He drew the following conclusions: A putrescent mass in the pulp chamber of a tooth might exist for months or years because the walls of the cavity could not collapse and were incapable of throwing out granulations and eventually filling the cavity with healthy tissue, which was the natural process of curing an abscess in the soft tissues of the body. This putrescent mass might constantly poison the bony tissue surrounding the apical foramen sufficient to produce an effect clearly recognizable in a radiogram. This condition might be unknown to the patient, and sometimes not reveal itself to the usual tests applied by the dentist. From this long-existing source of infection secondary lesions and symptoms of the gravest and most diversified character might arise. The *x*-ray was to be depended upon to show whether or not the source of trouble was connected with the teeth or the pneumatic sinuses, and if so, whether the trouble was due to malposition and unnatural pressure or to infection. It would be a mistake to regard every case as due to the teeth.

The Treatment of Inoperable Carcinoma by Bipolar Ionization.—Dr. G. BETTON MASSEY of Philadelphia said that in this method the active needles were inserted just beyond the periphery of the growth, while the inactive, negative electrode was inserted in its center. As no material amount of current traversed the general body structures, the method could be pushed to the point of producing a boiling temperature in the larger growths, thus adding the valuable agency of heat to the devitalizing chemical action of the dispersed ions of zinc from the erosion of the zinc electrodes attached to the positive pole. This method was applicable to large growths when heavy currents were needed. In small growths the ionization alone was sufficient, applied in the unipolar method. Illustrative cases were reported.

Prompt Removal of Exudate from Trauma.—Dr. A. B. HIRSH of Philadelphia drew the following conclusions: Prevailing modes of removing exudate from the tissues after injury are altogether inefficient, therefore inadequate, and lead to needless invalidism through nonunion or deformity after fracture or other interference with function. Prompt removal of any excess of effused blood and lymph is necessary for union of broken bone or lacerated soft structures, leading to resumption of normal function. Mechanical modalities, largely electrical, alone can supply the deep molecular contraction of tissue required to force back into torn vessels their misplaced fluids, and where such extravasated material has had time to become organized to soften it sufficiently to bring about its absorption.

Contraindications to the Use of High-Frequency Currents.—Dr. FREDERIC DE KRAFT of New York gave as the contraindications to the use of the high frequency current all conditions where a tendency to hemorrhage existed, for instance, in cases of pulmonary tuberculosis with a history of recent hemorrhage or in those where bleeding had occurred recently in the pelvic organs, uterus, and ovaries. As it stimulated cell functions it was contraindicated in hyperthyroidism, Hodgkins' disease, leucemia, etc. It should not be used in cases of walled-in pus, tuberculous glands, or acute rheumatism. It was seldom wise to employ it during menstruation. In certain cases of obesity it increased the weight.

The Importance of Dieting in Medicine.—Dr. ANTHONY BASSLER of New York outlined the facts to be kept in mind in diets for diabetes, cardiac decompensations, nephritis, polyarthritis, gall-bladder disease, intestinal toxemias, and constipation.

The Condenser Discharge; Its Use in Diagnosis and Treatment.—Dr. FRANK B. GRANGER of Boston said that in this method of testing muscles a condenser of known capacity was charged from the main or from a battery to a constant voltage and was then discharged through a muscle. For muscle testing this method bade fair to supplant other methods, as we had an exact numerical equation, instead of vague terms, and thus the improvement of the patient could be determined readily and rapidly. In therapeutics more work must be done, more cases tabulated and compared, before we could assign it its place in therapeutics.

Uterine Fibroids.—Dr. MARY ARNOLD SNOW of New York, after discussing the frequency, cause, classification, diagnosis, structure, growth, site, and symptoms of uterine fibroids, advocated their treatment by the *x*-ray, preferably by the fractional dose method. The advantages of the *x*-ray treatment were: It left the reproductive system intact, though sterile, whereas the radical operation meant incalculable reflex shock to the system mentally and physically. The *x*-ray treatment was an ambulatory treatment. There was no danger from hemorrhage. The patient enjoyed her usual comfort. With proper precautions there should be no disturbance of the digestive system, as from the after effects of an anesthetic, and there should be freedom from danger to life. The lowest mortality from surgery was 3 to 5 per cent. There was no period of convalescence, and insanity never occurred. The symptoms of the induced menopause were less pronounced than those following an operation. The contraindications were: Such severe symptoms that the life of the patient would be endangered by waiting for results from the *x*-ray; pedunculated submucous fibroids; infectious gangrene or malignancy, or where the fibroid was associated with disease of the adnexa.

The Value of the Cooper Hewitt Quartz Lamp in the Treatment of Alopecia.—Dr. WILLIAM H. DIEFFENBACH of New York in this paper gave a verification of the claims of Dr. Franz Nagelschmidt of Berlin in the treatment of alopecia by means of the ultra-violet rays emitted from the quartz lamp. He showed lantern slides of numerous cases in his own experience and that of Nagelschmidt.

Subacromial Bursitis.—Dr. J. E. DEERING of Worcester, Mass., said the treatment of subacromial bursitis in the first stage consisted in the use of a rather long treatment with a high candle power lamp, followed by twenty minutes to half an hour of diathermy. Often four or five treatments would relieve and cure a case. Where there was tension in the bursa static sparks should be used, preceded by the high candle power lamp. In the second stage during the formation of adhesions one should use the high candle power lamp, fifteen or twenty minutes of diathermy, and fifteen or twenty minutes of static wave if that be well borne. Where contraction of adhesions had taken place diathermy might be omitted from the foregoing treatment.

Some Phases of Intestinal Stasis and Its Treatment by Physical Measures.—Dr. WILLIAM MARTIN of Atlantic City detailed the history of an interesting case of intestinal stasis treated and cured by a combination of diathermy, light treatment and vibration of the intervertebral spaces and the static wave and the slow sinusoidal currents.

The Treatment of Infantile Paralysis.—Dr. FRANK E. PECKHAM of Providence, R. I., reported three cases of infantile paralysis treated in the early stage by the

static wave current over the lumbar region of the spine, the 500 c.p. lamp over the affected muscles and over the lumbar spine, and later vibration and gymnastic exercises.

The Treatment of Infantile Paralysis Based on the Present Epidemic. — Dr. H. W. Freuenthal of New York said that no advance had been made in treatment in the acute stage further than in the fact that, in cases where anterior poliomyelitis was detected immediately, the disease had been checked and paralysis averted by the use of immunizing serums obtained from persons who had already had the disease. Treatment should be begun in the second week. Pain could be relieved by the warm bath or an electric light bath. The affected muscles should be treated with the sinusoidal current alternating with a combined galvanic and faradic current. Massage should be instituted the moment the acute inflammatory symptoms disappeared. Attention should also be given to a class of active and passive exercises before a mirror, having the patient concentrate his mind on the affected muscles.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

College of Physicians and Surgeons of Ontario.

Final Examination, November, 1915.

MEDICINE.

1. Endocarditis. Discuss the types, etiology, morbid anatomy, and clinical manifestations.
2. Cirrhosis of the liver. Enumerate varieties, and discuss the pathology, symptoms and treatment.
3. Diabetes mellitus. Describe the mode of onset and urinary findings, and discuss in detail your treatment.
4. Discuss the cause, and describe the prodromal symptoms, course, and treatment of a case of typhoid fever.
5. Discuss the etiology, and describe the lesions and mode of treatment of: Impetigo contagiosa, Herpes zoster, Alopecia areata.

SURGERY.

1. (*a*) What symptoms differentiate a malignant from a non-malignant tumor of the breast? (*b*) What course would you adopt in doubtful cases? (*c*) Describe the operation for complete removal of the breast.
2. (*a*) How is intussusception produced? (*b*) Give symptoms. (*c*) Give treatment.
3. (*a*) Describe a method for amputation in the middle of the forearm. (*b*) Enumerate the structures divided.
4. (*a*) Give the differential diagnosis between anal fissure, hemorrhoids and carcinoma of the rectum. (*b*) Give the treatment of each.
5. (*a*) Give the differential diagnosis between malignant disease of the esophageal and pyloric ends of the stomach. (*b*) Give treatment in each case.

OBSTETRICS AND GYNECOLOGY.

1. Give the management of a case of pregnancy up to the advent of labor, and also from the delivery of the placenta to the end of the puerperium, in a normal case.
2. Pains: Define the following:—True, false, weak, cutting, atonic, expulsive, after.
3. Forceps and pituitrin: What are the indications, and the contraindications, for the use of each?
4. A woman's abdomen is enlarged from the pelvis to the level of the umbilicus. Mention the conditions which may produce such an enlargement. How would you make a differential diagnosis of them?
5. Prolapsus uteri; give causes, symptoms, and treatment, operative, and non-operative.

ANSWERS.

MEDICINE.

1. Endocarditis.

Types:—I. Acute { Simple / Malignant or Ulcerative { Septic / Typhoid / Cardiac

II. Chronic.

The difference between simple and malignant endocarditis is probably one of degree rather than of kind.

Etiology: Simple endocarditis is associated with rheumatism or scarlet fever. Malignant endocarditis is also associated with rheumatism, scarlet fever, and also with pneumonia or septic processes. Micrococci are often found. Chronic endocarditis may follow an acute endocarditis, or may be the result of syphilis, old age, high arterial tension, gout.

Morbid Anatomy: In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium; superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegetations. These vegetations are most marked at a slight distance from the free borders of the valves—*i.e.* those parts which come into opposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survive, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact.

As regards the side of the heart most affected—*Congenital* endocarditis attacks the right side of the heart (but note that many congenital cardiac lesions are due not to endocarditis, but to developmental faults); simple endocarditis attacks the left only; the *malignant* attacks *both sides*, though the *left* is much more implicated than the right side.

The vegetations are upon that side of the valve opposed to the blood-stream—viz., at the aortic valve the vegetations project into the ventricle, at the mitral valve into the auricle.

As in pericarditis, the myocardium almost always shares in the inflammatory affection.

In *chronic* endocarditis, when not directly due to acute endocarditis, the changes are: Formation of small nodular prominences, with thickening of the valve. The vegetations are much firmer than in the acute disease. Formation of yellowish, opaque fatty patches. Great increase of fibrous tissue, which subsequently contracts, producing much deformity. The cusps become rigid, curled, and may cause great destruction to the onward flow of blood, and at the same time fail accurately to close together when required. Great narrowing of the valvular orifice. Shortening of the chordæ tendineæ and papillary muscles. Frequently fusion of the chordæ tendineæ (adhesions). Calcification of the fibrosed portion.—(Wheeler and Jack.)

Clinical Manifestations: "Simple Endocarditis.—The signs are extremely ill marked; possibly increased rapidity of pulse, dyspnea, precordial distress, etc., may attract attention to the heart. On examination some dilatation of the heart, from the accompanying myocarditis, may be found, and a *recently developed murmur* of a soft blowing or bellows-like character may be heard in the mitral or aortic areas. The commonest murmurs are those of mitral regurgitation (systolic), or mitral stenosis (presystolic).

"It should be remembered, however, that in most fevers the heart is somewhat dilated, and a murmur, *not due to endocarditis*, may be present. We must therefore be cautious in coming to a too rapid conclusion that a suddenly developed murmur is indicative of endocarditis. An important distinction is that the onset of endocarditis is usually accompanied by a smart rise in temperature above the previous level, while in hemic murmurs, or those due to simple dilatation, this is absent. A diastolic murmur in the aortic area is likely to be organic (aortic regurgitation).

"*Malignant Form.*—Three types may be distinguished —*The Septic Type* is characterized by the symptoms of

septic infection—viz., rigors, sweats, oscillating temperature, emaciation and metastic abscesses. The symptoms may continue for months. *The Typhoid Type* is characterized by irregular or intermittent temperature, looseness of the bowels, petechial rashes, and a rapid assumption of the typhoid state. Great difficulty may be experienced in distinguishing this form from typhoid fever or meningitis. *The Cardiac Type* is that in which symptoms of acute endocarditis, with fever of a septic type, appear in the course of a chronic valvular lesion. In some of these cases death is rapid; others may recover after a protracted illness.

"Along with these general symptoms there are usually definite cardiac signs—development of murmur, dilatation of the heart, cardiac irregularity, and so on. But the cardiac symptoms may be altogether latent, causing difficulty in diagnosis."—(Wheeler and Jack's *Handbook of Medicine.*)

2. Cirrhosis of Liver. *Varieties:* Portal, or atrophic or alcoholic; biliary or hypertrophic; also syphilitic or pericellular.

Pathology. In *atrophic cirrhosis* the liver may be very small, but is sometimes enormously enlarged. The latter condition may be caused by congestion or fatty changes. Generally, in the atrophic condition, the surface of the liver is rough and nodular. The connective tissue is increased in quantity, and the liver cells are destroyed (probably by the poison which causes the disease). The fibrous tissue in Glisson's capsule is increased, the portal circulation is obstructed, and later the bile ducts are obstructed and the hepatic cells become obliterated. In the *hypertrophic cirrhosis* the liver is always enlarged. The following table (from Wheeler and Jack) gives the important features of the morbid anatomy of the two varieties of cirrhosis, together with the differences:

PORTAL OR MULTILOBULAR CIRRHOSIS.	BILIARY OR UNILOBULAR CIRRHOSIS.
1. The bile-ducts are not involved, and jaundice is a late symptom.	1. The smaller bile-ducts are inflamed (cholangitis); jaundice is early and severe.
2. The new-formed connective tissue compresses the branches of the portal vein.	2. The portal circulation is not impeded.
3. In the earlier stages, active congestion and proliferation of connective tissue in the portal spaces may cause increase in the size of the liver; later, there is usually contraction.	3. The new tissue is diffused throughout the organ, and causes a great increaso in size.
4. The capsule is much thickened, and the surface is rough and hob-nailed.	4. The capsule is not thickened, and the surface is smooth (like morocco leather).
5. The masses of liver cells vary in size, some consisting of several lobules, others being smaller than a lobule. Each mass forms a *distinct area* with a rounded outline, and is enclosed in a fibrous girdle.	5. The masses of liver cells consist of isolated lobules. The cut surface has a uniform and finely-granulated appearance.
6. On microscopic examination, the process is seen to be going on *chiefly* at the periphery of the lobules. The fibrous tissue is very dense.	6. The fibrous tissue is not confined to the periphery, but invades the substance of the lobules. It is much more open than that of portal cirrhosis.

Symptoms. Atrophic cirrhosis presents gastric catrrh, with anorexia, dyspepsia, nausea, flatulence, diarrhea and sometimes hematemesis. The liver is tender and enlarged at the beginning of the disease. As the disease progresses, and the pressure in the portal system increases, the liver and spleen enlarge, the superficial abdominal veins become prominent, ascites and swelling of the feet are observed, hemorrhoids develop and there may be hemorrhage from the stomach or bowel. Later, the liver gets smaller, the patient loses flesh and strength, slight jaundice may be present, fever, headache, and nervous symptoms (stupor, delirium, convulsions and coma) may appear. In the *hypertrophic cirrhosis* the liver is much enlarged, the spleen enlarged, jaundice is marked, there is pronounced loss of flesh and strength, hemorrhages into the skin and from the mucous membrane may occur, pain in the hepatic region, fever and vomiting are of common occurrence. Ascites and dilated abdominal veins are absent.

Treatment. In *atrophic cirrhosis*, alcohol must be forbidden; for the gastric catarrh, bismuth and alkalies may be adopted; the portal congestion is relieved by salines and diuretics; Epsom salts, compound jalap powder, claterium, squill, digitalis and calomel have been recommended. Paracentesis is indicated for the ascites; epiplopexy has also been suggested. In the *hypertrophic* variety the treatment is symptomatic only, and follows the lines laid down under *atrophic cirrhosis.* The atrophic variety is amenable to treatment in the early stages.

3. Diabetes Mellitus. The *mode of onset* is gradual, and generally it is the frequency of urination or the extreme thirst which attracts the patient's attention. Occasionally the disease sets in somewhat rapidly, following injury or a severe chill or intense and sudden emotion.

The *urinary findings* are: Increased quantity voided, from 3 or 4 quarts to 20 quarts or more in a day; the specific gravity is generally high, 1020 to 1045; the urine is pale in color and has a sweetish odor and taste; the reaction is acid; glucose is present in varying amounts, from 10 to 20 or more ounces being excreted in a day; the urea is increased, and so is the nitrogenous output in general; acetone, diacetic acid, beta-oxybutyric acid are often present; phosphates and sodium chloride are often present in increased quantities; fat and gas in the urine are sometimes met with; albumin may be present.

Treatment. The diet must be carefully regulated, and explicit written directions must be given to the patient. The carbohydrates must be limited, the diet consisting of proteins and fat, the tolerance for carbohydrates must be built up and increased, and a sufficient number of calories must be supplied. With many patients the gradual withdrawal of carbohydrates is tolerated better than their sudden restriction. The percentage of sugar in the urine when the patient is on a general diet is first to be calculated, then the amount on a sugar-free diet, and then the quantity of carbohydrate which can be given without glycosuria appearing. Recently the *starvation diet* of Allen and Joslin has been recommended, but the details of this method are too lengthy for insertion here. Care must be taken lest a diet which is too exclusively nitrogenous should throw an excessive strain upon the liver and kidneys. As a general rule, diabetics *must not take*: Liver, sugars, sweets or starches of any kind, wheaten bread or biscuits, corn bread, oatmeal, barley, rice, rye bread, arrowroot, sago, macaroni, tapioca, vermicelli, potatoes, parsnips, beets, turnips, peas, carrots, melons, fruits, puddings, pastry, pies, ices, honey, jams, sweet or sparkling wines, cordials, cider, porter, lager, chestnuts, peanuts. They may, as a rule, be allowed a diet selected from the following: Soups or broths of beef, chicken, mutton, veal, oysters, clams, terrapin or turtle (not thickened with any farinaceous substances), beef tea, shell fish and all kinds of fish, fresh, salted, dried, pickled or otherwise preserved (no dressing containing flour), eggs, fat beef, mutton, ham or bacon, poultry, sweetbreads, calf's head, sausage, kidneys, pig's feet, tongue, tripe, game (all cooked free of flour, potatoes, bread or crackers), gluten porridge, gluten bread, gluten gems, gluten biscuits, gluten wafers, gluten griddle cakes, almond bread or cakes, bran bread or cakes. String beans, spinach, beet-tops, chicory, kale, lettuce plain or dressed with oil and vinegar, cucumbers, onions, tomatoes, mushrooms, asparagus, oyster plant, celery, dandelions, cresses, radishes, pickles, olives, custards, jellies, creams (without sugar), walnuts, almonds, filberts, Brazil nuts, cocoanuts, pecans, tea or coffee (without sugar), pure water, peptonized milk.

In every case the diet list must be prepared for the individual patient. The general health must also be attended to. The patient should lead a quiet life, free from worry, take gentle exercise, bathe daily in warm water, and only take drugs when indicated. The most commonly used drugs are codeine, morphine, strychnine, arsenic and cod liver oil. For the extreme thirst citrate of potassium or lemon juice with water may be given.

4. Typhoid Fever. *Etiology.* The exciting cause is presence of the *bacillus typhosus.* It may be communicated by contaminated food, milk, water, dust, soiled hands, clothing, instruments or utensils, flies, "carriers," or anything that has become contaminated with the feces, urine or vomitus of one affected with the disease.

The *prodromal symptoms* are vague. There are pain in the head or back or limbs, general depression, anorexia, nausea, chills, headache, epigastric oppression, diarrhea or constipation, disturbed sleep, cough, nosebleed.

Course of the disease. After the prodromal symptoms the patient takes to his bed, and from this the definite onset is generally dated. "During the *first week* there is, in some cases (but by no means in all,

as has long been taught), a steady rise in the fever, the evening record rising a degree or a degree and a half higher each day, reaching 103° or 104°. The pulse is rapid, from 100 to 110, full in volume, but of low tension and often dicrotic; the tongue is coated and white; the abdomen is slightly distended and tender. Unless the fever is high there is no delirium, but the patient complains of headache, and there may be mental confusion and wandering at night. The bowels may be constipated, or there may be two or three loose movements daily. Toward the end of the week the spleen becomes enlarged and the rash appears in the form of rose-colored spots, seen first on the skin of the abdomen. Cough and bronchitic symptoms are not uncommon at the outset. In the *second week*, in cases of moderate severity, the symptoms become aggravated; the fever remains high and the morning remission is slight. The pulse is rapid and loses its dicrotic character. There is no longer headache, but there are mental torpor and dulness. The face looks heavy; the lips are dry; the tongue, in severe cases, becomes dry also. The abdominal symptoms, if present—diarrhea, tympanites, and tenderness—become aggravated. Death may occur during this week, with pronounced nervous symptoms, or, toward the end of it, from hemorrhage or perforation. In mild cases the temperature declines, and by the fourteenth day may be normal. In the *third week*, in cases of moderate severity, the pulse ranges from 110 to 130; the temperature now shows marked morning remissions, and there is a gradual decline in the fever. The loss of flesh is now more noticeable, and the weakness is pronounced. Diarrhea and meteorism may now occur for the first time. Unfavorable symptoms at this stage are the pulmonary complications, increasing feebleness of the heart, and pronounced delirium with muscular tremor. Special dangers are perforation and hemorrhage. With the *fourth week*, in a majority of instances, convalescence begins. The temperature gradually reaches the normal point, the diarrhea stops, the tongue cleans, and the desire for food returns. In severe cases the fourth and even the fifth week may present an aggravated picture of the third; the patient grows weaker, the pulse more rapid and feeble, the tongue dry, and the abdomen distended. He lies in a condition of profound stupor, with low muttering delirium and subsultus tendinum, and passes the feces and urine involuntarily. Heartfailure and secondary complications are the chief dangers of this period. In the *fifth and sixth weeks* protracted cases may still show irregular fever, and convalescence may not set in until after the fortieth day. In this period we meet with relapses in the milder forms or slight recrudescence of the fever. At this time, too, occur many of the complications and sequelæ."—(Osler's *Practice of Medicine.*)

Treatment. "This is largely supportive and prophylactic. On account of the wide distribution of the bacilli in the secretions, it is highly important that the excreta and all substances which come in contact with the patient should be thoroughly disinfected to prevent dissemination of the disease. Corrosive sublimate (1:500), carbolic acid (1:10), and chlorinated lime are used to disinfect the stools. Weaker solutions may be employed for sponging the perineum and anal region of the patient and for washing the hands of the attendants. The general treatment consists in absolute rest in bed with the enforced use of the bed-pan. The diet should be liquid, largely milk, and should be administered every three hours. The modern tendency is toward a more liberal diet, and the high calory diet (as advocated by Coleman) adds to the comfort of the patient, shortens the convalescence and lowers the death-rate. Fever should be controlled by sponging, by the wet pack, and by the full bath. The Brand method consists in immersion of the body in a tub of water (70° F.) for 15 or 20 minutes every third hour when the temperature rises above 102.5° F. The medicinal treatment includes the use of antipyretics, intestinal antiseptics, and antityphoid serum. Abdominal pain, tympanites, and tenderness are best treated with fomentations and turpentine stupes, while meteorism may be relieved by the internal administration of turpentine and by the use of the rectal tube or injections of the milk of asafetida (ʒ 5-6). Diarrhea, when it exceeds 4 or 5 stools daily, will require the withholding of all food except milk and the administration of opium, bismuth, codeine, etc. Constipation should be relieved every 2 days by enemas containing soapsuds. When hemorrhage occurs, the foot of the bed should be elevated, an ice-bag or iced cloth should be applied to the abdomen, morphine should be given hypodermically, and opium (gr. 1) should be administered by the mouth every three hours. Peritonitis usually terminates fatally, and requires the same treatment as hemorrhage. Abdominal section should be performed as soon as the diagnosis is positive. Alcohol, ammonia, strychnine, digitalis, etc., should be used if heart-failure supervenes. Nervous symptoms are greatly lessened by hydrotherapy, but nerve-sedatives may be necessary. Sore mouth may be prevented by cleanliness and the use of carbolized glycerin solution (0.5 per cent.) upon the gums and teeth."—(*Pocket Cyclopedia.*)

5. *Impetigo contagiosa* is an acute, contagious, inflammatory disease of the skin, characterized by discrete, flat, superficial vesicles or blebs, which rapidly become pustular and dry upon the skin as thin crusts. The eruption is most common upon the face and hands. The lesions begin as flat vesicles or blebs, which, in the course of twenty-four hours, become vesiculopustular or pustular. Rupture soon occurs, the exudate drying upon the skin as thin, wafer-like crusts, which appear to be "stuck on." The edges of the crusts become detached, curl up, and the crusts drop off, exposing to view reddish spots which soon fade. The lesions at times show a tendency to umbilication. A coalescence of neighboring pustules may occur, leading to the formation of patches of considerable size. In severe cases there may be slight febrile disturbance. Itching is slight or absent. Occasionally the eruption takes on a circinate form. The affection is chiefly seen in poor children. It is likely to accompany pediculosis capitis, as the result of scratching. Epidemics of contagious impetigo are not uncommon in institutions for children. The affection is caused by inoculation with the ordinary pus microorganisms, particularly the staphylococcus pyogenes aureus. The chief characteristics are the discreteness, superficiality, and autoinoculability of the lesions. The affection may be cured in a week or ten days, or, indeed, may get well spontaneously. The crusts may be removed with soap and warm water, after which an ointment of ammoniated mercury (gr. xxx to 1 ounce of petrolatum) should be applied; mild antiseptics may be employed, care being taken to avoid irritation.—(*Cyclopedia of Medicine and Surgery.*)

Herpes zoster is probably an acute specific disease of the nervous system, characterized by the formation of grouped vesicles along the line of a cutaneous nerve, and accompanied by neuralgic pains. Cold, anemia, excessive use of arsenic, malaria have been mentioned as causative factors. There is an irritative or inflammatory condition of the central, spinal, or peripheral nerve apparatus. The process is usually an interstitial descending neuritis of one of the spinal ganglia. The parts affected should be protected from injury by a dusting powder or collodion; the pain may demand morphine. Internally, zinc phosphide, and tonics have been recommended.

Alopecia areata is a disease of the hairy system characterized by the more or less sudden occurrence of round or oval, circumscribed, bald patches, in rare cases coalescing and producing total baldness. The cause is usually neurotic in character, although at times the disease seems to be caused by a parasite. The characteristics of the disease are the circumscribed areas of baldness, the pale, smooth skin, the contracted follicles, and the rapid onset. Internally, arsenic, in addition to other tonics and stimulants, is of great service. Locally, stimulation of the scalp is indicated, for which purpose the essential oils, cantharides, capsicum, turpentine, and sulphur are recommended. The faradic current applied with a wire-brush electrode is often useful. In obstinate cases blistering may be resorted to.—(*Pocket Cyclopedia.*)

SURGERY.

1. (*a*) *Benign tumors* of the breast are generally found in young women, between the ages of 15 and 30. They grow very slowly and gradually. As a rule they are freely movable, are firm, round and oval, and the nearer they are to the skin the softer they are. They are not encapsulated, and don't cause retraction of the nipple or enlargement of the axillary glands. As a rule they are not painful. *Malignant tumors* are generally found in women between 30 and 60 years of age. Cachexia accompanies them. They grow rapidly. They are movable in the early stages, later they become adherent to the skin or pectoralis major muscle, and are hard and immovable. The nipple is retracted. The axillary glands are enlarged. Pain is a symptom. There may be metastatic growths.

(*b*) In *doubtful cases* it is well to imagine the growth to be malignant until it is proved otherwise. If the breast is removed, and the tumor is proved benign, the woman has lost a breast; whereas, if it is not removed, and should prove to be malignant, she will lose her life. The best plan is (with the consent of the patient) to prepare for a radical operation, excise a piece of the tumor, have it examined microscopically, and if it proves to be benign, remove the tumor; if it is malignant, remove the whole breast and neighboring lymphatic glands.

(*c*) *"Halsted's operation* aims to remove in one piece the entire breast and overlying skin, the costal portion of the pectoralis major, the pectoralis minor, and all the fat and glands of the axilla. The supraclavicular glands are removed in a second piece. An incision is carried through the skin and fat, and a triangular flap turned back. The costal portion of the pectoralis major is divided close to the ribs and separated from the clavicular portion, which with the overlying skin is divided up to the clavicle, exposing the apex of the axilla; these flaps are drawn upward with a retractor and separated from the underlying tissues, and the muscle further split as far as the humerus, where it is severed close to the bone. The breast, pectoralis major, and all fat are stripped from the chest wall, including the pectoralis minor, which is divided at each end, thus exposing the entire axilla, which is cleansed of fat and lymphatic glands from above and within, downward and outward, all small vessels being ligated close to the axillary vessels, which, with the nerves, should alone remain. The triangular flap of skin is drawn outward and the lateral and posterior walls of the axilla likewise cleared, the subscapular vessels being ligated, and the subscapular nerves preserved if possible. The mass is then turned inward and removed from the chest. A vertical incision is now made along the posterior margin of the sternomastoid, and the supra- and infraclavicular fat and glands removed by dissecting from the junction of the internal jugular and subclavian veins downward and outward. The cervical wound is sutured, and the edges of the chest wound approximated by a buried purse-string suture of silk, which includes the base of the triangular flap, the apex being spread over the axilla. The rest of the wound is covered with Thiersch's skin grafts. The axilla is not drained. The disability resulting after such an extensive operation is surprisingly slight. The entire wound may be closed in most cases by fashioning two flaps from the lower lip of the wound. A small gauze drain should always be placed in the axilla, preferably through a small incision at its posterior margin, in order to drain the large quantity of fluid which escapes from the severed lymph vessels."—(Stewart's *Surgery.*)

2. *Intussusception* is the telescoping of one part of the intestine into the part immediately below. It is said to be due to irregular peristalsis; trauma, diarrhea, intestinal worms, polypi and new growths in the intestinal wall have all been credited with causing the condition.

(*b*) *Acute intussusception* is most common in children. It begins suddenly with severe abdominal pain and vomiting. Blood-stained mucus is passed, perhaps with tenesmus. Collapse soon comes on, and may be fatal in twenty-four hours; otherwise death occurs in a few days from peritonitis. In most cases a "sausage-shaped" tumor can be felt, usually along the course of the colon, but lower down, or just above the pubis The right iliac fossa feels empty. A natural cure may follow, but rarely, from sloughing of the intussusceptum, whilst the peritoneal cavity is protected by adhesions uniting the entering and ensheathing layers.

(*c*) *Treatment.* "The reduction of the intussusception at the earliest possible moment is the only treatment admissible, and this can only be done with certainty by operation. The abdomen should be opened over the tumor if it can be felt; if not, in the mid-line below the umbilicus. The intussusception is then reduced by squeezing out the entering portion, beginning at the lowest part. The intestine should never be pulled out, for fear of tearing it. If there is any difficulty, the wound must be enlarged and the lump brought out. If, owing to adhesions, reduction cannot be done, the intussuscepted portion must be excised through an incision in the ensheathing layer, but the outlook is bad in these cases. If the bowel is gangrenous, the condition is so bad that nothing more can be done than to bring out the coil and establish an artificial anus. If, owing to any reason, an operation is not possible, nonoperative procedures must be tried. These consist of attempting to reduce the invagination by inflation with air or, better still, by fluid. A catheter is passed into the rectum and fluid poured in from a funnel raised not more than 2 feet. A hand is placed over the tumor to feel when the lump disappears. The objections to this are that after twelve hours reduction cannot be obtained by this method; that valuable time is wasted if it fails; that you cannot tell if the last inch has been reduced (and if it has not, recurrence is certain); that it is no use in the enteric or ileocolic forms, and that the bowel may be ruptured."—(*Aids to Surgery.*)

5. (*a*) *Amputation in the middle of the forearm.* "An anterior and a posterior U-shaped flap are incised on the respective aspects of the forearm, the base of each flap at the saw-line being equal to a half-circumference of the limb at that line and the length of each equal to three-fourths of the diameter—the hand being supinated in making the anterior flap and the forearm vertical in making the posterior flap. Having cut through skin and fascia in outlining the flaps, these incisions are now deepened upon the line of the retracted skin, beginning at the ulnar side of the anterior flap, in case of the right arm (and on the radial side upon the opposite arm). The vertical ulnar incision will involve the flexor carpi ulnaris and flexor profundus—the vertical radial incision will involve the two radial carpal extensors—both vertical incisions passing directly to the bones. The muscles on the anterior and posterior aspects of the forearm, at the lower rounded extremities of the flaps, are cut from without inward in such a manner as to bevel them slightly. The entire flaps are now raised from the bones up to a point sufficiently below the saw-line to furnish a musculoperiosteal covering—at which level the periosteum is circularly divided around the bones, the interosseous membrane cut transversely, and the musculoperiosteal covering freed to the saw-line. The soft parts are then retracted and the bones sawed. The radial, ulnar, anterior and posterior interosseous arteries are tied. The median, radial, and ulnar nerves should be cut short, or even dissected from the flap. The musculoperiosteal covering is sutured and the muscles quilted—and the integuments sutured in a lateral line."—(Bickham's *Operative Surgery.*)

(*b*) In amputation of forearm at middle third there will be severed: Skin; fascia; muscles:—supinator longus, extensor carpi radialis longior and brevior, extensor communis digitorum, extensor carpi ulnaris, supinator brevis, anconeus, pronator radii teres, flexor carpi radialis, palmaris longus, flexor sublimis digitorum, flexor carpi ulnaris, flexor profundus digitorum; arteries:—anterior interosseous, posterior interosseous, radial, ulnar; veins:—radial, interosseous, ulnar, median; nerves:—posterior interosseous, radial, median, ulnar; bones:—radius, ulna.

4. *Anal fissure* is characterized by the very severe pain on defecation, and for some time afterward; constipation and pruritus are commonly present; local examination shows a "sentinal pile," on the inner side of which is a very painful ulcer or fissure.

Hemorrhoids. The patient complains of a feeling of weight, itching, tenesmus. There is but little pain unless a fissure or ulcer is also present. Internal hemorrhoids, if protruding, are painful; bleeding may be severe. The hemorrhoids are readily seen if external; internal hemorrhoids may be seen if the patient strains, or they protrude during defecation.

Carcinoma of the rectum generally attacks persons past middle age. At first there may be no symptoms beyond itching and occasional bleeding; then diarrhea, straining at stool, the discharge of pus or mucus may be observed; pain may be present, which radiates to the back and thighs. Under anesthesia the carcinoma may be seen by the proctoscope or felt by the examiner's finger. In the later stages cachexia develops and the symptoms of stricture are present.

Treatment of anal fissure. The base of the fissure (including the external sphincter) must be divided: all piles (including the "sentinal pile") must be removed; the ulcer must be excised. The wound then heals by granulation. The bowels must be kept relaxed.

The *treatment* of *external piles* when uninflamed consists in preventing constipation, keeping the parts clean, and applying hamamelis ointment. They seldom need removal except when associated with internal piles. Inflamed piles should be treated by rest, a large warm enema, and fomentations. If there is much pain the pile should be incised and the blood-clot turned out.

The *treatment* of *internal piles.* Constipation must be avoided, also excesses in eating and drinking. The

parts must be carefully cleansed and hamamelis ointment applied. Operations include clamp and cautery, ligature, and Whitehead's operation.

Operation for hemorrhoids. Clamp and cautery. *Radical treatment* is advisable when there is much pain and bleeding. It must be ascertained first that the piles are not due to disease elsewhere, as cirrhosis or stricture, or to pregnancy. The bowels are emptied and the patient is placed in the lithotomy position. The sphincter is then dilated with two thumbs to expose the piles, which are caught up with ring forceps. A clamp is applied to the piles in turn, and they are removed by the cautery. The bowels are kept confined for five or six days, when castor oil is given. Very little pain and no bleeding follow this operation. Removal can be done by snipping the mucous membrane around the pile and ligaturing its base. Crushing is also done.—(*Aids to Surgery.*)

The *treatment of cancer of the rectum* is excision of the rectum or colostomy. *Kraske's operation* (excision of the rectum by the sacral route): "With the patient lying on the right side, a median incision is made from the anus to the middle of the sacrum. The coccyx is excised. The ligaments and muscles are detached from the sides of the sacrum as high as a point just below the third sacral foramina, at which point the sacrum is sawn across and the lower piece removed. The rectum is exposed and cut through above and below the growth. The peritoneum may have to be opened to get above the tumor. If the sphincter and anus are unaffected they are left and the bowel is brought down and an end-to-end anastomosis is made. If the whole rectum has to be removed the upper end is either brought down and stitched to the skin around the original anus, or, if this is not possible, an anus is made just below the divided sacrum. During the operation the sacral glands must be searched for and removed if enlarged. Incontinence usually remains, and is less easy to manage with a truss than a colotomy."—(*Aids to Surgery.*)

5. "If the disease is at the *cardiac end* of the stomach, involving the cardiac orifice, the symptoms may resemble those of stricture of the esophagus and be associated with dysphagia, ending in an inability to swallow at first solid and later even fluid nourishment; in such cases the tumor, being well under cover of the ribs, is difficult or impossible to palpate, but enlargement of the supraclavicular glands on the left side is usually present.

"If the *pylorus* be the part involved, dilatation of the stomach with retention and decomposition of food and vomiting are pronounced symptoms, the vomiting being at first irregular, perhaps every second or third day, soon becoming daily and later occurring after every meal. Peristalsis may be accompanied by severe pain of a crampy character which is relieved by vomiting."—(Keen's *Surgery.*) There may be felt a tumor a little above and to the right of the umbilicus, at first movable but later fixed by adhesions. The pylorus becomes stenosed. In the later stages there are pressure symptoms, such as ascites, jaundice, edema of the legs, and varicose veins in the abdominal walls.

Treatment. When the *cardiac* end is involved only palliative operations are recommended; gastrostomy may be tried. When the disease is at the *pyloric* end, "complete removal of the affected segment of stomach and of the associated lymphatics is the only means of curing the disease. In many cases it is only after the parts have been exposed by laparotomy that it is possible to say whether or not the radical operation should be undertaken. If the associated glands are capable of being removed, and if there is no evidence of metastasis having occurred, the radical operation should be carried out. The term *pylorectomy* is applied when the operation is performed for malignant disease of the pylorus, although a considerable portion of the stomach must also be removed. Adhesion to and infiltration of the transverse colon is not usually a contraindication to the radical operation, as it is quite feasible to resect the portion of colon involved. The technique of the operation has been simplified by the preliminary ligation of the arteries distributed to the stomach and by the use of clamps. In the majorty of cases it is best to perform gastroenterostomy in the first place, choosing a healthy portion of the stomach; the resection is then carried out and the cut ends of the stomach and duodenum closed and invaginated. In weakly patients an interval may be allowed to elapse between the gastroenterostomy and the resection. The radical operation is contraindicated when the disease is associated with ascites, when the tumor has infiltrated the omentum, liver, pancreas, or abdominal wall, or when metastasis has occurred."—(Thomson and Miles' *Manual of Surgery.*)

OBSTETRICS AND GYNECOLOGY.

1. The patient should be instructed fully in the hygiene of pregnancy, by which is meant the care which should be observed by the pregnant woman for the preservation of health and strength both of herself and of the fetus. The pregnant woman should take moderate exercise in the open air; in the last month massage may take the place of exercise. Daily bathing in tepid water, care of the teeth, regularity of the bowels, ample sleep in a well-ventilated room, plenty (but not too much) of simple, nourishing and easily digested food at regular hours, clothing not too tight, especially about the abdomen and breast; attention to the nipples, regular examination of the urine, and the restriction of marital relations are the main points to which advice should be directed. In addition certain measurements are necessary; a pelvimeter will be required to make these measurements. The interspinal and intercristal diameters are measured, also the distance between the ischial tuberosities and the anteroposterior diameter, as well as the external conjugate. It is well to notice if the subpubic arch is narrowed; the diagonal conjugate is also estimated; from the latter the true conjugate can be obtained.

Care of mother during puerperium. "*During the first week* the patient keeps the bed, but after the first few hours she has considerable license. She may assume the sitting or halfsitting posture to take her meals and to nurse the baby, and, if necessary, for evacuation of the bladder and rectum. She should assume the lateroprone posture both right and left several times a day, and lie upon her abdomen for at least an hour daily. Frequent change of position favors uterine drainage and massages the uterine supports. *During the second week* she has greater liberty, while the greater part of her time is spent on the bed or lounge. She may sit up for her meals, to urinate, and for bowel movements, and she should spend at least half an hour, twice daily, in abdominal and leg exercises to keep up her muscular tone. *The third week* she may be moved to a chair for a part of the day, having the liberty of the room. After sitting up for any length of time she should be instructed to take the genupectoral position before lying down. Prescribed exercises for the legs and abdominal muscles are to be taken daily. *The fourth week*, if all goes well, she may leave the room and have the benefits of air and sun. Physical exercises should be continued. The duration of the lying-in period and the degree of freedom to be given the patient after the second week must, however, depend on the character and amount of the lochia, the general progress of her convalescence, and the rate of the uterine involution."—(Polak's *Obstetrics.*)

2. *True labor pains* are the pains occurring at the commencement of labor, and which are coincident with expulsive efforts of the uterus. They begin at the back, pass to the front, occur at gradually shortening intervals, are accompanied by uterine contraction and increased opening of the os externum.

False labor pains occur before labor. They are feeble, do not last long, occur at long intervals, are not accompanied by contraction of the abdominal muscles, are generally felt in front, and do not cause opening of the os.

Weak pains are such as do not aid much in the expulsion of the fetus.

Cutting pains are the early pains experienced by the woman, and are so called from the "cutting" sensations experienced by the woman.

Atonic pains are the ineffective pains accompanying a condition of uterine inertia; the uterus does not harden to any extent, and contracts feebly and irregularly.

Expulsive pains are such as produce or accompany the expulsion of the fetus.

After pains are painful contractions of the uterus which occur after delivery (generally for two or three days).

3. *Indications for the use of forceps are:* "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 3. *Passenger at fault:* A

Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 perminute). 3. *Accidental complications:* Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases of complications in which immediate delivery is required in the interest of mother or child or both."—(From Jewett's *Practice of Obstetrics.*) *Contraindications:* Mechanical obstruction in the parturient canal; incomplete dilatation of the os; non-rupture of membranes; non-engagement of the presenting part; the fetal head being too large or too small; distended bladder or rectum.

Pituitrin may be used in cases of uterine inertia, provided the os is dilated and there is no obstruction to delivery.

4. The condition may be anyone of the following: Pregnancy, uterine fibroid, ascites, ovarian cyst, fat, pseudocyesis, and subinvolution of the uterus.

Pregnancy: The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ascites: Absence of the signs of pregnancy; the abdomen is distended, but the shape varies with the position of the patient; on lying down there is bulging at the sides, the tumor fluctuates, and percussion shows dullness in the flanks, with resonance in the median line, but the dullness varies with the position of the patient.

Ovarian cyst: Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

Fat: Absence of signs of pregnancy, also of fibroid, or ascites.

Pseudocyesis: The uterus is not enlarged, and the administration of a general anesthetic causes the collapse of the "tumor."

Subinvolution of uterus: The uterus does not increase in size, there is a leucorrhea, there is generally pain in the back or ovarian region, there is a history of irregular (and profuse) menstruation, and the signs of pregnancy are absent.

5. PROLAPSUS UTERI. *Etiology:* Injury at childbirth, lacerated perineum, relaxation and elongation of the ligaments of the uterus, loss of rigidity of the abdominal walls, increase in the weight of the uterus, subinvolution, increased intraabdominal pressure. *Symptoms:* The patient complains of a feeling of "bearing down"; of trouble with micturition and defecation; of pain and fatigue on walking, and of "falling of the womb." The cervix is low down in the vagina; the sound shows that the uterine cavity is lengthened. Procidentia is evident on inspection. *Treatment:* "A prolapsed uterus must first be placed in proper position, or a procidentia reduced. In many cases the introduction of a rubber ring pessary will then suffice to prevent recurrence. But it will often be found necessary to repair a torn perineum, removing at the same time redundant portions of the vaginal walls, before the ring will remain in the vagina. When such an operation is contraindicated, and the vaginal orifice is so wide that a ring cannot be kept in, some form of pessary with a vaginal stem and perineal bands will be required. In cases of procidentia, where the exposed surface is much ulcerated, the patient should be kept in bed, emollient applications made to the ulcers, and vaginal douches given. When the ulcers have healed, a pessary may be introduced. Procidentia due to supravaginal elongation of the cervix must be differently dealt with. Amputation of a portion of the cervix must therefore form the first step in the treatment, and it may be required also when the hyperplasia is secondary to descent. Cases of prolapse and procidentia which resist milder measures require further operative procedures, such as ventrofixation of the uterus or the shortening of the round ligaments. It is in cases of this kind that hysteropexy has often given satisfactory results. Total extirpation of the uterus has been practised for the treatment of procidentia."—(Sutton and Giles' *Diseases of Women.*)

Books Received.

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AN ADEQUATE DIET. By PERCY G. STILES, Ph.D., Assistant Professor of Physiology in Harvard University. Published by Harvard University Press, Cambridge, 1916. 48 pages.

ADENOIDS AND TONSILS. By ALGERNON COOLIDGE, M.D., Professor of Laryngology in Harvard University. Published by Harvard University Press, Cambridge, 1916. 46 pages.

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A TEXTBOOK OF PRACTICAL THERAPEUTICS. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment Upon a Rational Basis. By HOBART AMORY HARE, M.D., B.Sc. Published by Lea & Febiger, Philadelphia and New York, 1916. Sixteenth Edition, Enlarged, Thoroughly Revised, and Largely Rewritten. Illustrated with 149 Engravings and 7 Plates. 1,009 pages.

A CRITIQUE OF THE THEORY OF EVOLUTION. By THOMAS HUNT MORGAN. Published by Princeton University Press, Princeton. Lectures delivered at Princeton University, February 24, March 1, 8, 15, 1916. Illustrated. 197 pages. Price, $1.50 net.

A LABORATORY MANUAL OF ORGANIC CHEMISTRY FOR MEDICAL STUDENTS. By MATTHEW STEEL, Ph.D. Published by John Wiley & Sons, Inc., New York. First Edition, First Thousand. 193 pages. Price, $1.25 net.

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THE SCOPE AND TECHNIQUE OF *X*-RAY THERAPY.*

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X-RAYS as will be shown later are in many respects quite analogous to the rays of light. The spectrum of the so-called white light may be divided into four parts. One part situated at about the middle of the spectrum, consists of the so-called visible rays of light, *i. e.* those rays which are so constructed that they produce a certain impression upon the retina of the eye, and as a consequence, appear to our consciousness as rays of light of different color, varying from red to violet. Below the red rays there are a number of rays which are invisible, and when analyzed appear to be the source of heat. At the other extreme end of the visible rays, *i. e.* beyond the violet, there are a set of rays which are also invisible, and exert various chemical influences on the substances which they strike. Still further along the spectrum, beyond chemical or actinic rays, are rays which are known as the *x*-rays, and beyond these the gamma rays of the radioactive substances.

The significance of radiant energy in the maintenance of all plant and animal life is very evident. Let us stop to think for a moment of the following very simple experiment. If two hen's eggs are placed in separate small wooden boxes, the only difference being that one box contains a small electric light bulb which warms the box to a certain degree, the other box being cold, it will be found after the lapse of three weeks that the egg in the cold box has remained unchanged, while the egg in the warm box has hatched. Both eggs contained a fertile germ, and consequently the rays of heat were indispensable for the development of the living organism.

The ability of a plant to assimilate the inorganic substances of the air and soil and change them into its own organized constituent parts is due to the chlorophyll, which performs its functions only in the presence of light. In complete darkness the plant loses its green color, *i. e.* the chlorophyll is unable to assimilate inorganic food, and dies. Where there is no plant life in existence, animal life which can feed only on organic substances is inconceivable; consequently neither plant nor animal life can exist in the absence of light.

Every therapeutic measure, in its ultimate analysis, influences the life and metabolism of the cell; and it is evident, therefore, that light, which is capable of affecting to so great a degree the life of the cell, plant or animal, must be of great therapeutic value. This was appreciated at the very beginning of known civilization, even the old Egyptians, according to the statements of Herodotus, placing their sick in the hot sand under the direct rays of the sun.

The discovery of the *x*-rays by Roentgen and of the rays of the radioactive substances by Becquerel was immediately followed by attempts to utilize these rays for therapeutic purposes. The opinion still prevails today, however, as it did during the second half of the Nineteenth Century, that only organic and inorganic substances which are chemically or rather pharmacologically active when introduced into the organism have any therapeutic value. Physical methods of treatment are regarded with distrust and hardly find a place in the curriculum of any medical school or in the text-books of pharmacology and therapeutics. Until recently this opinion was in a way natural and in accord with the conceptions of the relative positions of physics and chemistry. It has been considered a scientific axiom that physics dealt only with laws of energy and with such changes in the constitution of matter as left each molecule undisturbed, while chemistry on the other hand, studied the conditions within each molecule of matter, and chemical forces were capable of splitting the molecule into its component parts—atoms. It was further accepted as an axiom that an atom cannot be divided any further. Chemistry, then was thought to be capable of producing the deeper changes within matter, and consequently within the organism than physics.

It will be shown later that the hypotheses of the structure of matter, the nature of energy, and the interrelation of the two have radically changed in the course of the last two decades. If the functions of the science of physics as known during the last century may be called intermolecular and the functions of chemistry, interatomic; then the activities of physics, as they are understood today, are even more than interatomic; they are intraatomic since purely physical agents are capable of breaking up the presumably indivisible atom into its component parts.

In view of all this, we must learn to readjust our therapeutic conceptions as well. The therapeutic action of radiant energy must not be confused with the purely mechanical methods of physiotherapy. Indeed, if the modern conceptions of the structure of matter be taken into account, then the method of radiotherapy is very similar to, if not identical with the method of chemotherapy. In both instances, the ultimate effect consists in a disturbance and rearrangement within the atom of matter. The difference between the two methods consists in the fact that in chemotherapy a foreign

*Read by invitation at the meeting of the New York Roentgen Ray Association, March 31, 1916.

chemical substance is introduced into the organism, and influences the electrons within the atoms of the tissues, while in radiotherapy no foreign substance is introduced, but the waves of ether constituting the various rays disturb the composition of the atom.

It is interesting to draw a comparison between the therapeutic and physiological action of radiant energy and of the arsenicals, the most potent of the known chemotherapeutic agents. Both act in a similar manner, in small quantities they stimulate cell metabolism, cell growth, and all other cell functions. The following excerpt from the most recent edition of "Die experimentelle Pharmakologie" by Meyer & Gottlieb, describing the pharmacological action of arsenic illustrates the point: "In a normal organism there are injured the cells of the most complex organs, as the liver, kidney, capillaries, and the blood, but certain new formations, as the malignant lymphomata, syphilitic gummata, etc., seem most easily to undergo destruction under the influence of arsenic; this phenomenon makes it possible for the arsenic to influence abnormal growth without producing any apparent or permanent change in the normal tissues." The action described here is quite analogous to the action of the radiations.

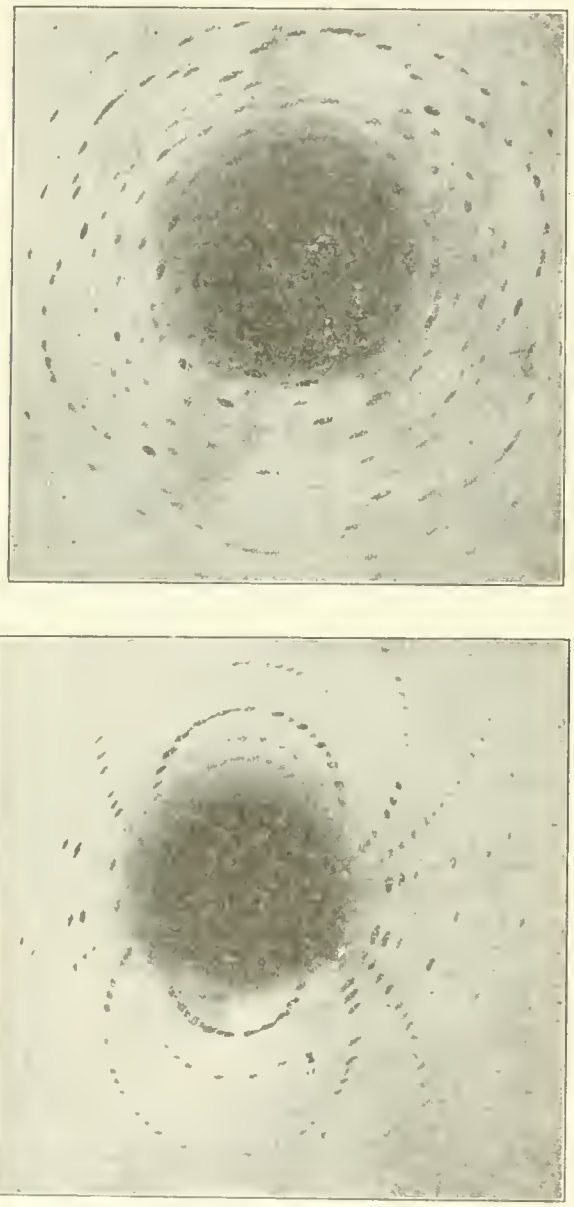

FIG. 1.—*X*-ray photograph of two crystals—nickel sulphate (below) and beryl (above).

Radiant energy, then, is capable of inducing changes in the atomic structure of the constituent parts of the tissues, without the introduction into the organism of any foreign substance. It is self-evident that whenever either a chemical substance or radiant energy may be used with equal effect in the treatment of a certain disease radiotherapy should be the method of choice.

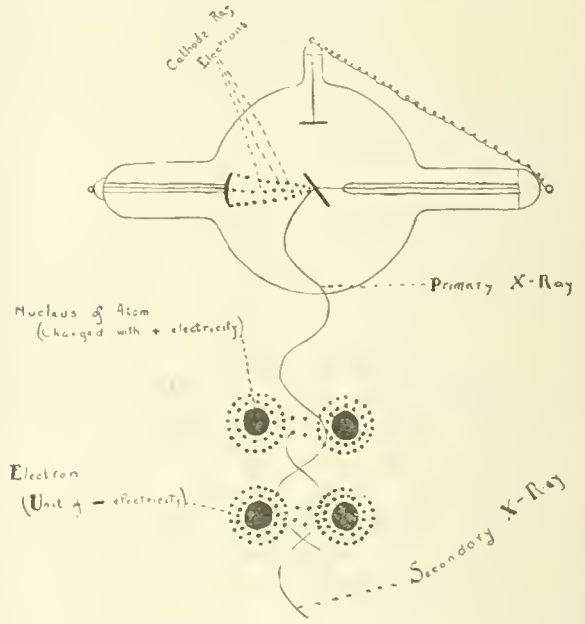

FIG. 2.—A symbolical drawing of the structure of matter and the action of *x*-rays upon it.

Like any chemotherapeutic agent, radiant energy is not a true specific, such as diphtheria antitoxin, but none the less, as will be shown later, its action may be quantitatively selective; *i. e.* a certain quantity of radiation which is not sufficiently strong to have a deleterious effect on the normal tissues of the organism, may influence the

FIG. 3.—Radiated and control plants (in text). The dotted lines show the comparative length of the whole plant and the intranodular spaces.

pathological tissues and consequently have a selective curative effect.

Physics of X-rays.—*X*-rays are in many respects analogous to the rays of light. They move in straight lines, they traverse space without any

Fig. 4.—*a*, Radiated tadpole; *b*, normal control tadpole

obvious transference or intervention of matter, they act on a photographic plate, excite certain materials to phosphorescence, and bring about the ionization of gas. The only characteristic of light which *x*-rays do not possess is the deflection by prisms or lenses. But very recent investigations have shown that such a deflection may be obtained when crystals are used instead of mirrors or prisms. If a pencil of *x*-rays is made to traverse a crystal, diffracted pencils are formed, arranged about the primary beam in a regular pattern, according to the structure of the crystal. A photographic plate placed perpendicular to the primary rays and behind the crystal would show a strong central spot where the primary rays struck it, and other spots arranged in regular fashion around the central spot in the places struck by the diffracted pencils. Fig. 1 from W. H. Bragg & W. L. Bragg, "*X*-ray and Crystal Structure" shows this.

Thus it seems quite reasonable to suppose that the rays of light and the *x*-rays are qualitatively identical. The difference between the two kinds of rays consists in the fact that the waves of ether forming the *x*-rays are considerably shorter than the shortest ultraviolet waves of light. The waves of the so-called soft *x*-rays are about one thousand times shorter than those of ultraviolet light, and the waves of the hard *x*-rays are still shorter. The truth of this assumption is further enhanced by the fact that the photographs shown in Fig. 1 were calculated mathematically before they were proven by experiment.

All substances, when exposed to a beam of *x*-rays, absorb a part of the rays. The fraction of the rays thus absorbed depends upon the density, thickness and the atomic weight of the substance. The remaining rays penetrate beyond the interposed substance. Besides this, the primary *x*-rays produce within the substance the formation of secondary cathode rays: *i. e.* swiftly moving electrons; and also secondary *x*-rays. Fig. 2 gives a rough symbolic sketch of the production of secondary cathode and *x*-rays in matter exposes to primary *x*-rays. In accordance with Rutherford's conception of the structure of matter an atom consists of a large nucleus charged with positive electricity, surrounded like a planet by satellites, by two circles of negatively charged electrons. One of the circles of electrons, the so-called "valency" electrons, takes part in the chemical reactions of the atoms. The other circle of "emission" electrons gives rise to the absorption of radiations by the substance. In metals there are also present "free" electrons between the atoms, to which the electrical conductivity of a metal is due. An electron is the smallest unit of matter known today and is at the same time presumably an independent unit of electricity; in other words, it is something which links together as it were matter and energy. The minute spaces between the atoms contain the hypothetical ether which is supposed to penetrate all space in nature. When a pulse in the ether is short enough to penetrate between the atoms (*i. e.* hard *x*-rays), it sets in rapid motion a certain number of the electrons and thus creates secondary cathode rays. The rapidly moving electrons, on the other hand, create new pulses in the ether situated between the atoms; *i. e.* create secondary *x*-rays. Very recently Rutherford showed that the G-rays emitted by radium may be regarded as secondary *x*-rays produced in the radium by the action of B-particles; *i. e.* electrons, which latter are consequently analogous to secondary cathode rays. Fig. 2 shows graphically the relationship in space between the cathode rays or electrons of the cathode of an *x*-ray tube, the primary *x*-rays, the positively charged nuclei of an atom, the circles of electrons surrounding the atom of matter, the free electrons between the atoms which act as the secondary cathode rays, and the secondary *x*-rays. The character of the secondary *x*-rays will be the same, for instance whether the primary *x*-rays penetrate a certain metal or solution of a salt of the same metal. This conception of the structure of matter and the nature of the *x*-rays makes clear the importance of the three main characteristics of the rays; namely, the *penetration*, the *absorption*, and the *selective action*. Hardest *x*-rays, *i. e.* shortest waves of ether, *penetrate* between the atoms of matter without affecting the substance in any manner. Soft rays, *i. e.* longer waves of ether, are unable to penetrate between the atoms of the substance and are *dispersed* over the surface of the substance and again produce no effect on the latter. Only when the relationship between the atomic structure of the substance and the wave length of the *x*-rays is correct does there take place a *selective absorption* of the rays by the substance, and the latter is then influenced by the rays.

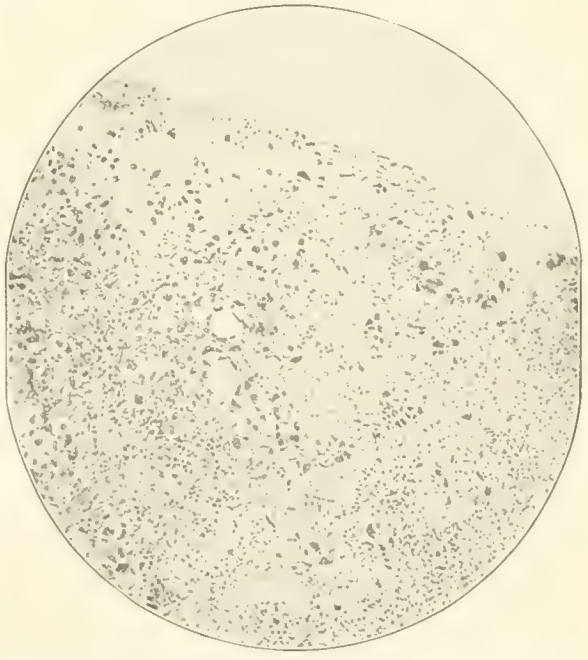

Fig. 5.—Microphotograph of a piece of carcinomatous tissue removed from the cervix uteri soon after the beginning of radium and *x*-ray treatment. It shows degenerated cancer cells surrounded by a round-cell infiltration.

Biological Action of X-rays.—The biological action of the *x*-rays is also analogous to the action of light. This analogy is very evident in the so-called *x*-ray burn of the skin. When a large dose of soft

x-rays is applied to the unprotected skin there takes place an erythema, blistering, and ultimately the condition is qualitatively identical with a sunburn and only differs from it in degree. The browning of the skin which takes place as a result of an x-

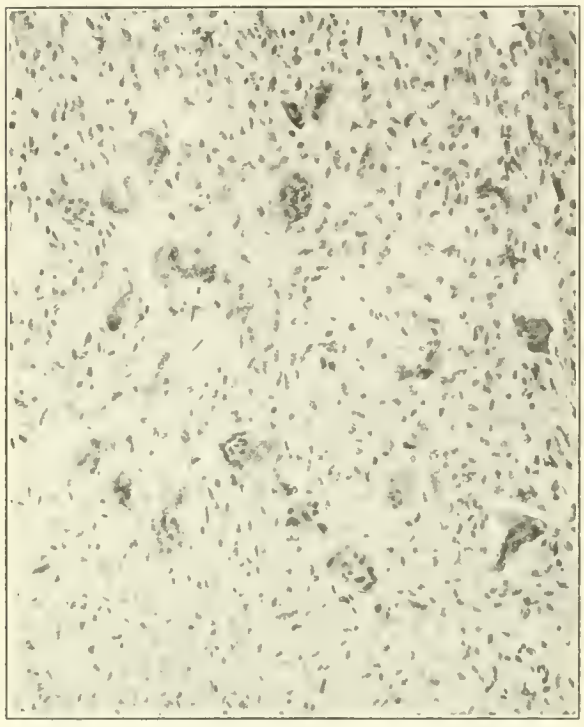

Fig. 6.—Microscopical section of a sarcoma before treatment, showing numerous giant and spindle cells.

ray burn, or occasionally after x-raying of the skin even without the formation of a burn is identical with the pigmentation of the skin after a sunburn. Here again the difference is only in degree.

Fr. Bernig in a recent review states that the rays of light, or rather of ultraviolet light, which is biologically the most active part of the spectrum, produce the following effects on the skin: Direct destruction of the cells; thrombosis of the blood vessels (through the direct influence of the rays on the endothelium and musculature of the vessels) and serohemorrhagic inflammation. The latter ends with the formation of hyperthrophic connective tissue. These morphological changes are very similar to the changes induced in tissues by x-rays.

The analysis of a biological action of any agent is much simpler in the uncomplicated cellular structure of a plant or lower animal than in a vertebrate. A. Richards came to the following conclusion from his studies on the effect of x-rays on the rate of cell division in the early cleavage of the eggs of Planorbis. The first effect of exposure to x-rays upon the rate of cleavage of the eggs of Planorbis is to stimulate mitotic activity. Following the phase of acceleration a phase of depression sets in; the end result is a marked retardation in the development of the egg.

It is quite possible that the action of x-rays on plant and animal tissue is identical with the action of the rays on metal. To cite an instance: x-rays produce a marked biological effect on erythrocytes, and the hemoglobin of the latter contain a solution of iron. It is known that active secondary rays are produced in iron by the x-rays penetrating it.

The most marked biological effect of x-rays on plants and vertebrate animal organism also consists in inhibition of life functions. Fig. 3. is taken from Gaus & Lembcke "Roentgentieftherapie" and represents three plants (edible peas). The largest one is a control, the upper left plant was radiated with soft x-rays and the lower left with filtered hard rays. Both plants are greatly retarded in their growth. The plant radiated with hard rays is affected more deeply, and its tip is completely withered. Fig. 4 from O. Hertwig's article in P. Lasarus' book on "Radiumtherapie" shows two tadpoles. The smaller one shows an arrest of development produced by radiations.

It is probable that in complex vertebrate tissue the effect of a small amount of the rays also consists in an acceleration of the cellular functions. But it is difficult to demonstrate this phenomenon morphologically. Finally there takes place an inhibition of cell life. Different cells react differently to the rays. For instance, the liver cells are more susceptible to the rays than the gall-duct cells, and the tubules of the kidney react stronger than the glomeruli. Highly interesting is the action of the rays on the testicle and the ovaries The rays affect the spermatozoa forming epithelium and the Graafian follicles without influencing the other structural parts of the organs. As a result an azoospermia may occur in a man and a cessation of menstruation in a woman, by a quantity of the rays which produces no other abnormality in the organism.

Morphological Changes Induced in Tumors and Infectious Granulomata Under the Influence of Radiations.—It may be stated as a general rule that tissues of less differentiated, younger cells, cells in a state of active proliferation, are most deeply influenced by the rays.

Every tumor or granuloma consists of undifferentiated young cells in a state of active proliferation, and therefore a strong selective biological and consequently therapeutic influence of the rays on these conditions is the most evident. The morphological changes which take place in the different types of tumors and in granulomata under the influence of the rays differ to such an extent that it may be well to consider them separately.

Fig. 7.—Microscopical section of a sarcoma after treatment, showing connective tissue but no tumor cells.

Carcinoma.—The first morphological changes which occur in carcinomatous tissues under the influence of x-rays are observed in the tumor cells themselves and are manifested by the vacuolization of the protoplasm, pycnosis of the nuclei, caryoly-

sis, and complete necrosis of the cell. (Fig. 5.) All this is accompanied by a round-cell infiltration which replaces the destroyed carcinomatous cells. Somewhat later there begins formation of dense sclerotic connective tissue poor in blood vessels. This connective tissue formation may become very extensive, surround islands of carcinomatous cells, and assist in the destruction of the latter. The following case of carcinoma of the sigmoid, observed by the writer, with metastatic dissemination in the peritoneum which came to autopsy after six months of continuous *x*-ray treatment demonstrates the importance and extent of this connective tissue formation.

The patient died of acute intestinal obstruction. At the autopsy there were found in the peritoneal cavity several loops of the intestines adherent by old adhesions to the posterior surface of tumor mass in the sigmoid. The peritoneum, especially in the pelvis, was studded with numerous white plaques, varying in size from 1 mm. to ½ cm. in diameter; the larger ones were quite firm to the touch. Microscopical examination of a section taken through two loops of the small intestine which were firmly bound together by old adhesions showed that the adhesions consisted of a thick layer of connective tissue containing occasional nests of degenerated tumor cells. The peritoneal nodules were composed of dense connective tissue, with occasional groups of degenerated tumor cells. In the greater number of these nodules no tumor cells were found.

Sarcoma.—The morphological changes induced in sarcoma tissues by *x*-rays is analogous with those induced in carcinoma.

The following case of a giant cell sarcoma of the lower jaw, treated by the writer, illustrates this effect. A small piece was removed for microscopic examination before treatment, which showed a sarcoma with numerous giant cells and actively growing spindle cells. Following eight weeks of combined radium and x-ray treatment, another section was taken from the same region from which the previous one was obtained. The section showed a very loose connective tissue, relatively poor in cells, and beneath this a zone of denser connective tissue. No giant cells or any other form of tumor cells were present. Figs. 6 and 7 show the condition before and after treatment.

Infectious Granulomata, whether tuberculous, syphilitic, or of any other origin, as well as lymphosarcomata, are influenced by the *x*-rays in an identical manner. The lymphoid cells are destroyed and replaced by dense sclerotic fibrous connective tissue. A case of rhinoscleroma radiated by the writer shows the characteristic changes. Rhinoscleroma is an infectious granuloma, characterized by the presence in the granulation tissue of the so-called Mikulicz cells. The latter are degenerated lymphoid cells, enlarged in size, inside of which may be found frequently the Frisch bacillus, which is the causative agent. The microscopic examination after radiation showed that the granulation tissue was completely replaced by dense connective tissue. Figs. 8, 9 and 10 show the condition before and after treatment.

Thus the most generally observed morphological changes in tumor and granuloma tissue under the influence of radiation is the extensive formation of sclerotic connective tissue. Some observers maintain that this new connective tissue formation is the only direct effect of radiation. The destruction of the tumor cells is in accordance with this opinion secondary and due to lack of nutrition. This opinion cannot be accepted as true. In the first place, as was shown above, the first change noted in carcinoma is the destruction of the tumor cells and only subsequently does the connective tissue form. Moreover, in certain conditions, for instance, rodent ulcer of the skin, the epithelioma heals and is covered with skin without formation of connective tissue.

Other investigators assert that the destruction of the tumor cells is the only direct effect of radiation. The formation of connective tissue, in accordance with this view, is secondary to the accumulation of dead tumor cells and is analogous to formation of connective tissue around foreign bodies. This assumption is also hardly tenable. In the first place the amount of connective tissue formation in the peritoneal nodules of the carcinoma of the sigmoid reported above was entirely out of proportion to the number of carcinomatous cells destroyed. Moreover, if such young connective tissue were formed only by the stimulus of dead tumor cells, then the *x*-rays subsequently would dissolve this connective tissue as easily as it dissolves a keloid, for instance. But this does not take place and the amount of connective tissue usually increases, with subsequent radiation.

It must be concluded then that morphological changes which take place in tumors and granulomata under the influence of *x*-rays are two-fold. There occurs an inhibition and ultimate destruction of the tumor cells with irritation and consequent proliferation of surrounding connective tissue. The source of this new connective tissue is not the normal tissue surrounding the tumor. The postmortem study of carcinoma of the sigmoid reported above showed that there was no new connective tissue formed anywhere in the normal organs under the influence of radiation. The beginning of the new connective tissue must be looked for either in the stroma of the tumor, or in the round cell infiltration which always closely follows the destruction of the tumor cells by the rays.

It may be stated that the destruction of the tumor cells is the primary and the formation of new sclerotic connective tissue a secondary but as important a phase in the morphological changes which take place in tumors and granulomata under the influence of *x*-rays.

The Technique of X-ray Therapy.—Attempts at therapy by the aid of the *x*-rays began immediately after their discovery, but real progress in the matter was achieved not more than five years ago. It was then shown by French investigators and mainly by Gaus of Freiburg that the soft rays which constitute the major part of the beam of rays of an *x*-ray tube are absorbed by the skin, and that only the hard rays penetrate into the deeper tissues and produce there the therapeutic effect. Two methods have been gradually developed in order to obtain the hard rays. On one hand tubes used for therapy are the so-called hard tubes with a high vacuum, and on the other hand layers of metal are placed between the tube and the patient to filter off the softer rays. An additional filter of leather is placed under the metal to filter off the soft secondary rays formed in the metal filter.

Normal skin is highly sensitive to the action of the *x*-rays and a small quantity of even hard rays by far not sufficient to influence the tissues lying deeper underneath the skin may burn the latter. To obviate this difficulty another technical method is added which consists in using a number of small regions of the skin for the entry of the *x*-rays. These "fields" of the skin are so selected that the pencils of rays penetrating from any of them meet at the deeper lying tissues to be treated. This so-

called *cross fire* method increases greatly the quantity of the hard rays which may be employed without injury to the skin, since the combined quantity of the rays reaching the deep tissue equals the quantity penetrating through each field multiplied by the number of fields.

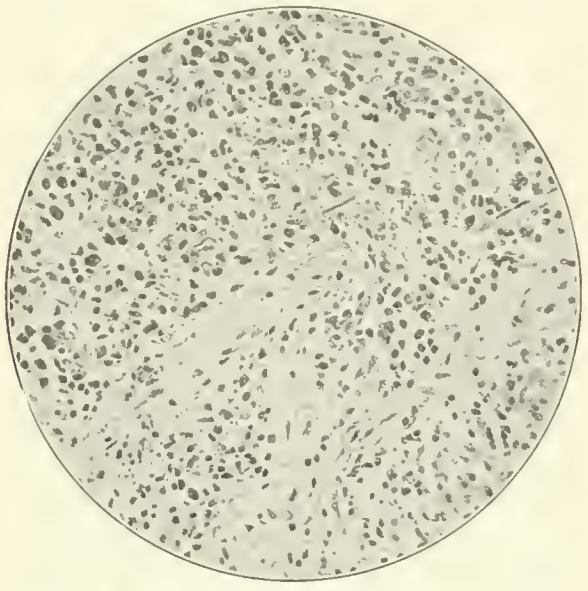

FIG. 8.—Microphotograph of a specimen of rhinoscleroma. Low power, showing granulation tissue.

The maximum quantity of *x*-rays which can be directed through the same field of the skin without injury to the latter is quite well ascertained. A very important phase of the modern methods of *x*-ray therapy is the great care exercised in measuring accurately the quantity of the *x*-rays employed. The measurements at our command are indirect and are based on the fact that the various chemical actions of the rays are in direct ratio to their quantity. A solution of barium platinocyanide, which has normally a green color becomes brown under the influence of the rays, and the shade depends upon the quantity of the rays used. A strip of photographic film wrapped in black paper and consequently impermeable to the rays of the light become darkened under the influence of the *x*-rays. The shade of darkening of the strip depends on the quantity of rays used. On the basis of these photochemical reactions, various apparatus are devised for measuring the quantities of the *x*-rays emitted by a tube in a unit of time. A unit is considered the quantity of the rays which produces an erythema of the skin.

The next important step in the progress of *x*-ray therapy was made by Coolidge through his discovery of the Coolidge *x*-ray tube. A brief comparative description of the old type and the Coolidge tubes will show the advantage of the latter.

X-rays originate on the surface of a metal which is bombarded by the negative electrons of the cathode rays. The greater the velocity of the cathode rays the harder, the more penetrating are the *x*-rays. The tubes of the old type have an incomplete vacuum. A high-potential current passes in the tube from the anode to the cathode, frees the electrons of the latter, and propels them toward the anticathode or target. The bombarding of the electrons induces the formation of the *x*-rays on the surface of the target. The target is built of a heavy metal and becomes overheated under the action of the cathode rays. The heat frees the gases contained in the metal of the target and these in turn diminish the vacuum of the tube. As a consequence the velocity of the cathode rays also diminishes and the *x*-rays become softer. Various regulating devices are added to the tube in order to keep the character of the *x*-rays uniformly hard for the length of time necessary for therapeutic purposes. Still the penetration of the rays emitted by the tube constantly changes. The most effective old-type tube is the one devised by Gaus of Freiburg for therapy. It has a water-cooling chamber to diminish the heating of the target, a large auxiliary vacuum bulb to diminish the influence of the gases freed from the overheated target on the combined vacuum, and a gas regulator to increase the amount of gas in the bulbs and diminish the vacuum when it becomes so high that no *x*-rays can be formed.

The fundamental advantage of the Coolidge tube consists in the fact that it has nearly a complete vacuum, so that the small amount of gas escaping from a heated target cannot influence it. Moreover, the target is built of tungsten which is completely freed of gas before the tube is finished. In such a tube with a complete vacuum, a high-potential current cannot pass from the anode to the cathode and free the negative electrons of the latter. The freeing of the cathode rays is accomplished in the Coolidge tube through the heating of the cathode to a high temperature by the aid of a special storage battery. The cathode consists of a spiral tungsten filament supported by a molybdenum sleeve. The high-potential current propels the freed electrons to the anode which acts at the same time as a target. The number of the electrons depend upon the temperature of the filament of the cathode and their velocity on the voltage of the primary current.

A priori it would be expected that the Coolidge tube would not only produce a greater output of *x*-rays, but also would generate rays of greater uniformity of penetration. Comparative experiments were done by the writer with the Gaus and the Coolidge tubes, using a very heavy German coil as a generator. Both tubes were placed approximately

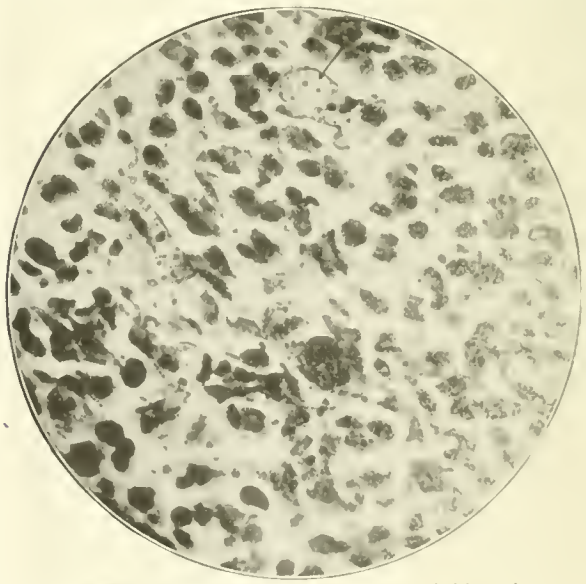

FIG. 9.—Microphotograph of a specimen of rhinoscleroma. High power, showing granulation tissue; *a*, Mikulicz cell filled with Frisch's bacilli.

under similar conditions, *i.e.* the same voltage of primary current was sent through the coil, nearly the same number of milliamperes of high-potential current was sent through the tube, and the resulting *x*-rays showed the same penetrating power.

To study the distribution of the rays, pieces of meat of certain thickness were radiated. Test strips of photographic paper (Kienböck strips) were placed on the surface of the radiated piece and at various depths of tissue. Pieces of meat were used 1, 1.5,, 2, 3, and 4 inches in thickness. The soft rays were absorbed by a plate of aluminum 3 mm. in thickness and a layer of chamois leather 2 mm. thick placed between the aluminum and the meat. Fig. 11 shows the records of two experiments: (*a*) an experiment with 4 inches of meat and a Gaus tube; (*b*) an experiment with 4 inches of meat and a Coolidge tube; (*c*) shows the Kienböck quantimeter and the method of estimation.

The results of numerous experiments may be summarized as follows: To obtain the same quantity of rays on the surface with a Coolidge tube takes about one-third of the time that was required with the old-type tubes. At the depth of 2 inches of meat the strip shows about one-third the quantity of the rays shown by the surface strip during the same experiment with an old-type tube and about one-half by the Coolidge tube. At a depth of 4 inches there is usually about one-seventh of the quantity shown on the surface obtained from a Gaus type, while from a Coolidge tube one obtains at the same depth usually one-fifth of the quantity shown on the surface. There is no complete regularity in the results of the experiments with either tube, but the Coolidge tube shows a far greater uniformity. The reason for this superiority shown by the Coolidge tube is probably due to the following: The *x*-rays emitted by a tube are never uniform in their character and represent all grades of hardness. The methods of measuring the penetration of the tube reveal only the hardest rays. Apparently the rays are more uniform in the Coolidge tube and a greater proportion of the pencil of rays are of the harder quality, and therefore a greater fraction of these entering the surface reach a certain depth. Another advantage of the Coolidge tube consists in the fact that when it is once regulated to a certain penetration it remains so for an indefinite period of time.

Therefore, when the same voltage (the same length of the parallel spark gap) and the same number of milliamperes of the high-potential is used in a Coolidge tube then there will also be generated the same quantity of *x*-rays in a unit of time, and the chemical measuring devices will show the same amounts and need be used only occasionally for control.

The technique of *x*-ray therapy employed by the writer at present is as follows: The Coolidge tube is used exclusively. The distance between the target and the skin is 8 inches and the length of the spark gap is 8½ inches. A Bauer penetrometer, an apparatus which measures the hardness of the rays, as well as the milliammeter are placed so that they can both be observed constantly through the lead glass window. The penetration or hardness of the rays is kept at 10 Bauer and 5 milliamperes are sent through the tube. Each field of the skin represents a circle of from 1 to 2 inches in diameter, depending upon the region treated. The rest of the skin of the patient is covered with lead rubber and the operator stands behind a lead lined booth, within which are placed all the electric controls. The walls of the treatment room are lined with one-eighth inch of lead to protect the operator, nurse, and the patients in the waitng rooms.

The Scope of X-ray Therapy.—It was stated above that the main physiological function of the *x*-rays consists in the inhibition of cell life. Furthermore a quantity of the rays which may be sufficient to inhibit a certain group of cells or a certain tissue or organ may produce no influence at all on the rest of the organism. These biological characteristics of the rays clearly indicate the scope of their therapeutic applicability. In tissue in which the main function of the cells consists in their proliferation, as in benign or malignant tumors or granulomata, an agent which kills the cells must of necessity at first arrest the growth of the tumor, and subsequently destroy it through the absorption of the dead cells.

When the cells are endowed with a special function, as in the parenchymatous organs, then the death of the cells will destroy or, if not all the cells are dead, will impede the function of the organ.

The chart presented below shows the diseases which are treated successfully by the aid of the *x*-ray, classified in accordance with the above-mentioned biological function of the rays. This classification of the diseases amenable to *x*-ray treatment indicates at the same time clearly the biological scientific basis for the inclusion of the *x*-rays in

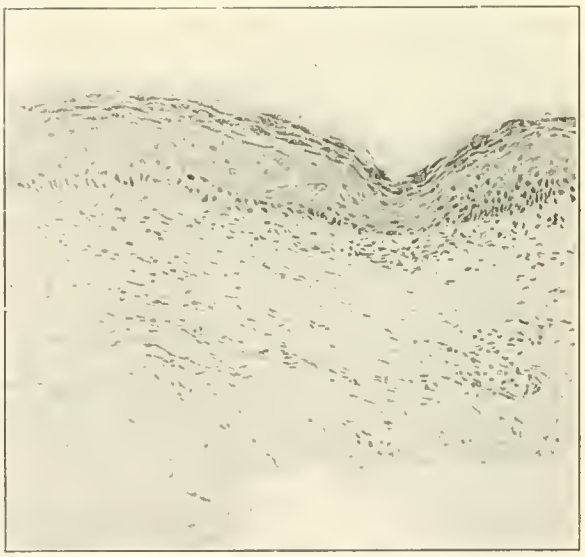

Fig. 10.—Microphotograph of a specimen of rhinoscleroma after treatment; the granulation tissue is replaced by dense connective tissue.

our therapeutic armamentarium. Indeed, the *raison d'être* of *x*-ray therapy is less empiric than of a number of pharmacological remedies.

Inhibiting Cell Proliferation.

Benign Tumors: Keloid, angioma, verrucæ, uterine fibroid, prostatic hypertrophy.

Carcinoma.

Sarcoma.

Lymphoma: Hodgkin's disease, mediastinal tumor, lymphosarcoma.

Granuloma: Tuberculosis of lymph glands, bones, joints; rhinoscleroma, inflammatory dermatoses.

Inhibiting Cell Functions.

Ovary: Metropathia, uterine fibroid.

Thyroid: Exophthalmic goiter.

Hypophysis: Acromegaly.

Thymus: Exophthalmic goiter, status lymphaticus.

Spleen and bone-marrow: Leucemia.

Below will be given a very brief review of the value of *x*-ray therapy in each disease enumerated in the chart. Good results are claimed by some

writers, in Addison's disease, sciatica, syringomyelia, and several other conditions, but they are omitted in this presentation and only such pathological conditions are analyzed in which there is sufficient biological and clinical evidence of the value of *x*-ray therapy.

Benign Tumors.—Keloid is readily influenced by *x*-rays. The hard red elevation over the skin disappears and is replaced by a white soft scar. In view of the fact that the keloid is situated superficially no crossfire method can be employed. The writer usually gives one full dose of hard filtered rays and repeats it every three weeks until the effect is produced.

Prostatic hypertrophy is treated successfully by *x*-ray as well as by radium, when the enlargement of the organ is due mainly to the hyperplasia of the glandular tissue. In cases in which the hypertrophy is due to an increase of the fibrous connective tissue the results are not so striking, but even in these cases the improvement of the subjective symptoms is very prompt. In view of the possibility of an occasional malignant degeneration of the hypertrophied gland and the splendid results of surgery, the latter method of treatment is always preferable in prostatic hypertrophy. On the other hand, whenever surgery is contraindicated *x*-ray therapy is the method of choice. *X*-radiation

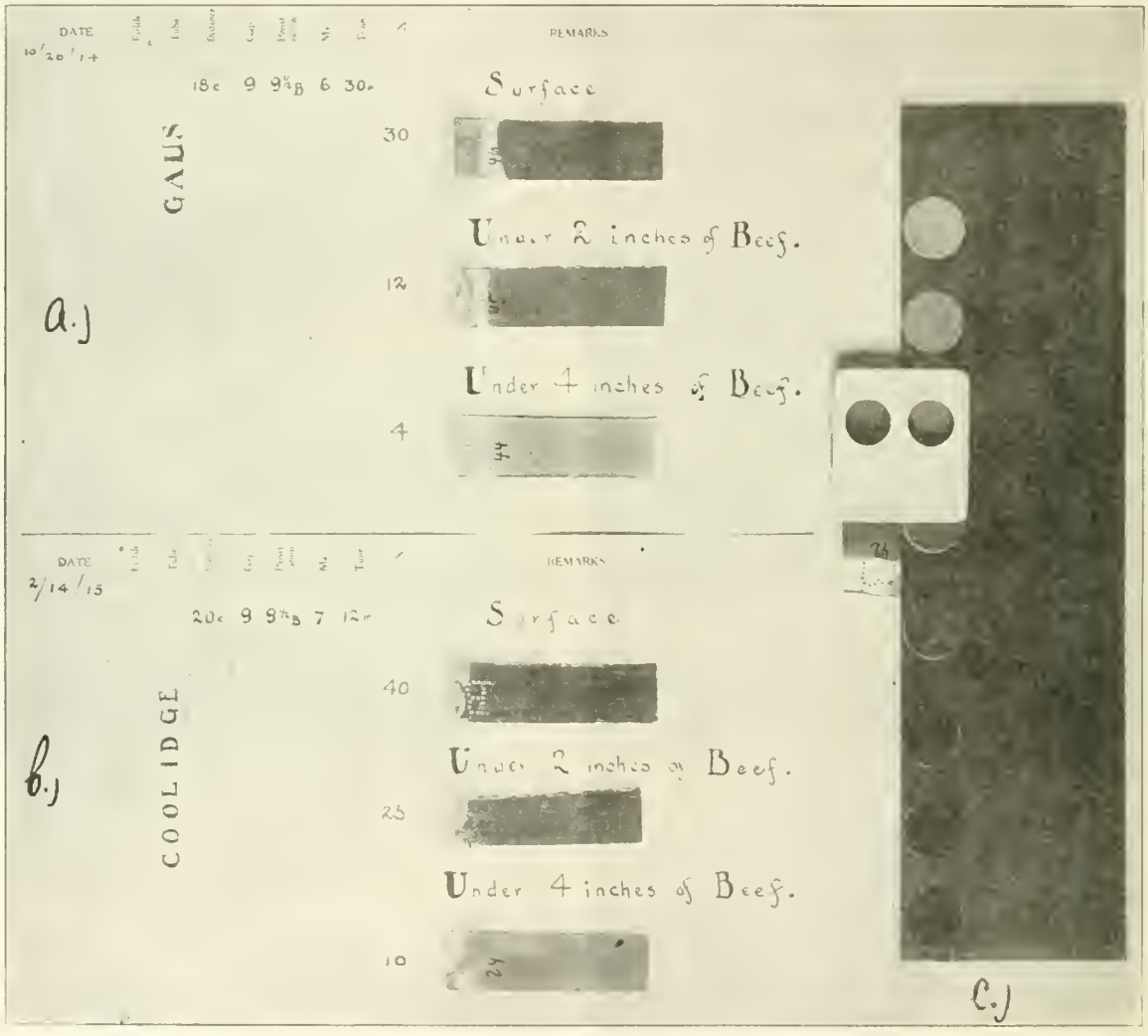

FIG. 11.—Record of two experiments—*a*, with a Gaus tube; *b*, with a Coolidge tube; *c*, shows the Kienböck quantimeter. The photographic slip is placed alongside a circle with the corresponding shade; the circles show the previously estimated number of units.

Angioma or nevus responds well to radiations when it is vascular and elevated over the skin. The so-called "port wine stains" are more refractory. *X*-ray treatment can be assisted by radium. In certain conditions radium is superior to *x*-ray treatment. Angioma and keloid are both influenced more rapidly by radium than by *x*-rays.

Verrucæ or warts disappear rapidly after two or three *x*-ray treatments.

Uterine fibroid is placed here because the *x*-rays produce undoubtedly a direct effect on the cells of the fibroid tumor and diminish its size. The main effect, however, is on the ovary and the subject will, therefore, be considered at greater detail in the section on inhibition of cell function.

is done through the suprapubic region and the perineum. The radiation of each field is repeated every three weeks, and the testicles are protected against the rays. Radium acts quite as well as the *x*-rays and takes less time. A radium tube is inserted in either the rectum or the urethra.

Carcinoma and Sarcoma.—It would lead too far afield to give here a complete exposition of the methods and rationale of *x*-ray therapy in carcinoma and sarcoma. Those interested should consult the previous publications of the writer on the subject. The best method of treatment of malignant tumors is undoubtedly the *combination of surgical treatment and radiotherapy.* The gross tumor should be removed surgically whenever pos-

sible, even when a radical operation cannot be performed, and the remnants of the tumor destroyed by radiotherapy. The writer has demonstrated anatomically that small islands of cancer tissue may be destroyed at a great distance from the skin; *i.e.*

Fig. 12.—Radiograph of a mediastinal tumor before treatment.

even a metastasis may be destroyed by *x*-rays when it is sufficiently small. In view of this the importance of the *postoperative prophylactic radiation* is self evident.

Postoperative treatment should be begun as soon after the operation as possible and regions should be selected for treatment in which the metastases most frequently occurs. For the same reason, *i.e.* in order to destroy small islands of tumor tissue at a distance from the primary tumor as well as to destroy *in situ* as many as possible of the cancer cells of the primary tumor every case should receive an intensive *x*-ray treatment before the operation. Such a course of treatment does not take more time than is needed to prepare the patient for the operation.

The *x*-ray treatment of malignant tumors must be very intensive, a great many fields of entry should be selected, and the raying of each field repeated at least every two weeks.

Lymphomata.—This class of diseases characterized by an enlargement of the lymphatic glands in various regions of the body responds promptly to *x*-ray treatment.

Hodgkin's disease or pseudoleucemia is a disease which resembles leucemia in many respects, only usually with a less prominent involvement of the spleen and no increase in the number of leucocytes in the blood. The affected lymphatic glands diminish very rapidly in size under *x*-ray and radium treatment, and with it there is a marked improvement in the general condition of the patient. The opinion seems to prevail that the action of the radiations is only palliative and that ultimately the patients fail to respond to the treatment. These unsatisfactory results are most probably due to the fact that *x*-ray treatment is attempted only late in the course of the disease and the treatment is not pursued with sufficient energy. The radiations should be given to many regions of the body not less than once a week for months, and only gradually should the interval between the treatments be increased. By this method the writer succeeded in early cases in arresting the disease for long periods.

Mediastinal tumors are most frequently lymphomata of the mediastinal lymphatic glands. The disease usually begins to give clinical symptoms only in its advanced stage, and therefore the results of the treatment are only temporary. Nevertheless, a number of cases were reported in which the *x*-ray plates show a clinical cure of the condition. The two radiographs shown in Figs. 12 and 13 picture a case of a mediastinal tumor under *x*-ray treatment by the writer. Fig. 12 shows the tumor before treatment, and Fig. 13 shows the condition practically cleared up nine months later.

Lymphosarcomata, or the round-celled sarcomata of the lymphatic glands, are not easy to distinguish from the above described lymphomata, but they usually tend to break through the glandular capsule and invade the surrounding tissue. Lymphosarcomata, while not as easily amenable to treatment as the lymphomata, respond easier than any other form of sarcoma.

Granulomata.—The therapeutic effect of radiations on infectious granulomata is not due as much to an influence upon pathogenic microorganisms as to an inhibitory action on the young cells of the granulation tissue.

Tuberculosis of the lymphatic glands gives the most satisfactory results of any form of tuberculosis. The clinical condition may be divided into three groups. Simple enlargement of the lymphatic glands promptly diminishes under radiation after an occasional initial enlargement. Ultimately the glands change into very small hard fibrous nodules freely movable under the skin. Glands with a central focus of suppuration should be treated after an aspiration of the pus or its evacuation through a small incision. In suppurating glands with open sinuses surgical treatment of the latter should accompany the radiation. It would lead too far to discuss here the respective merits of surgery and radiotherapy in the treatment of tuberculous lymph glands. It is quite evident that radiotherapy is a less severe method of treatment than surgery and is not followed by deforming scars and keloids. Moreover, if subsequently surgical removal should become advisable the preliminary radiation will simplify the operation by diminishing the size of the glands.

Tuberculosis of the bones, joints, and peritoneum is favorably influenced by the *x*-rays. The radiation should be employed either as an adjuvant to surgery, or when the latter is contraindicated. In all classes of surgical tuberculosis the local treatment with *x*-rays should be supported by a general radiation of the whole body, either by the direct rays of the sun (heliotherapy) or by the ultraviolet rays

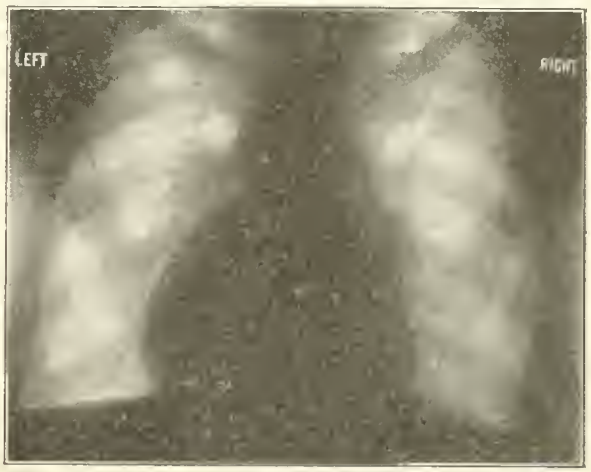

Fig. 13.—Radiograph of a mediastinal tumor nine months after the beginning of treatment; the condition is cleared up.

artificially produced by a quartz-mercury lamp.

Rhinoscleroma is an infectious disease characterized by tumor-like swelling of the mucous membranes of the nasopharynx, the pathology of which was described above.

The obstruction necessitates surgical removal of the swelling and the condition rapidly recurs after the operation. The tumors produce a swelling and deformity of the nose. Fig. 14 shows a photograph of a patient who suffered from rhinoscleroma for eleven years. She had to be operated upon with constantly increasing frequency, ultimately every month. She was treated by the writer with *x*-rays and radium and has remained well now for over two years.

The therapeutic action of the *x*-rays in infectious inflammatory dermatoses—psoriasis, eczemata, acne vulgaris, lupus vulgaris, mycosis fungoides—is very similar to its action in infectious granulomata. While all these skin diseases respond readily to *x*-ray treatment, all the other methods of treatment

Fig. 14.—Photograph of a rhinoscleroma patient, showing the characteristic deformity of the nose.

should be tried before radiation is attempted. Only in lupus vulgaris are the *x*-rays superior to any other method of treatment, and in mycosis fungoides they act like an actual specific. There has been a great deal of controversy recently in regard to comparative merits of the soft and hard rays in the treatment of skin diseases. The writer finds the hard filtered *x*-rays just as efficient in skin lesions as for deep therapy.

Ovary.—Uterine hemorrhage and fibroid uterus. The efficacy of *x*-ray therapy in these conditions has been proven on hundreds of cases. The action is due mainly to the inhibiting influence of the rays on the ovaries, causing thereby an artificial menopause. Moreover, as stated above, the *x*-rays have undoubtedly a direct effect on the tissue of the fibroid tumor, destroy most probably its younger cells, and thus diminish the size of the tumor. In women near the natural menopause the result is both prompt and lasting, the bleeding ceases, and with it the other symptoms. In at least half of the fibroid cases the tumor itself diminishes occasionally to such an extent that the size of the uterus becomes nearly normal. In young women the treatment is not nearly as successful, and it is difficult to obtain a complete menopause. Still the bleeding decreases so that the menses become normal, and the size of the tumor is diminished.

In uncomplicated conditions of climacteric metrorrhagias and fibroids radiotherapy is fully as efficient and by far less dangerous than the operative treatment and therefore *x*-ray therapy is the method of choice. It is contraindicated in young healthy women in whom there is a possibility of performing a conservative myomectomy without removal of the ovaries.

Fibroids complicated by diseases of the adnexa, or by the coexistence of a carcinoma or a sarcoma of the uterus demand operative interference. When the malignancy complicating the fibroid is inoperable radiotherapy again becomes the method of choice.

The possibility that a radiated fibroid uterus may become subsequently sarcomatous is very slight, since a true degeneration of a fibroid into a sarcoma is found in less than ½ per cent. of the cases.

Thyroid.—Exophthalmic goiter is promptly influenced by the *x*-rays in a great percentage of the cases. Of the symptoms of the disease the pulse rate is the first to respond most easily to the treatment, next the weight increases, and the sleeplessness, and the other nervous symptoms show a great improvement. The exophthalmus and the goiter are the last to be influenced and in a certain number of cases these last two symptoms remain unimproved. A preliminary radiation does not make a subsequent operation more difficult. In view of all this, no case of exophthalmic goiter should be operated on without an attempt at *x*-ray therapy.

Thymus.—The thymus is found to be enlarged in the majority of cases of exophthalmic goiter. In these cases the symptoms may be due to a great extent to the enlarged thymus. This organ diminishes in size very rapidly under *x*-ray treatment, therefore cases of exophthalmic goiter accompanied by an enlarged thymus are readily influenced by radiation, while the surgical treatment may remain without effect.

Status lymphaticus is a clinical condition which is due mainly to the enlargement of the thymus and may also be very favorably influenced by *x*-ray treatment of the gland.

Hypophysis.—In view of the brilliant results obtained by *x*-ray treatment of the thyroid and the thymus in exophthalmic goiter it seemed reasonable *a priori* to expect that in acromegaly the raying of the hypophysis may benefit the disease. Indeed, there are reported in the literature a few cases in which the *x*-ray treatment exerted undoubtedly beneficial effect on the disease.

Spleen and Bone-Marrow.—Leucemia is a disease in which the characteristic changes are an alteration in the relative proportions of the different leucocytes of the blood, with an increase in their number, and the appearance of unusual forms. The red cells are diminished in number, abnormal forms appear in the blood, and accompanying these alterations in the blood are changes in the spleen, bone-marrow, and in the lymphatic glands. In myelogenous leucemia the changes are mainly localized in the spleen and the bone-marrow, and the blood

shows an increase in polymorphonuclear leucocytes and in myelocites. In lymphatic leucemia all the lymphatic glands are enlarged as well as the spleen and there is an increased number of lymphocytes in the blood. The disease is analogous in many respects to lymphosarcoma and may be considered to be a malignant disease of the blood. The readiness with which this disease responds to *x*-rays is quite remarkable. The leucocytes after a slight initial increase promptly diminish in number. The following observation made by the writer in collaboration with Dr. B. Joseph is very interesting in this connection. While the number of myelocytes in myelogenous leucemia may decrease to a remarkable degree after a few *x*-ray treatments, the increased number of myelocytes found in cases of skeletal metastases of carcinoma remain uninfluenced by radiation. The spleen as well as the lymphatic glands decrease in size and the general condition of the patient improves. In regard to the ultimate result, and the relapses of the disease, the statement made above in connection with Hodgkin's disease may be repeated. The earlier the treatment is begun, and the more energetically it is pursued, the longer will the life of the patient be preserved. The radiations with hard filtered rays should be given not only over the regions of the spleen, liver, and the lymphatic glands, but also over the regions of the long bones. For several years the treatment should be repeated at stated intervals. The treatment should be controlled constantly by blood examinations.

Conclusion.—The difference in the technique and the armamentarium used in radiography and in *x*-ray therapeutics is very considerable. Each of these two modes of the medical application of the *x*-rays have extensive fields of usefulness of their own, and it would be most advantageous for the progress of both disciplines if they were not united in the same laboratory. Each worker should develop only one branch of the work. The great success of radiotherapy in Germany dates from the time when the surgeons and gynecologists themselves undertook this method of treatment instead of referring the patients to the radiographers. Correct radiotherapy implies a thorough understanding of the pathological and clinical condition of the patient as well as the technique, dangers, and limitations of the therapeutic measure.

As shown above, the usefulness of *x*-ray therapy is limited to a well-defined class of diseases, but in those it acts very frequently as an actual specific and always as a very important adjuvant to other methods of treatment. It behooves as little the clinician to neglect this method of treatment as the *x*-ray therapeutist to become over enthusiastic

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THE WORTH OF AN EARLY *X*-RAY EXAMINATION IN GASTRIC CANCER.

By GEORGE M. NILES, M.D.,

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The Roentgen ray as an early diagnostic agent in suspected or non-suspected cases of gastric cancer has won a recognized rank.

Many and erudite have been other methods advanced; and for some of the newer processes, such as the glycyltryptophan test, the phosphotungstic acid reaction of Wolff, the hemolysis test, and the modified Abderhalden reaction, glowing claims have been put forth. Unfortunately, all of these have been weighed and found wanting in some particular, and thus two hapless conclusions are forced upon us: first, that a reasonably early diagnosis of gastric cancer from clinical data alone is

Fig. 1.—Malignant infiltration of the pylorus. This patient has had superficial epitheliomas removed from lip and nose; resection advised.

impracticable; second, that when a clinical diagnosis of such can be readily made, the patient may well set his earthly affairs in order, for no form of therapy is then of permanent service. With the Roentgen method, however, we have a means at hand, which, if carefully employed and intelligently interpreted, will prove itself worth while in detecting early carcinoma.

Another important possibility of a Roentgen examination is the recognition of a latent, but perhaps advanced, cancer with few or no special symptoms.

Apart from pyloric obstruction, the diagnosis of carcinoma depends upon irregularities in contour caused by the inroads of the growth. These may be quite small, like the outline of a piece of coral, or there may be more or less marked obliteration of the cavity by the growth, which displaces the barium, causing a distortion of the normal shadow. Viewed through the fluoroscopic screen, these inroads may suggest peristaltic waves at first sight, but, on closer observation, it will be noted that they

Fig. 2.—So-called "leather-bottle stomach." In this condition there remains only a rigid tube through which the nourishment flows out almost immediately; inoperable condition.

are permanent, that the peristaltic waves sweep up to these notches, are lost to sight, then reappear on the further side of them. In advanced cases the major part of the stomach cavity may be completely obliterated, showing an irregular shadow

that possesses no likeness to a normal gastric contour. Growths invading the anterior or posterior walls are sometimes so arranged that the barium is displaced and a clear space observed in the midst of the shadow. These clear spaces may appear and

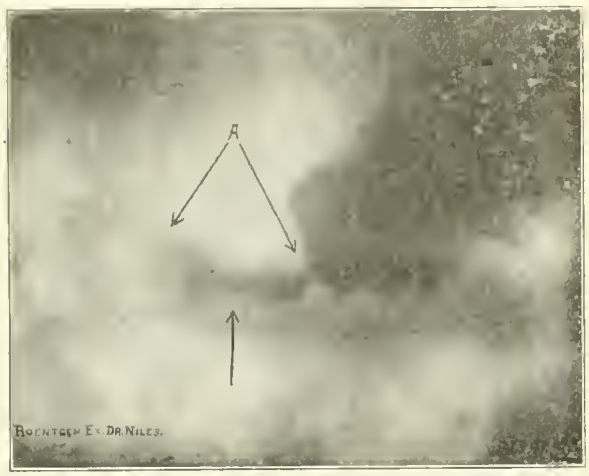

FIG. 3.—Annular carcinoma involving the pylorus and greater curvature of the stomach. Note the "bitten-out" appearance of the greater curvature; inoperable condition.

disappear as the peristaltic waves sweep on, and the gross aspect may sometimes be completely altered by palpation. Particles of retained food which have been coated over or admixed with barium may cause confusing shadows, so it is well to obtain roentgenograms on successive days to guard against this error.

Adhesions in the vicinity of the stomach, pylorus, or duodenum may also cause inroads that are difficult to differentiate from neoplastic growths; and such problems can only be intelligently solved by combined palpation under the screen and a liberal number of roentgenograms.

Spasmodic contractions may counterfeit growths, calling for gentle massage under the screen, plus a subsequent examination. Let it be insisted upon that there is seldom a case in which a *single* examination justifies an absolutely positive diagnosis with its perhaps somber prognosis.

The technique in the Roentgen investigation of these cases is quite similar to the routine examination in other lesions of the stomach. The writer uses buttermilk (about 12 ounces, if that much can be retained) and barium (about 2½ ounces). Several plates are made at once both in the standing and prone positions. Sometimes plates made in the

FIG. 4.—Artist's drawing of Fig. 3.

lateral or oblique positions afford valuable information. Let this be clearly understood—a single plate showing a normal filling may carry more diagnostic weight than a dozen which fail to fill.

A few neoplastic growths occur in the cardiac region of the stomach, usually invading the cardiac orifice. Such patients generally come for obstructive symptoms, refereable to the esophagus; and in many of these it is found that the carcinoma has already reached the inoperable stage. In the

FIG. 5.—Extensive involvement of pylorus and prepyloric region. The symptoms appeared suddenly in a very robust man; condition inoperable.

writer's experience no carcinomatous invasion of the stomach is more insidious than that situated near the cardiac orifice.

Primary carcinoma in the pars media is a rare entity.

Filling defects at or near the pylorus are annular in character, lending the appearance of an unduly elongated pyloric gap. This *annular* aspect is not so clearly noted in chronic ulcer. As before mentioned, these apparent lesions should be verified by a number of plates with the patient in varying postures. Should the annular appearance be corroborated by bitten out "notches," the examiner may be nearly sure he is dealing with a *growth*.

It little matters whether the neoplasm is primary or a malignant degeneration on the site of an old ulcer, the potentialities for evil are the same. When such material conditions are obvious, and are proved by a painstaking Roentgen investigation, immediate and radical surgery should be recommended.

Negative findings are of great value only when the examination has been thorough. A normal-appearing shadow of the stomach with a smooth and unserrated contour rules out any neoplasm be-

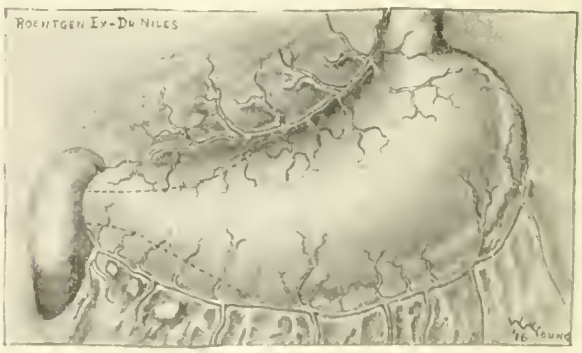

FIG. 6.—Artist's drawing of Fig. 5.

yond the microscopic stage. In a few instances under the writer's observation, a careful examination. Roentgen and otherwise, with unmistakable negative findings has *cured* the patient.

In some late cases so much of the stomach struc-

ture may be involved that there seems to be simply a rigid canal with no peristaltic waves whatever. The patient can take only a small amount at a time, thus running out of the stomach almost as rapidly as it descends through the esophagus. Unless the plate is taken expeditiously, the stomach will have emptied itself so that no shadow will be discernible. Such a case is shown in Fig. 2.

In conclusion, let it be asserted that when any individual in middle life rather suddenly develops indigestion, when this indigestion cannot be satisfactorily explained by abnormalities of the circulatory system, the kidneys, the blood and blood-forming organs, or the central nervous system, a careful roentgenological examination is emphatically indicated. Otherwise, many guileless patients and over-optimistic physicians will wake up to a sudden realization that the "day of grace" has passed, and that the malignant process has overspread operative bounds.

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COMPLETE TRANSPOSITION OF VISCERA, WITH REPORT OF TWO CASES.*

By H. J. HARTZ, M.D.,

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Of the abnormal positions of the viscera the most important is the one known as "situs viscerum inversus" or lateral transposition of the internal organs; the transposition forming a mirror-image of the normal. The transposition may be complete or partial. If restricted to the heart alone the condition is known as dextrocardia. In rarer instances the change involves only the abdominal organs.

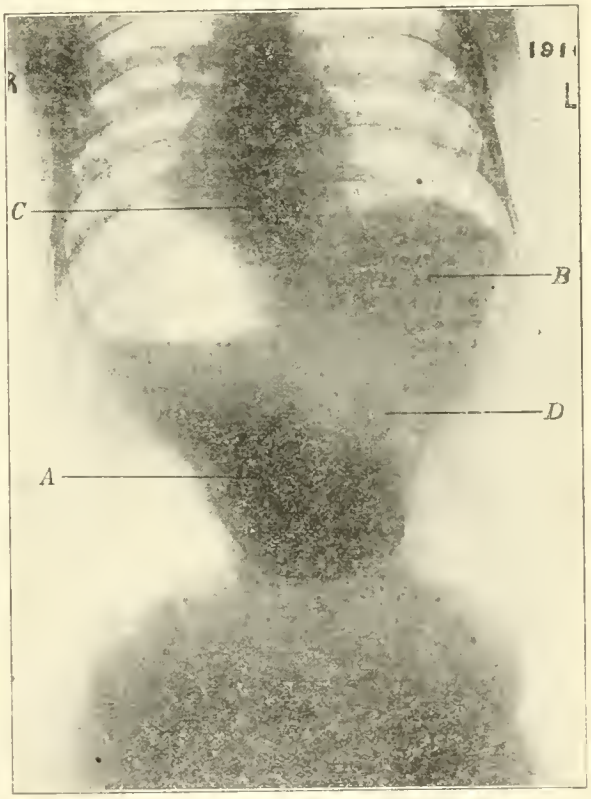
The various theories explaining the development of the viscera are chiefly of interest to the embryologist and anatomist. Adami[1] believes that the most likely explanation is that the main current of blood to and from the germinal area becomes diverted at an early stage of existence and thus purely mechanical influences lead the vessels of one side of the organism to receive more blood and therefore to grow more vigorously than those of the other. There are numerus other theories relating to this subject but they are too technical to be discussed in a paper of this kind.

Cases of partial transposition are not as common as the complete type. Lochte,[2] in 1898, was able to collect but 13 cases of this incomplete variety.

To the clinician transposition of the viscera presents many interesting problems in differential diagnosis. Congenital displacements of the heart to the right must be differentiated from those occurring in disease. The acquired displacement of the apex beat occurs rarely beyond the right mammary line. It may be caused by the pressure of a left-sided pleurisy with effusion, a left hydrothorax or pneumothorax, a tumor of the left lung or mediastinal tumors. It may be caused by the retracting power of chronic fibroid changes in the right lung and adhesions in the right pleural cavity which fix the heart in this abnormal position. The discovery of an enlarged area of dullness in the left hypochondrium is suggestive of several conditions. Besides a transposed liver, an enlarged spleen either of leucemia, malaria, or splenomegaly may be present. The dullness may be caused by an enlarged movable and prolapsed kidney or perinephritic abscess. Fecal accumulation, effusion in lesser peritoneal cavity, a subphrenic abscess, psoas abscess, cancer of splenic flexure of colon, and tuberculous peritonitis must also be considered.

In 1865 Gruber[3] made an exhaustive study of the literature and collected 79 cases of complete transposition of viscera; Küchenmeiser,[4] in 1883, added to that series and increased the number to 149. In 1895 Pic[5] reported 190 cases, which number represents all of the cases known in literature up to that year. Arneill,[6] in an elaborate study in 1902 involving communications with leading internists and anatomists, reported over 40 additional cases.

In this country, cases of transposition in recent times are much more frequently discovered during life than on the post-mortem table. Arneill contrasts Gruber's series and his own. Of the 79 cases reported by Gruber only five or six were discovered during life. In Arneill's collection, which numbered 44 cases, 38 were diagnosed during life, and but six after death.



Case I.—*X*-ray photograph of patient, standing erect, taken in anteroposterior position after a bismuth meal. *A*, stomach on right side of median line; *B*, liver on left side of body; *C*, heart displaced to right of median line; *D*, duodenal cap displaced toward the left.

Gruber in his study arrived at a number of interesting conclusions. There were 49 men, 19 women and 11 in which sex was not mentioned. The longevity in these individuals did not differ from those with normal organs. The women were normally fruitful, one gave birth to 12 children. In 71 of the 79 cases both chest and abdominal organs were displaced. Of the abdominal organs alone there were 8 displacements. Lungs were transposed in 35 of 71 cases, the right had two lobes and the left three lobes.

Case I.—The case that I am reporting is that of a boy 13 years of age, name S. F., white American born of Hebrew parentage. Has one sister 15 years old and one brother 11 years old. The family history is negative. Had measles and chicken pox in infancy, otherwise has enjoyed perfect health.

I was called to the patient's home and found him complaining of pain on left side of chest in midaxillary

*Read before Jefferson Hospital Clinical Society, January, 1915.

line, aggravated on deep inspiration and during coughing; duration one day. Physical examination showed a well-developed muscular and robust boy. On examining the bared chest I was surprised at the absence of the cardiac apex beat from its usual location. The heart was completely transposed to the right side of the body with apex in the right mid-clavicular line. The lungs were normal except for a slight pleural friction rub in midaxillary line on left side, ascertainable both on palpation and ausculation. Liver dullness was outlined on left side of body and the stomach was transposed to the right of the midline. The right testicle was at a lower level in the scrotum than the left. The patient was right handed. In a few days the patient recovered from his pleurisy. Fluoroscopic and *x*-ray studies were made following ingestion of a bismuth meal, and verified the physical findings of a complete transposition of all of the viscera of the chest and abdomen.

That complete transposition of viscera is not an infrequent condition is evidenced by the fact that quite recently (November 22, 1916) I had the good fortune of discovering a second case of this interesting anatomical anomaly.

Case II.—I was called to the home of a little patient that was complaining of a sore throat. The following history was elicited: The patient D. S., is a boy 12 years of age, American born of Italian parentage. During childhood had frequent attacks of tonsillitis, otherwise has enjoyed fair health. The present illness consists of an acute attack of follicular tonsillitis, superimposed on a chronic hyperplasia of tonsils. The boy is fairly well developed but rather slender for his age. In view of above history I was anxious to know if cardiac murmurs existed, and on examining the chest I located the apex in mid-clavicular line on the right side, the liver dullness was elicited on left side of body, the stomach was to right of median line. Fluoroscopic and *x*-ray examinations following a bismuth meal showed a complete transposition of viscera. The plates were practically identical with those of the case reported above.

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DIVERSIONAL THERAPY IN MENTAL DISEASE.

A PLAN FOR ITS EMPLOYMENT WITH SPECIAL REFERENCE TO SOCIAL CLUBS.

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The treatment of mental disease by diversional therapy has been recognized for some time to be the most rational and scientific. The method is one of substitution and is accomplished by replacing the focal idea of consciousness. For if a healthy idea can only occasionally be substituted for an idea of false reasoning the patient's attitude of mind and conduct will improve. Considering the psychology of diversional therapy, let us suppose a group of patients manifesting different forms of insanity are attending a moving picture show, we are impressed how well their attention is held. Suppose another group are attending a dance, and observe how interested those become who are fond of dancing and what a good time they have. There is another group employed in some useful mode of occupation, we again are impressed with the interest one manifests who is weaving a rug or another occupied in the construction of a table. And so we could suppose ourselves conducted throughout an average hospital for the insane and invariably observe that those patients that seem to derive the greatest benefit from their employment are those most interested in their work and who accordingly give to it a more undivided *attention*. This would bring to mind a well-known fact that the attention is dependent upon the emotion and controlled by a motor mechanism which is inhibitory in character. In other words, anything capable of engaging the attention must first to some extent stir the emotions. This requires a quality of attractiveness. Recognizing such principles, diversional therapy is employed to render those things attractive that are not naturally so and in like manner produce an interest in them.

The different psychoses will be touched upon in so far as the treatment of them is related to diversional therapy. First, manic-depressive insanity; in the depressed form of this psychosis the patient has his inhibitory powers of attention increased. Here the mind is obsessed with fixed ideas that are delusional in character and tend toward more or less dangerous acts of conduct. In such cases diversional occupation of the mind will help to crowd aside the false beliefs. In the other type characterized by increased psychomotor activity and flight of ideas, the attention has become greatly debilitated. Patients suffering from this type may have the excess energy utilized through occupation.

Second, in those psychoses characterized by mental enfeeblement and dissociated personality, namely, the precox group, diversional therapy tends to dissolve the symbolical personality and arrest mental deterioration. The process by which this is accomplished is best explained by comparing it to a boy flying a kite, the boy representing the patient, the kite his mind soaring afar off in its world of fantasy and the string diversional therapy which serves as a means to prevent the mind's complete withdrawal or at least retard the usual rapid dementia characteristic of this type of insanity.

Third, the use of diversional therapy in the functional group of psychoses yields remarkable results toward directing the stream of thought into healthier channels.

Fourth, there is that large group of dements and aments who show slow reaction to external stimuli that may be brought out of their lethargy through re-education.

In the prescribing of diversions the same care should be observed as when drugs are used. There is danger of overtaxing the patient's strength and causing him to become disinterested through a lack of variety or too long hours and not enough recreation. Patients will soon grow weary of "all work and no play." In view of this fact, care must be taken to have work and recreation balance well.

In order to schedule new patients correctly, we follow a regular routine in the keeping on new patients what we call an "Efficiency Report" which gives a full report on personal, social, and industrial capacities and incapacities as observed by

nurses and physicians. This report is completed at the end of the second week subsequent to admission. A monthly record is kept of the hours patients are employed and entertained. One record is kept by those in charge of the department in which patients work. The nurses on the wards keep three records, one for the patients who are employed about the wards, a second in which is kept a total of the hours each patient on the wards is employed, a third in which is kept an account of the number of hours the patients are entertained. These reports give to those in charge a correct account of the work each patient does in the different departments. The second report kept by the ward nurses gives a check upon the records kept by outside department heads, who as a rule are careless in keeping correct reports of patients. The third enables us to balance up productive employment and recreation received by each patient.

It is doubtful if it is a wise plan to give other rewards than tobacco. At some places, patients are allowed both smoking and chewing tobacco. Requisition should be made for tobacco in the form of snuff and plug on approval of physician in charge for whom it is wanted. It should be given out in morning daily allowances when the patients are leaving the wards for their various places of duty. There is no one thing that gives patients so much pleasure as the permission to use tobacco, and no special privilege that will give the work more attraction.

Below, I submit a plan for a department of diversional occupation and have tried to observe the principles of variety and balance between productive employment and recreation. In the productive group, there are included the different industries and the farm upon which an institution's momentum and upkeep partly depend. There is also included in this group a number of diversions that are productive through the manufacture of materials which are exportable. In the second group, designated nonproductive, we have in mind the employment of those patients whose conditions do not allow them to enjoy the freedom of those who work in the productive group; that large class of patients that are more or less disturbed and demand special attention by the attendants and nurses. This is the most important group since here the greatest amount of good by diversional therapy can be obtained. In this division the patients may be occupied with raffia, basketry, pottery, and hand weaving which are all good in holding the attention of the patients. At the Taunton State Hospital, Miss Cameron, Superintendent of Nurses, uses a method by which she teaches a class of nurses a new idea which the nurses each in turn teach to a group of patients. In the third group designated recreation the different forms of entertainments and athletics are included. The scheme of this plan is as follows:

A. Productive Employment.
   1. Industrial: (*a*) Shops, including sewing rooms, mending rooms, shoe repair, carpentry, laundry, etc.
   2. Farm and Garden.

B. Non-Productive Employment.
   1. Ward classes.

C. Recreation.
   1. Athletics: (*a*) Gymnasium; (*b*) Athletic field, providing tennis courts, ball diamonds, football and basket ball.
   2. Entertainments, including special lectures, moving pictures, dances and entertainments by patients.
   3. Devotional.
   4. Library.
   5. Social Clubs.

The department as outlined above, I believe, should be under the direction of the superintendent of nurses, as carried out in the Taunton State Hospital at Taunton, Mass. We have accordingly placed this department under the superintendent of nurses. Each group is headed by a Supervisor who is directly responsible to her.

The supervisor of the farm and garden work parties sends out daily patients as directed by the medical department to the different places where their labors are needed. He visits the patients at such places, looking after them in regard to their comforts, reporting those to the physician who require attention. He also makes requisitions for tobacco and proportions the same to the attendants of work parties.

The patients working in the laundry and shops are under the direction of the department head who is responsible for them and reports any irregularities to the assistant physician or superintendent of nurses. In this department, as in the farm and garden department, tobacco and snuff is requisitioned for by the supervisor of industrial department and dealt out by him to the patients. The second group of nonproductive employment has already been described.

The third group, recreation, takes up first athletics, which includes in addition to the gymnasium all outside athletics. One understanding the principles of physical culture should be in charge of this division. The physical director should provide during the winter months every evening some form of entertainment for a part or all the patients. There should be for every day a regular schedule of classes, made up of those patients who are included in the productive and non-productive groups. During the summer months special attention should be directed toward the athletic field, which should provide tennis courts, ball diamonds, football and basket ball. The physical director should teach the patients how to play different games, doing so by regular classes. Frequent games between patients should be arranged and games with outside teams encouraged. It must be remembered that not only those who attend the classes and take part in the games derive benefit from the athletic department, but those who are spectators at the games which includes a very large number, since all the patients who can should be permitted to go.

Second, we come to that part of recreation which includes special entertainments, lectures, moving pictures, dances, and entertainments given by patients. Frequent entertainments impromptu in character should be arranged for the patients; they may consist of sleight-of-hand performance and the like, and if the institution is in a large city a number of entertainments can be provided by the inhabitants, who as a rule will be glad to assist in such work. Special lectures on interesting subjects and story telling provide good means for entertainment. Dances and moving picture shows should come regularly and frequently.

Third, in this division we come to religious services, in which we include such services as conducted by ministers and others of the pulpit and the singing of religious songs. These services cannot come

too often if conducted properly. Here we have three services on Sunday, morning, afternoon, and evening. The evening service is nothing more than the singing of hymns, but it enables us to provide all of the patients with at least weekly attendance. It is a good routine to request of those in charge of such services to be careful not to use any discourse that tends in the slightest degree toward emotionalism. The same thought should be borne in mind in the singing of religious songs, only those hymns that tend neither to depress nor to excite the emotions should be sung. The books used should have those songs checked that have been approved by the medical department.

Fourth. The library should be sufficiently large for the requirements of both patients and employees, and should be under the supervision of a librarian who keeps similar records in regard to books and the loaning of them as in any public library. The patients, in the attendance of nurses, should be allowed certain hours to go to the library and select the books they wish to take. A certain schedule should be followed in regard to taking patients in classes to the library where they can read the papers and magazines provided there.

Fifth. In this division I will describe a plan by which social clubs organized among patients will bring remarkable results. A number of state hospitals have organized such clubs and found them very productive. I have organized among the patients in the female department a large number of clubs, namely, reading circles, musical clubs, dramatic clubs, card clubs, sewing circles, etc. These clubs are organized with a limited membership, and all meet at least once a week. Each club elects its own officers, consisting of president, vice-president, and secretary. The officers and members are given the privilege of conducting the clubs as they desire. A nurse designated as advising officer meets with the club and tactfully stimulates its progress. Patients vote on new members by secret ballot, and the names of those that are accepted are submitted to the assistant physician for his approval. Each member wears a badge which bears the name of the club, for example: "Monday Afternoon Sewing Circle." I find the patients are very proud of the badges, which I believe have a greater stimulating effect than anything else. One of the parlors of the administration building is provided for holding some of the meetings. Refreshments are served at each meeting in the form of tea, wafers, fruit, or ice cream. Picnics are voted for occasionally and because of their beneficial results are granted whenever possible. Outsiders are urged to visit the clubs but I have them obtain final permission from the president of the club which they wish to visit. This adds dignity and to the patients increases the clubs' importance. The visitors are asked to enter into the work of the meeting exactly the same as they would do if visiting a club in a community of normal individuals. Too often persons with best intentions when visiting mental patients are prone to show unwanted sympathy and unconsciously exaggerate their own normal condition.

The sewing circles do principally fancy work, and the members take great pride in learning new things and teaching the same to new members. Outside visitors come, and while they are requested at least to pretend to receive more than they give, they frequently interest the circles with something new. The card clubs meet in the evening, play the usual games and enjoy the refreshments very much. Every floor and building has a reading circle named after its respective floor or building. These circles meet in the evening and read aloud interesting articles in which the advising nurse assists. Magazines and books are sent to the Hospital by a number of its friends and are distributed to the different circles for their use. One of the clubs has the distinction of having given interesting entertainment every week since its organization eight months ago. Officers, employees, and outsiders have been in regular attendance and always report a good time. The dramatic club gave a play this Spring for the graduating class of the Training School, and it was considered by everyone to be equal to the average amateur play.

Personally, I am very enthusiastic about this phase of diversion and believe that social clubs tend to give to the mental patient his former adjustment more rapidly than any other. Of course, they should be conducted properly and the principles adhered to which I have brought out above, namely:

First, give patients, as far as possible, full charge of the clubs which they compose.

Second, keep up an interest by not allowing the object of the club to diminish in its importance.

Third, serve refreshments at the meetings and if at all possible grant picnics and special privileges whenever such are requested.

Fourth, provide badges which not only increase the interest but create pride in the wearer.

Fifth, encourage officers and outsiders to attend the meetings frequently, but never allow visitors to forget that they are objects of the club's hospitality.

NAUSEA AND VOMITING AFTER NITROUS OXIDE-OXYGEN ANESTHESIA.

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THE opinions of the average medical man on any unsettled question may be derived from impressions—his own and those of other men—from experimental evidence, from statistics, or from the statements of recognized authorities. Though it is not scientific to rely upon impressions, many conclusions are arrived at in this way and sometimes they are more correct than those based on experimental evidence and statistics. Experiments are often faulty, statistics are fallacious, and both may be wrongly interpreted.

The status of gas oxygen anesthesia may be regarded as not entirely settled, and, as members of the medical profession have had varying impressions and experiences in connection with its use, opinions naturally are divided.

The writer's first experience with nitrous oxide was obtained in a hospital where a large amount of tooth-extracting was done under this anesthetic. The gas was pushed till the appearance of cyanosis and stertor, then the inhaler was removed and the extraction rapidly performed. The anesthetic was considered so safe that we never thought of any danger and vomiting was very rare. Several years later the writer saw, for the first time, a major operation (prostatectomy) performed under gas-oxygen with ether as needed. The cyanosis, which was exhibited to a considerable extent, was not unexpected, but the vomiting which followed the withdrawal of the anesthetic was something of a surprise and gave rise to the question whether ether

alone would not have done as well. Subsequent experience and conversation with other observers frequently suggested the same question. It was disappointing to find that after this form of anesthesia patients frequently vomited — especially women. The vomiting, too, seemed to take place irrespective of preliminary morphine medication or the addition of ether or of skill (or lack of skill) on the part of the anesthetist.

For example, one patient, who received a preliminary hypodermic of morphine and was under the anesthetic for a few minutes while the uterus was curetted, remained apparently unconscious for half an hour or more after the operation and suffered from nausea for several hours afterward. Another patient without preliminary medication took her anesthetic very satisfactorily for six minutes while some necrosed bone was removed from the os calcis. She vomited at the close of the operation and was more or less nauseated for several hours. No ether was used in either of these cases. Two patients, operated upon within a few days of each other, were of particular interest because of the striking points of contrast which their cases presented. In each case a preliminary hypodermic of morphine (¼ gr.) was given.

The first patient was a woman 32 years of age who was operated upon for varicose veins of both extremities. Gas-oxygen without ether was given for an hour and forty-five minutes. During induction of anesthesia there was moderate cyanosis, but after the first few minutes the patient's color remained pink and conditions were in every way satisfactory, except that there was a tendency to vomit whenever the supply of nitrous oxide was decreased. The operation was completed at 1 P. M. The patient promptly vomited, and nausea and vomiting continued all the rest of the afternoon. She stated that these symptoms were much the same as after ether, but that she preferred the gas-oxygen on account of the quicker disappearance of her mental confusion. (She had been operated upon for hernia eight days before, under ether.)

The second patient was a woman of 46 years who underwent a radical operation for carcinoma of the breast. Gas-oxygen anesthesia was attempted and maintained for forty-five minutes, with the aid of 2 ounces of ether. The patient was at all times more or less cyanosed. Breathing was irregular and there was a constant tendency to struggle. At the end of forty-five minutes the nitrous oxide was discontinued and a light anesthesia kept up for three-quarters of an hour longer with 4 ounces of ether.

Gas-oxygen anesthesia as usually conducted may be divided into three classes; first, gas-oxygen anesthesia alone; second, gas-oxygen anesthesia assisted by ether; third, ether anesthesia modified by gas oxygen. The case last described may, on the whole, be justly called an ether anesthesia *complicated* by gas-oxygen. The results, however, were surprisingly satisfactory. The patient was conscious and talking before being removed from the table; according to the nurse there was no subsequent vomiting and the patient herself reported little or no nausea.

Of course these two cases prove nothing. They are merely examples of two contrasting types frequently met with, the one very susceptible to the good and bad effects of an anesthetic, the other resistant to both. However, neither of these cases would have given the casual observer a very favorable impression of nitrous-oxide oxygen anesthesia.

A satisfactory anesthesia with this agent presents much the same features as a correspondingly satisfactory ether anesthesia. The patient's color should be pink or only slightly dusky, the pupils small or medium, the breathing quiet and regular and the patient sufficiently relaxed to allow the surgeon to do his work without too much annoyance from muscular rigidity.

The conditions usually necessary for such an anesthesia are somewhat as follows: (1) A reasonably tractable patient. (2) A reasonably skillful anesthetist. (3) A willingness on the part of the operator to put up with a certain amount of muscular rigidity or to have the anesthesia deepened by adding ether rather than by the more dangerous

Case.	Age.	Sex.	Operation.	Preliminary Medication.	Quantity of Ether Used.	Duration of Anesthesia.	Nausea and Vomiting.
1	32	F.	For varicose veins	Magendie 8 minims	None	1¾ hours	Vomited twice during operation and four or five times afterward. Nauseated for several hours.
2	55	F.	Curetting of os calcis	None	None	7 minutes	Very little vomiting. Slight nausea.
3	20	M.	Resection of rib for empyema	None	None	29 minutes	None.
4	33	F.	Curetting of uterus	None	None	9 minutes	Vomited twice on operating table at close of operation. Little subsequent nausea
5	39	M.	For varicocele	Magendie 7 minims	None	35 minutes	Retching at close of operation and at least once subsequently. Moderate nausea.
6	55	F.	Curetting of os calcis	None	None	6 minutes	Moderate vomiting. Nausea for several hours.
7	58	M.	Prostatectomy	Magendie 8 minims	1 ounce	20 minutes	None.
8	22	F.	Incision of breast abscess	None	None	10 minutes	Vomited on operating table at close of operation. (No further record.)
9	23	F.	Salpingectomy and appendectomy	Magendie 7 minims	5 drams	45 minutes	Vomited on operating table at close of operation. (No further record.)
10	61	M.	Removal of osteoma from knee joint	None	2 drams	25 minutes	Vomiting of mucus at close of operation. No subsequent nausea or vomiting.
11	30	M.	Repair of fistula of urinary bladder	Magendie 7 minims	1½ ounces	30 minutes	Vomited bile at close of operation. (No further record.)
12	18	F.	Plastic operation on hand, skin grafting	Magendie 6 minims	1 ounce	1¼ hours	Vomited mucus at close of operation and once subsequently. Little nausea.
13	49	F.	For prepatellar bursitis	Magendie 6 minims	4 drams	20 minutes	Vomited two or three times after operation Moderate nausea.
14	48	M.	Removal of lipoma of neck	Magendie 8 minims	3 drams	35 minutes	Vomited once or twice. Little nausea.
15	28	F.	For hemorrhoids.	Magendie 8 minims	3 drams	35 minutes	None.
16	20	M.	Reduction of fracture of olecranon	Magendie 7 minims	None	10 minutes	None.
17	20	M.	Amputation of foot	Magendie7 minims	4 drams	30 minutes	Little vomiting. Moderate nausea.
18	69	M.	Suture of ruptured quadriceps femoris	Magendie 7 minims	1 dram	45 minutes	None.
19	22	F.	For femoral hernia	Magendie 6 minims	1½ drams	35 minutes	Vomited twice. Little nausea.
20	21	F.	Puncture of breast with exploring needle	None	20 drops	10 minutes	Vomited bile on withdrawal of anesthetic. (No further record.)
21	30	F.	Curetting of uterus	None	None	10 minutes	No vomiting. Slight nausea.
22	20	F.	For femoral hernia	Magendie 7 minims	1 dram	35 minutes	None.
23	..	F.	For removal of buried suture from abdominal wall	None	None	5 minutes	In the midst of operation vomited a considerable quantity of food taken four hours before. Moderate subsequent nausea.
24	31	F.	Amputation of thigh	Magendie 6 minims	2 drams	25 minutes	None.
25	20	F.	Excision of tuberculous cervical lymph nodes	Magendie 7 minims	None	55 minutes	Vomited once during operation and at least three times after operation. Moderate nausea.

method of crowding the nitrous oxide. (4) A suitable apparatus. (5) A preliminary subcutaneous injection of morphine or some other sedative.

If "straight ether" were given under conditions similar or parallel to the above, would the patient suffer more subsequent discomfort than after gas-oxygen. The list presented is one of unselected cases, taken in the order in which they came to operation.

It would hardly be worth while to make an exhaustive analysis of these cases or fair to draw general conclusions therefrom. It may be noted, however, that of the seven patients who were free from nausea and vomiting, five received from a dram to an ounce of ether, and that of the eighteen patients who vomited or suffered more or less from nausea, nine received no ether at all. The record of nausea and vomiting in twenty-five unselected ether anesthesias, most of them for minor operations, should suffer very little by comparison with that in the list above tabulated. Such a comparison, however, would be misleading if one were to depend on the written record alone, the reason being that it is impossible to express with precision the severity of a patient's vomiting or the degree of his nausea. The perusal of statistics cannot wholly take the place of direct personal observation. Such observation convinces me that, as regards post-anesthetic nausea and vomiting, gas-oxygen has distinct advantages, though, doubtless, these are more or less overrated. A point worthy of notice is that the vomiting which follows gas-oxyen anesthesia is assisted by the patient's voluntary efforts and we do not so often see the cyanosis—often deep and sometimes alarming—which attends the vomiting efforts of the not yet conscious ether patient.

Frequently patients are met with who have undergone both forms of anesthesia and usually they express themselves as better pleased with gas-oxygen, though it must be confessed that they do not seem wildly enthusiastic in their preference. Indeed, one of these patients, himself a physician, told the writer that he was more comfortable after ether for the reason that his vomiting occurred while he was unconscious, whereas, after gas-oxygen he "knew all about it. Since the above cases were tabulated the writer has tested the comparative after-discomforts of gas-oxygen and ether, making use of himself as a subject for experiment. The tests were made a week apart under practically identical conditions. On each occasion a light breakfast had been eaten and the anesthetic was given shortly after midday for twelve minutes by the same professional anesthetist. In both instances recovery from the anesthetic was characterized by absolute freedom from vomiting but by a tendency to nausea. In the case of ether this was so pronounced that it was deemed wise to remain in the recumbent position for an hour after consciousness returned. After gas-oxygen the subject was up and about in a few minutes. In both instances a tendency to nausea and giddiness persisted through the afternoon, but a fairly substantial supper was eaten, enjoyed, and retained.

If a hundred men and a hundred women of the medical profession, preferably surgeons and anesthetists, would repeat these experiments and report results to (for instance) the American Association of Anesthetists, valuable first-hand information would thus be furnished concerning the relative after-effects of these two forms of anesthesia when uncomplicated by operative procedures.

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IS AN ANGINA RATHER THAN TONSILLITIS THE PRECURSOR OF ACUTE RHEUMATISM?

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If one may judge from the statements of some of the authoritative writers on general medicine the prevalent belief appears to be that tonsillitis precedes rheumatism. Thus in Allbutt and Rolleston it is said: "Tonsillitis is not an infrequent precursor of or concomitant with an attack." In modern clinical medicine the statement is made that "American and English physicians for a long time had already called attention to the frequent occurrence of acute rheumatism after an attack of tonsillar angina, etc."; Strümpel says: "Not infrequently the organs of the throat, particularly, appear to be the points of entry for the infection (tonsils and pharyngeal tonsils)."

Now is the throat condition, which so often precedes an attack of acute rheumatism, a real tonsillitis or is it not rather an angina or an inflammatory involvement of the tissues surrounding the tonsils due to the infective organism of the following attack of rheumatism; in other words, is the so-called tonsillitis, which precedes the rheumatic attack, really a tonsillar condition, or is it not rather an angina affecting the surrounding tissues and not the tonsils themselves? The following questions have presented themselves to my mind: Does the patient generally suffer so severely during this precursory attack as he does during a real attack of tonsillitis from which he recovers without an accompanying attack of acute rheumatism? Does he not frequently suffer rather much more from the local discomfort than from the systemic symptoms? or as the Englishman would say, "Doctor, I have a shockin' sore throat but I am well in myself," meaning that the constitutional or systemic symptoms do not cause him any discomfort, but that what discomfort he does suffer comes alone from the local condition. He has no malaise, no fever, no headache, no loss of appetite, etc.; but is in all respects fit except that his throat is sore. I have in mind two such cases: one that of a robust young woman in whom there were no serious after-effects, and the other that of an elderly man, hitherto possessing remarkable health and strength for his age, who, however, later on developed an extremely severe attack of acute rheumatism from which he has not yet recovered. In the case of the former aside from the local discomfort she was apparently well. There was an inflamed condition of the throat, which caused her great difficulty in swallowing and the pillars of the fauces were very much inflamed, the tonsils, however, being only very slightly affected, if at all. Her appetite was good and she made no change in her ordinary diet, but it was with great difficulty that she swallowed this food. As she herself said, "I am hungry; I must eat; but I do not know after I have taken the food into my mouth how I am going to swallow it." Finally the local condition becoming so uncomfortable, she applied for relief and the physician consulted made an application of ichthyol, 10 per cent. in boroglyceride, to the inflamed area. This was rather a matter of expediency than of thought in this case, as the ichthyol was at hand; but still it occurred to him that as ichthyol is beneficial in reducing the inflammation of erysipelas and uterine inflammatory conditions, why not in this one? The result was more than

could have been expected; for almost instantly the stiffness and the soreness disappeared and in their place was left a feeling of flabbiness and softness with no pain. The flabbiness was almost disagreeable until the tissues regained their normal tone. From this on there was no return of the condition and no rheumatic sequela.

In the other case the result was not by any means so satisfactory; for the patient, an elderly man, as I have mentioned above, but one exceptionally well preserved, going to business every day from a commuting distance and at intervals taking long business trips, complained of a sore throat. He consulted a physician who treated the case lightly, told the patient to remain at home for a few days, and gave him a gargle. The condition appeared to be somewhat relieved and after a few days the patient returned to his office, but still suffered from some discomfort in his throat, especially on swallowing. He made the remark, "it is not my tonsils; it is my throat." Not being consulted by him, but merely hearing him make this remark in the ordinary course of conversation I, in an offhand way, remarked, "probably you have a rheumatic throat," and thought no more of the matter until the next day, when he came down with a very sereve attack of acute rheumatism from which he has not yet fully recovered, having had several severe relapses.

Now, the question in my mind is, were either of these cases tonsillitis or were they not from the start rather rheumatic infections, attacking the tissues surrounding the tonsils? I cannot but feel that had they from the start been treated as rheumatic infections they would have sooner yielded to treatment, and that, in the latter case the acute attack of articular rheumatism might have been averted. Will it not always be wise for us so to regard all such conditions of the throat and treat them accordingly, no matter how slight they may be. That a tonsillitis may be due to the same organism I do not wish for one moment to deny; but on the other hand I wish to draw attention to the fact, that every sore throat that precedes a rheumatic attack may not necessarily be a tonsillitis, but may be an involvement of the peritonsillar tissues by the organism, which is responsible for the attack.

The localization of the primary attack is accessible; then why not then and there fight the infection when it is in its primary stage? In both of these cases there were no primary systemic symptoms. Just how beneficial ichthyol may be in this class of cases is a matter for further investigation. That it gave relief in this one case I know, but one swallow does not make a summer. However, if it is, as we know, beneficial in erysipelas, why not in a rheumatic condition of the throat which may be near of kin to it in being a streptococcic infection?

In conclusion I would say that I think that it is highly desirable that we shall treat all acute inflammatory conditions of the throat with an eye to their being the initiatory lesion in a case of acute rheumatism. If they are not, no harm will have been done, and if they are much harm may be prevented. I would like to draw special attention to the acute inflammatory conditions of the throat which do not produce constitutional disturbance as the most dangerous. If the patient has a very severe attack of tonsillitis, which confines him to his bed because he is too ill to remain out of it, then he runs a much better chance of not developing rheumatism as a sequela, than the patient who does not feel ill enough to give up, but who is really ill. Unfortunately these cases often from being so slight do not come under the care of a physician until the rheumatic attack has developed.

Summary.—(*a*) An angina and not a tonsillitis may be the precursor of rheumatism. (*b*) All such throat lesions should from the first be carefully treated with an eye to their probable development into acute rheumatism. (*c*) The beneficial effect of ichthyol deserves more consideration.

DIAGNOSIS OF SO-CALLED SCIATICA.

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AND

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THE old teaching that sciatica symptoms are due to a neuralgia of the sciatic nerve has been practically abandoned at present. It has been established of late by Déjerine[1] and his pupils that a great many cases of so-called sciatica are caused by the involvement of the roots that make up the sciatic nerve and thus the teaching of so-called root or radicular sciatica was introduced into neurology. According to Déjerine, radicular sciatica has the ordinary symptoms of plain sciatica, such as the Lasègue sign, Valleix painful points, etc., but the spontaneous pains are worse than in "troncular," or truncal, sciatica and are aggravated by coughing, sneezing, and straining of the abdominal muscles. Occasionally they spread over the crural nerve which is abnormally sensitive to pressure. Muscular atrophy is not rare, affecting either all of the muscles supplied by the sciatic nerve, so-called total radicular sciatica, or limited to some muscles only, partial radicular sciatica. The Achilles reflex is abolished or diminished, the patellar reflex is present. Sensory disturbances usually predominate. The differential diagnosis from truncal sciatica lies in the sensory disturbances since their topography is strictly radicular, *i.e.* is confined to the anatomical distribution of the spinal roots. At the beginning there is hyperesthesia to touch, cold, heat, and pain, later hypoesthesia, and finally anesthesia. Hyperesthesia frequently occupies the external surface of the leg and thigh. Anesthesia may be distributed along the tracts of various lumbar or sacral roots. In the partial or dissociated form the sensory disorders frequently affect or pertain to one root only. In this form there is dissociated atrophic paralysis of the muscles of the anteroexternal region of the leg, while those of the posterior surface of the leg and thigh remain intact. A circumscribed meningitis, Déjerine states, is the most frequent cause of the radiculitis and is usually syphilitic. Déjerine's teaching was confirmed by his pupils and in this country by A. Gordon,[2] who has published several cases illustrating Déjerine's teaching of radicular sciatica.

Some authors, as Bruce,[3] go so far as to place the cause of sciatica in the lesions of the hip-joint only. Bruce interprets the symptoms of sciatica as a referred pain from the diseased hip joint.

Pitfield,[4] in discussing sacroiliac relaxation as a cause of sciatica, quotes a prominent neurologist of the Massachusetts General Hospital whose name he fails to give, who stated that 90 per cent. of sciatica cases are due to sacroiliac relaxations and dislocations. Pitfield, like Goldthwait, emphasizes the close relationship between the sacral plexus and the

sacroiliac synchondrosis. Any disturbance in this relationship is likely to cause symptoms of pain along the sciatic nerve. This sacroiliac etiology of sciatica has been criticized by Lovett.[5]

Whatever the cause of sciatica may be, it is nevertheless frequently located outside the nerve and the roots making up the sciatic nerve. It is obvious that any lesion that may involve the nerve, the roots of the nerve, or the sacral plexus will give symptoms of sciatica. These possible causes have been sought for in the histories of the Cook County Hospital for the past four and one-half years. During this period 400 cases were admitted under the tentative diagnosis of sciatica. All of these patients presented symptoms of sciatica as their chief complaint. It was found that approximately one-half showed definite and various conditions that were not sciatica at all, but in which sciatica was merely a symptom. Of these 400 cases admitted as sciatica during 1916, in 75 per cent. the diagnosis of sciatica was finally modified, while in 1915 it was rejected in 56 per cent., in 1914 in 40 per cent., in 1913 and 1912 also in 40 per cent. In other words, the character of sciatica diagnosis was greatly improved in the past two years, which can be explained by the fact that in the past two years much more attention has been paid to the underlying factors causing sciatica. At present roentgenograms are made in every case and orthopedic considerations are studied more thoroughly. It was found that not only one or two but numerous and variable clinical entities presented sciatic pain as their chief symptom. Of those remaining cases in which an exhaustive study did not reveal anything definite, the diagnosis of sciatica or neuritis was made reluctantly. Many of these cases would probably be classified under sacroiliac disturbances, defective "static balance," etc., by the authorities advocating these respective theories. Since a classification of this nature is still arbitrary, these cases, in which examinations were negative, will not be discussed to any great extent except to state that 79 per cent. were in men and the average age was 39 years. The right side was affected in 42 per cent. of these cases, the left side in 41 per cent., and both sides in 17 per cent. Since 79 per cent. occurred in men, most of whom were doing heavy manual work, it appears plausible that their pains in the lower extremities may have been manifestations of some over-exertion.

Of the other 50 per cent in which a correct diagnosis could be established, 8 cases proved to be purely functional (hysteria and neurasthenia). The rest were organic. In ten cases a diagnosis of lumbago or muscular rheumatism was made. Among other cases to be enumerated below there were three of chronic nephritis and one of pyelonephritis. This etiology, however, is rare, though pointed out in the literature by Lapinsky.[6]

An anatomical classification of other but more frequent causes of sciatica in our series of cases will now be presented.

Cerebrospinal cord lesions have been mistaken for sciatica 13 times; tabes dorsalis, 7 cases; acute pneumococcus meningitis, 2 cases; cerebrospinal lues, 1 case; chronic anterior poliomyelitis, 1 case. In other words, instead of various cerebrospinal cord lesions, a diagnosis of sciatica was made. To illustrate at least one instance we will cite the following case:

C. S., American housewife, age 52, with good habits, entered the service of Dr. Hassin, complaining of an acute pain of four months' duration in the back and down the right thigh and leg, shooting in character, worse on standing and walking. There was a sense of constriction about the waist and urination was frequent. Past history: Rheumatism in right wrist eleven years ago, pneumonia several times, typhoid fever fifteen years ago; denies venereal diseases; has had no miscarriages; one son is living and well; her husband is living and well; menstruation is regular. Mother, aunt, and sister had pulmonary tuberculosis. Physical examination revealed a well-developed woman with normal mentality but with Argyll-Robertson pupils and normal fundi. Positive Kernig and Lasègue signs on the right side; Achilles absent on the right side but present on the left; knee jerks and sensibility were normal; Rhomberg, ataxia, and atrophies were absent. Wassermann on spinal fluid was strongly positive on two occasions. Cell count of 5 lymphocytes per cubic millimeter. Nonne and Noguchi tests were positive. X-ray examinations were negative. The patient improved markedly under treatment with mercury and arsenobenzol. This pâtient did not have sciatica, but tabes, which was shown by the Argyll-Robertson pupils, urinary disturbances, lost Achilles reflex, and spinal fluid findings, and was also confirmed by the results of the antiluetic treatment.

Diseases of the spinal column: Tuberculosis of the spinal column was overlooked in two instances; spondilitis deformans in 11 cases; old fracture of the spine in 1 case; scoliosis in 2 cases, and kyphosis in 1 case. Mild or incipient cases of spondylitis deformans are more numerous than the other members of this group because it is only with the aid of a Roentgenographic examination that a positive diagnosis can be made in some cases. To illustrate:

P. T., single, Italian laborer, 34 years old. Complained of pain in the back and left leg of two years' duration. The present attack began two months ago. The pain is worse on walking. Past history is negative. Physical examination revealed moderate tenderness over the lumbar spines, but the spinal column itself was not very rigid. There was tenderness along the left sciatic nerve. The Lasègue sign was positive on the left side. Reflexes and sensibility were normal. There was no pain on abduction or outward rotation of the thighs. Examination otherwise was negative. The x-ray report by Dr. E. Blaine says: "Left transverse process of fifth lumbar vertebræ is large and of butterfly outline, which articulates with the upper portion of the sacrum and ileum—a case of sacrolization. Shadows indicating spondylitis deformans are also present." The patient left the hospital before any surgical treatment could be carried out, but the case resembles similar conditions described recently by Shackleton[7] and Fassett[8], who have reported the results after excision of these transverse processes.

Conditions of the sacroiliac joint: Tuberculosis of the sacroiliac synchondrosis was discovered in 5 cases, sacroiliac arthritis in 2 cases, sacroiliac strain in 5 cases. Dystocia caused symptoms of sciatica in three instances. A history of trauma or strain was secured in 24 cases in which sciatica pain appeared after heavy lifting, contusions to pelvis or hip, etc.

A. K., American housewife, 28 years old, stated that for the past twelve years, while washing clothes, etc., she had a sharp pain in left hip and difficulty in straightening up. Four months ago, after dancing one evening, the pain became worse. At the time of entrance pain was present mostly on walking and on rotating the body. The obstetrical history showed that her first labor was instrumental; her back was weak after the second labor, which was normal; the history was otherwise negative. Physical examination: The patient was very obese; head, chest, and abdomen normal. Kernig and Lasègue signs were positive on both sides. Any sudden movement of either thigh caused pain in the left hip region, but no pain on abducting the thighs. On compressing the iliac bones or on direct pressure there was pain over the left sacroiliac joint. Pain was present over this region when the patient raised the right leg while standing on the left leg. Reflexes, sensibility tests, and Roentgen examinations were negative. A diagnosis of sacroiliac strain was made. After fixation of pelvis and rest in bed patient improved greatly.

Pelvic lesions comprise the most striking causes of sciatica symptoms of which we can cite the following conditions: blastomycosis combined with pelvic abscess, 1 case; retroperitoneal sarcoma, 1 case; carcinoma of pelvic bones secondary to cancer of breast, 2 cases; carcinoma of uterus and pelvis, 1 case; thrombophlebitis of common iliac vein, 1 case; retroperitoneal abscess, 1 case; ischiorectal abscess, 2 cases; fibroid of uterus, 2 cases; retroversion, 1 case; gonorrheal prostatitis, 1 case. Of these cases which were all admitted as sciatica, the most remarkable and unusual are the cases of blastomycosis and retroperitoneal sarcoma.

P. K., a German laborer, age 32, complained of constant dull, aching pain in right leg of about three weeks' duration, beginning in the right hip and gradually extending down the leg, hoarseness and sensation of dryness in the throat, occasional cough, loss of strength and weight, night sweats, nocturnal urination, and dysuria. His appetite was good and the bowels were regular. Patient came to Chicago eight months ago, previous to which time he had been a farm laborer. The present illness was first noticed three months before entrance. Family and venereal histories were negative. He used tobacco and alcohol moderately. Physical examination revealed evidences of a pulmonary tuberculosis, although tubercle bacilli were not found in the sputum. An ulcer the size of a silver quarter was present on the right forearm and had been there for one year. Temperature fluctuated from normal to 101°; pulse 94 to 130, and was weak; respiration 20 to 32. The patient died after the lapse of a short time in the hospital. Necropsy by Dr. H. G. Wells demonstrated a pulmonary and laryngeal tuberculosis, associated with a systemic oidiomycosis involving especially the lungs, prostrate, and sacroiliac synchondrosis. "In the retroperitoneal tissue of the pelvis there was a fluctuating mass filled with purulent material extending from the promontory of the sacrum down through the right obturator foramen, the anterior surface of the sacrum was eroded, and the periosteum was necrotic. A pocket of soft eroded bone replaced the right sacroiliac joint. The nerve trunks of the plexus were eroded. The process continued through the obturator foramen and about 6 to 8 cm. distally into the thigh, extending upward to the upper margin of the iliac bone. The left sacroiliac articulation was not involved. Microscopic study of the tissues proved that the case, which clinically and at the autopsy appeared to be tuberculosis, was one of generalized oidiomycosis associated with pulmonary and laryngeal tuberculosis."

A complete report of the case was presented to the Chicago Pathological Society by Dr. H. G. Wells. The sciatica symptoms in this case were evidently due to the involvement of the sacral plexus.

J. D., Swiss teamster, 43 years of age, married, complained of a constant aching pain in the left calf of six months' duration; the pain has gradually extended to the left hip in past two months; it keeps the patient awake at night, but is not aggravated by walking. Appetite is good and the bowels are regular. The history is otherwise negative. Upon physical examination a large, firm mass was found on left side of prostate adjacent to rectum. This mass was not tender and was not evident on abdominal palpation. There was marked atrophy of left thigh, which was 10 cm. smaller in circumference than right thigh. Pain in left hip joint on manipulation. Tenderness of calf muscles. Steppage gait with left foot. Reflexes and sensation, urine, and blood examinations were negative. Wassermann was positive on spinal fluid, but the latter was otherwise negative. Roentgen examinations showed bony changes in the left ischium. A diagnosis of retroperitoneal sarcoma was made and confirmed by operation which was done later on to relieve urinary retention and intestinal obstruction which developed subsequently. The sarcoma was found in the left side of the true pelvis pressing upon the rectum and urinary bladder. In this case a "sciatica" was a symptom of a retroperitoneal sarcoma.

Hip-joint lesions may be the cause of sciatica though they are not as frequent in this classification as Bruce[3] intimates. The following pathological conditions of the hip-joint have been registered in the hospital records: Tuberculosis of the hip-joint, 8 cases; chronic arthritis of the hip-joint, 6 cases; arthritis deformans, 6 cases; acute articular rheumatism, 3 cases; subacute articular rheumatism, 3 cases; chronic articular rheumatism, 3 cases; luetic arthritis of hip, 1 case; gonorrheal arthritis of the hip, 2 cases; contusion of the hip, 1 case; relaxation of the ligaments of the hip after an old dislocation, 1 case; old fracture of the neck of the femur, 2 cases.

Diverse conditions affecting the lower extremities and causing sciatica manifestations have been classified in the last group. The records reveal: Intermittent claudication, 1 case; erythromelalgia, 1 case; metastatic carcinoma of the upper femur secondary to breast cancer, 1 case; thrombosis of the femoral vein after typhoid fever, 1 case; acute periostitis of the femur, 1 case; endothelioma of the sciatic nerve, 1 case; bullet wound of the sciatic nerve, 1 case; varicose veins, 3 cases; pes planus, 4 cases.

There were also numerous cases of polyneuritis which were diagnosed primarily as sciatica. Of these, 16 were of alcoholic origin, 1 of diabetic, and 1 of typhoid. One case of traumatic neuritis was recorded. In reference to this group it may be proper to point out that Quénu[9] has stated that sciatica may be due to pressure of varicose veins upon the sciatic nerve in the neighborhood of the sacrosciatic foramen.

From the classification of the groups mentioned above one can see how numerous the causes of so-called sciatica may be and how imperative it is in any case of sciatica to attempt to locate the source of these pains. This is not only absolutely necessary for the sake of a mere diagnosis but, what is more important, for the purpose of making a correct prognosis and of instituting proper treatment. Undoubtedly there are many more etiological factors instrumental in causing what is commonly diagnosed as sciatica, but we have attempted to point out merely those conditions which have occurred in the various services of the Cook County Hospital in the past four and one-half years.

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Treatment of Severe Hyperemesis Gravidarum.—Weigh the patient, put her to bed, test urine for acetone, take blood pressure. If she loses flesh, has acetonuria, low blood pressure, or fever proceed at once to abortion. If she is normal, give liquid nourishment in small quantities and often, ice-cold if necessary. Give stomach lavage for the mental effect.—Jung in *Deutsche medizinische Wochenschrift.*

Death Rate in Mexico City.—According to the official bulletin this rate for last March was about 40 per 1,000 inhabitants. The natives suffer at the same period from respiratory and enteric conditions. Typhus is prevalent and violent deaths numerous.—*Boletin del Consejo Superior de Salubridal.*

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE RELATIONSHIP OF THE DUCTLESS GLANDS TO DISTURBANCES OF THE OPTIC NERVE.

OF the ductless glands it is the hypophysis, or pituitary body, which plays a considerable and significant rôle in the genesis of disorders of function of the optic nerve. For this reason a brief review of the optic nerve findings in disease (hypertrophy or tumor formation) of the hypophyseal body is very instructive. The mechanical effect of enlarged hypophysis may result in the production of heteronymous hemianopsia and the hemianopic pupillary syndrome. Complete temporal hemianopsia suggests disease of the hypophysis. But real diagnostic value should also be given to such findings as heteronymous defects of a quadrant or octant or even of the color sense alone, as well as to heteronymous scotomata.

As Schirmer (*Journal of Nervous and Mental Diseases*, October, 1916) mentions, injury to the nerve fibers paralyzes the peripheral fibers first, because they have the poorest function. It is very important to know that the color sense may be disturbed or even lost in many cases before white perception has shown any abnormalities. As a consequence there may be concentric contraction of the visual fields for color without the fields for white perception showing any change from the normal outlines. So great is the power of the nerve fibers to resist destruction and to recover when the pressure is relieved before actual destruction has taken place, that in choked disc, in case decompression has been performed, it is not surprising to find that there is a period of amblyopia for a week or two or more, soon to be followed by useful vision. In these cases, furthermore, it has been discovered that if the hemianopsia is complete or almost complete the hemianopic pupillary reaction is generally found present.

Pressure atrophy of the optic nerve may exist, to be sure, without evidence of hypersecretion or hyposecretion, as frequently occurs in such conditions as pregnancy, extirpation of the thyroid, infectious diseases, and atrophy of the gonadal system. Schirmer observes that the optic nerves may be affected by the direct chemical action of excessive ductless gland secretion, as in excessive secretion of the thyroid in cases of Graves' disease and possibly in some cases of pituitary hypersecretion. In some cases inflammation, in other instances atrophy may result.

Again we must state that in hypophyseal pressure upon the optic chiasm the color fields may be distorted or lost before similar changes have taken place in the white fields, and hence bitemporal hemichromatopsia may occur early in pituitary disease (as in acromegaly). The lesson to be learned from this point is that one should avoid the error of pronouncing the fields of vision normal because the white fields are normal, for, if the color fields be tested first, the abnormality in this connection may be noted and early pressure upon the fibers of the optic nerve thus diagnosed. In all of our examinations of the disc and the surrounding structures we should hold well in mind the fact that from the examination of the eye alone we cannot and need not make a diagnosis of the etiological basis of the condition found in the optic disc. Here the laboratory worker, the neurologist, and the ophthalmologist should co-operate whole-heartedly and for the best interests of the patient.

THE TREATMENT OF GONORRHEA BY ELECTROLYSIS.

SOMETHING over two years ago we called attention to the use of electricity in the abortive treatment of acute gonorrhea, our remarks at that time being based upon an article by G. Li Virghi of Naples, who reported that for about two years he had used the method which he described in his paper and that during that time he had treated 92 cases with 100 per cent. of cures. Some of Li Virghi's results seemed truly remarkable, rapidity of cure being an outstanding feature in most cases; and in our concluding paragraph we said that if his claims were verified by other observers a great step forward would have been made in the treatment of this treacherous disease.

The verification which we considered to be necessary now seems to have been furnished, for Charles Russ of London (*The Practitioner*, September, 1916) reports his results in the treatment by electrolysis of 100 cases of gonorrhea, 69 of which were of the acute and 31 of the chronic variety. His confirmation of the value of electrolysis in the treatment of acute gonorrhea is all the more convincing since it seems certain that these two observers, one in Naples and the other in London, conceived the idea of employing electrotherapeutic measures in the treatment of acute gonorrhea entirely independently of each other. Li Virghi's article was published in Paris, April 15, 1914, but Russ appears to have priority of publication, for he published an article in the *Lancet* of February 14, 1914, referring to his research work from 1909 to 1914 on electrolysis as a means of destroying bacteria and also detailing the results of his treatment by electrolysis of various types of clinical cases, among which were two cases of gonorrhea. In the *British Medical Journal*, June 12, 1915, Russ reported having treated 28 cases of gonorrhea by his method; while in a book entitled, "A New Treatment for Gonorrhea" (Lewis & Co., London, 1916) he gives

his method in detail and refers to the treatment of 70 cases. With the completion of a series of 100 cases Russ feels that he should again bring the subject to the attention of the profession, for on the basis of his experience he considers that his method marks a distinct advance in the treatment of this disease. Further confirmation of the value of electrolysis in the treatment of gonorrhea is furnished by Major E. G. Ffrench in the course of an article entitled "The Treatment of Venereal Disease in the Army" (*The Practitioner*, May, 1916). He states that some ten cases of gonorrhea have been treated by Russ' method at the Military Hospital, Rochester Row, S. W., London, and that the treatment seems worthy of every investigation and will be very thoroughly tested.

In Russ' series of 69 acute cases the average number of treatments required was 16, with a minimum of 5 and a maximum of 34; with 31 chronic cases the average number of treatments was 20, minimum 14, and maximum 35. In Li Virghi's series of 92 cases there were no complications which he thought should be attributed to the method, though there were some which he considered due to forcible injections made by the patients before consulting him. In Russ' series of 100 cases, acute and chronic, complications occurred in six patients as follows: epididymitis, 4; ophthalmia, 1; arthritis, 1. In the latter case the patient's doctor had incised a periurethral abscess the day before sending him for treatment by electrolysis; hence it is a question as to which is responsible for the metastatic infection. No cases of stricture have been known to follow electrolysis in this series.

For details as to the methods of procedure the reader is referred to the various articles by Li Virghi and Russ that have already been quoted. Suffice it to say that there is nothing at all complicated about the treatment, and as the results were so remarkably good it would seem that the time has come when electrolytic treatment should be thoroughly tested in the clinics of some of our own genitourinary specialists.

TYPHUS FEVER.

Typhus fever, one of the oldest diseases of which record can be found, was up to two years ago an almost forgotten malady, at any rate, as an epidemic. True, in many countries, in which sanitation was backward, and especially where domestic hygiene was lacking, typhus was endemic, and, as First Lieut. Horace C. Hall points out in the *Military Surgeon*, November, 1916, in the Balkans, Turkey, Persia, Arabia, China, and in Asia generally typhus has been endemic since the earliest of folk-lore legends. And within the past three centuries, along lines of commercial intercourse and travel, the disease has become largely endemic in Russia, Poland, Austria, Germany, and Latin America. But, as said before, there has been no serious epidemic of typhus fever until war conditions spread the disease through Serbia, and disturbed economic conditions in Mexico disseminated the infection far and wide in that country. It is a disease which is spread by neglect of proper sanitary precautions and conditions favorable to vermin also favor the spread of typhus. In fact, it has been demonstrated that the disease may be transmitted from man to monkey and therefore presumably from man to man by means of the common body louse. While admitting that the body louse does convey the infection and that the head louse and bedbug may be regarded as suspicious conveyers, Hall thinks that it has not been conclusively proven that vermin are the only means of conveying the disease. The predisposing causes of typhus are famine, filth, overcrowding, and conditions favorable for the thriving of vermin.

The main means of prevention are to find and kill the lice and bugs, a difficult task indeed when dealing with a primitive and dirty people such as the Mexican peons, the class of individuals among whom Hall gained his experience.

With regard to treatment it was found that immunizing vaccine, so far available, had not been of any material service. Hall controls the fever with baths, the delirium with bromides and an ice-cap, and gives egg albumin in water, even though it has to be placed in the stomach through a tube passed through the nose. He gives large broken doses of calomel, followed by magnesium sulphate and high enemata which are left in as long as possible. If the urine is scanty, these enemata are of physiological salt solution. He begins the strychnine as a matter of routine, to combat the muscular weakness which is certain to follow. An ice-cap is kept on the patient's head and he is bathed not oftener than four times within the twenty-four hours. When the crisis is approaching Hall gives hypodermic injections of camphor in oil, alternated with spartein sulphate, to tide over the period.

The only specific complication noticed by this observer is that of gangrene of the leg, most commonly the left, below the seat of election for amputation just below the knee. It is a dry gangrene, extremely painful, and slow to show the line of demarcation. In 95 per cent. of such cases it is best to amputate, as soon as the line of demarcation is indicated. Hall remarks that in 25 per cent of the educated, high-strung civilized American patients he has treated for this disease he has observed a form of toxic insanity complicating the final outcome of the cases. This is due, no doubt, to the continued high fever and severe toxic poisoning. This insanity is not transitory, that is to say, that while within a few weeks the reasoning power returns to nearly normal, there remains a mild delusional insanity for a considerable period.

Sublingual Medication.

One method of administering medicines has, rightly or wrongly, received very little attention from the medical profession. This is the practice of placing a dry tablet containing the drug beneath the tongue in the sublingual space and having the patient hold it there without swallowing until the taste disappears. This method is strongly recommended by Paulson (*Practitioner*, 1916, XCVII, 389) and is enthusiastically endorsed by Cooper (*Ibid*, page 493). These writers are apparently of the opinion that absorption from the sublingual space takes

place more quickly than from any other portion of the body, though probably they would admit that medication injected intravenously would exert its action more rapidly. It is difficult to get information on this question. Most of the standard works on physiology either fail to mention the mouth as a place where absorption may occur or else say that its structure is unsuited for absorption. Indeed, when one considers that the submaxillary and sublingual glands both empty their secretions into the sublingual space it is difficuult to see how absorption in this area could be very rapid or complete. It should not be a very difficult matter to investigate this question experimentally both in man and in animals. Only in this way can we obtain exact information. The method offers so many advantages that it would be well worth investigation. The authors claim that it surpasses hypodermic injection in rapidity and effectiveness and it certainly does excel in ease and simplicity. The doing away with the necessity for the sterilization of a hypodermic syringe would be a great help to all of us and we hope that the method will be thoroughly tried out and its usefulness or worthlessness fully demonstrated.

A New Sign of Sciatica.

None of the evidences of sciatica, such as pain over the nerve, Lasègue's sign, muscular atrophy, modifications of electrical reactions, scoliosis, elevation of the heel in walking, fibrillary contractions of the leg muscles, clonus of the glutei, abolition of the Achilles reflex, lessening of the gluteal fold, etc., is in itself pathognomonic of the disease in question, and in a given case some of them will be absent all the time. Hence, a true pathognomonic sign would prove of great value in cases where rapid and certain diagnosis is necessary. Pisani believes that he has discovered such a sign in connection with the behavior of the abdominal reflex on the affected side (*Malpighi*, July 1-15). He has found this to be the predominating symptom in every case thus far examined. It consists in the fact that the reflexes are less pronounced or absent on the sound side. The superior, median, and inferior reflexes should all be tested. The patient lies on his back with his abdominal walls fully relaxed, and the limbs extended symmetrically. The predominance of the reflex on the affected side is not in itself strictly pathognomonic, but is found in over 80 per cent. of all patients examined; while the presence of this phenomenon in non-sciatic cases means some condition which could never be confounded with sciatica, so that the sign has all the force of actual pathognomonic symptoms. As already stated no negative results have yet appeared.

Cerebrospinal Meningitis in Geneva.

Historians teach us that epidemic cerebrospinal meningitis is first known to have occurred in the spring of 1805, when it prevailed to a notable extent in Geneva. In the following year, Vieusseux, a Genoese physician, wrote the first account of the new malady. The number of fatalities inside the city walls was 33. The first cases occurred outside the walls, in one of the forlorn suburbs. According to Mallet there has never been another epidemic of the disease in Geneva up to the present time (*Revue médicale de la Suisse Romande*, July 20.) Sporadic cases occur, but have never shown cumulation, nor could any case be imputed to contagion. The vital statistics go back to 1871, and from that year to 1900 but nine cases were reported, all fatal. From 1900 to 1910 there were 25 cases, the increase having been associated partly with the diagnostic enrichment of lumbar puncture. From 1910 to 1916 the number of cases was 21, and 6 of these occurred last June, while the total for 1915 was 9. In other words, there has been an incidence of 15 cases in the past 18 months. To offset these figures there were no cases in 1911 and 1913. A further analysis showed the existence of maxima in 1904, 1908 and 1914-15, periods which correspond to the great military mobilizations. The great fatality of the disease has abated since 1910, when serotherapy was introduced. Evidence has accumulated that the disease is spread by carriers. It seems extraordinary at first sight that a disease which first appeared in epidemic incidence in a close community, and which has appeared sporadically in the latter for at least 45 years, has never since exhibited epidemicity. The increased incidence of the past 18 months may indicate the approach of an epidemic, but Mallet thinks it more likely that it will be succeeded by a sudden decline.

News of the Week.

The New York Diagnostic Society, having for its object the establishment of institutes for group diagnosis, was recently organized in New York, partly, at least, as the result of a suggestion made by Dr. Charles H. Mayo of Rochester, Minn. Speaking before the Catholic Hospital Society at Milwaukee a short time ago Dr. Mayo expressed the opinion that the one great present day need in hospital advancement was a hospital devoted entirely to diagnosis. The officers of the society are: *President*, Dr. M. Joseph Mandelbaum; *Viee-Presidents*, Dr. De Witt Stetten and Dr. Otto Hensel; *Treasurer*, Dr. Julius Auerbach; *Secretary*, Dr. Monroe Aünstler.

Pasteur Exhibit.—In connection with the meeting of the American Association for the Advancement of Science in New York during Christmas week preparations are being made for an exhibition of objects relating to the work of Louis Pasteur. Letters, manuscripts, pictures, microscopic preparations, and other material are desired by the committee in charge, and it is requested that any one willing to loan such exhibits communicate with Prof. C.-E. A. Winslow, American Museum of National History, Seventy-seventh Street and Central Park West, chairman of the subcommittee, or with Prof. J. G. Hopkins, College of Physicians and Surgeons, 437 West Fifty-ninth Street, New York.

War on Heart Disease.—Following the organization of the Association for the Prevention and Relief of Heart Disease, the New York Post-Graduate Hospital recently announced the formation of a special committee to aid the work of its cardiac department. The committee will assist the visiting nurses and the social service workers, who now visit the heart patients in their homes, see that they are properly cared for and aid them when necessary in finding work suitable to their physical condition.

New Home for Nurses.—Plans have been filed with the New York Building Department for the erection of a seven-story fireproof home for nurses of the New York Eye, Ear, and Throat Hospital. The home will be located in the rear of the hospital building, with a frontage of 125 feet on the north

side of Sixty-third Street. It is estimated that the cost will be $275,000.

Street Accidents.—During the month of November, 1916, there occurred 65 deaths in traffic accidents in New York City, an increase of 19 over the number for November, 1915. Of these, 42 fatalities were due to automobile accidents, as compared with 18 a year ago. Of those killed, 32 were children. In the State outside of New York City, during the month 37 persons were killed by automobiles, 4 by trolleys, and 4 by wagons, a total increase of 14 over the figures for last year. In New Jersey, the figures for the month were 20 persons killed by automobiles and 4 by trolleys and wagons. The Safety First campaign needs reviving.

Personals.—Dr. Abraham Jablons of New York has been commissioned lieutenant-surgeon of the White Cross Hospital and Relief Association.

Dr. M. Joseph Mandelbaum was the guest of honor at a dinner given by the New York Diagnostic Society in the Astor Gallery of the Waldorf-Astoria on Tuesday evening, December 5.

Presentation of Dr. Raymond's Portrait.—On Monday, December 4, the graduating class of the Long Island College Hospital presented to the college a photographic portrait of the late Dr. Joseph H. Raymond, formerly secretary of the Faculty and professor of hygiene. Dr. John D. Rushmore made the address of acceptance.

Southern Medical Association.—At the annual meeting of the association held in Atlanta, Ga., on November 16 and 17, Dr. Duncan Eve, Nashville, Tenn., was elected *President*, and Dr. Stewart R. Roberts, Atlanta, Ga. and Dr. Bransford Lewis, St. Louis, Mo., first and second *Vice-Presidents* respectively. Dr. Searle Harris, Birmingham, Ala., was re-elected *Secretary-Treasurer*, and editor of the *Southern Medical Journal*. Memphis was selected as the next place of meeting. Announcement was made at the closing session that the sum of $10,000 had been subscribed to pay off the indebtedness on the *Journal*.

Penobscot County (Me.) Medical Association.—The sixty-second annual meeting of this society was held at Bangor on November 16, when the following officers were elected: *President*, Dr. William P. McNally, Bangor; *Vice-President*, Dr. J. B. Thompson, Bangor; *Secretary-Treasurer*, Dr. Harris J. Milliken, Bangor.

Obituary Notes.—Dr. CHARLES LOUIS BEIL of New York, a graduate of Bellevue Hospital Medical College, New York, in 1898, and a member of the Medical Society of the State of New York and the New York County Medical Society, died on November 30, aged 40 years.

Dr. HENRY JONATHAN DEARBORN of Mount Sterling, Ill., a graduate of Rush Medical College, Chicago, in 1888, died at his home on October 29, from cerebral hemorrhage, aged 51 years.

Dr. FRANK KERRICK GREEN of Louisville, Ky., a graduate of the Medical Department of the University of Louisville, in 1899, died at Perryville, Ky., on October 26, aged 46 years.

Dr. ROMEO O. KEISER of Columbus, Ohio, a graduate of Ohio Medical University, Columbus, in 1898, and of the Cleveland-Pulte Medical College in 1899, died at his home on November 1, aged 46 years.

Dr. JOHN T. DUNN of Pasadena, Cal., a graduate of the Medical School of the University of Minnesota, Minneapolis, in 1904, died on October 26, aged 37 years.

Dr. JOHN EDWIN WALKER of Thomaston, Me., a graduate of the Medical School of Maine, Portland, in 1884, and a member of the Maine Medical Association and the Knox County Medical Society, died on November 22, aged 58 years. Dr. Walker was State prison physician of Maine for twenty-six years.

Dr. WILLIAM FINDER, JR., of Ballston Spa., N. Y., a graduate of Long Island College Hospital, Brooklyn, in 1882, and of Columbia University College of Physicians and Surgeons, New York, in 1883, died at his home on November 20, aged 61 years.

Dr. HENRY SELDEN NORRIS of New York, a graduate of New York University Medical College in 1876, and a member of the American Medical Association, the Medical Society of the State of New York and the New York County Medical Society, and consulting specialist at Bellevue Hospital, died at his home on November 19, aged 69 years.

Dr. ABNER HAYWARD of Mount Clemens, Mich., a graduate of Cleveland University of Medicine and Surgery in 1866, died at his home on October 28, from cerebral hemorrhage, aged 86 years.

Dr. DAVID JOHNSON CULVER of Harrisville, N. Y., a graduate of the University of Vermont, College of Medicine, Burlington, in 1881, and a member of the American Medical Association, the Medical Society of the State of New York, and the Lewis County Medical Society, died at his home on October 29, from arteriosclerosis, aged 60 years.

Dr. WILLIAM MCMANN of Gardner, Ill., a member of the Illinois State Medical Society and the Grundy County Medical Society, died at his home on October 24, aged 78 years.

Dr. CECIL C. KIMMEL of Fort Wayne, Ind., a graduate of the Indiana Medical College, School of Medicine, of Purdue University, Indianapolis, in 1907, and a member of the American Medical Association, the Indiana State Medical Association and the Allen County Medical Society, died at the Lutheran Hospital, Fort Wayne, on October 18, from pneumonia, aged 34 years.

Dr. JOHN B. ARMSTRONG of Chicago, Ill., a graduate of the New Orleans School of Medicine in 1869, died at his home on November 8, from heart disease, aged 69 years.

Dr. JONATHAN HENRY WOODS of Brookline, Mass., a graduate of the Long Island College Hospital, Brooklyn, in 1880, and of Columbia University, College of Physicians and Surgeons, New York, in 1881, and a member of the American Medical Association, the Massachusetts Medical Society, and the Norfolk District Medical Society, died at his home on November 16, after a short illness, aged 66 years.

Dr. HARRY W. WEYANT of Philadelphia, a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1895, and a member of the Medical Society of the State of Pennsylvania and the Philadelphia County Medical Society, died at his home on November 2, from pneumonia, aged 47 years.

Dr. HIRAM M. WINN of Sterling, Okla., a graduate of the College of Physicians and Surgeons, Keokuk, in 1892, died at his home on October 16, aged 64 years.

Dr. WILLIAM G. DUBOIS of Camden, N. J., a graduate of the Hahnemann Medical College and Hospital of Philadelphia in 1880, died at his home on October 28, aged 59 years.

Dr. ALBERT PHILIP OHLMACHER of Detroit, Mich., a graduate of the Northwestern University Medical School, Chicago, in 180, and a member of American Medical Association, the Michigan State

Medical Society, and the Wayne County Medical Society, died at his home on November 10, aged 51 years.

Dr. Joseph Hammond Huston of Clintondale, Pa., a graduate of Jefferson Medical College of Philadelphia in 1866, and a member of the Medical Society of the State of Pennsylvania and the Clinton County Medical Society, died in the Lock Haven Hospital on October 26, from disease of the bladder, aged 78 years.

Dr. John W. Webster of Siloam Springs, Ark., a graduate of Missouri Medical College, St. Louis, in 1884, and a member of the Arkansas Medical Society and the Benton County Society, died at his home on October 21, aged 69 years.

Dr. Elmer G. Myers of Canton, Ohio, a graduate of Starling Medical College, Columbus, in 1889, died at his home on November 4, from rheumatic endocarditis, aged 53 years.

Dr. Edwin A. Lex of Irvington, Ky., a graduate of the Medical Department of Kentucky University, Louisville, in 1903, died in St. Joseph's Infirmary, Louisville, on October 26, from typhoid fever, aged 40 years.

Dr. Peter J. McCahey of Philadelphia, a graduate of Jefferson Medical College of Philadelphia in 1885, died at his home on October 22, from heart disease, aged 60 years.

Dr. Fenton D. Drewry of Virgilina, Va., a graduate of the Medical College of Virginia, Richmond, in 1898, and a member of the Medical Society of Virginia and the Halifax County Medical Society, died at the Sara Leigh Hospital, Norfolk, following an operation for appendicitis, on October 18, aged 39 years.

Dr. Asa M. Stackhouse of Moorestown, N. J., a graduate of the Hahnemann Medical College and Hospital of Philadelphia in 1868, died at his home on October 6, aged 72 years.

Dr. Richard Frederick Winsor of Omaha, Neb., a graduate of the University of Illinois, college of Medicine, Chicago, in 1906, and a member of the Illinois State Medical Society, the Nebraska State Medical Association, the Douglas County Medical Society, and the American Medical Association, died at his home on October 21, from pneumonia, aged 36 years.

Dr. Gilman Corson Dolley of Manila, P. I., a graduate of the Medico-Chirurgical College of Philadelphia in 1907, a member of the United States Army and resident physician at the United States Leprosarium Culion, Palawan, died in Manila on October 21, from pneumonia, aged 37 years.

Dr. Andrew L. Marugg of Spechts Ferry, Iowa, a graduate of the Northwestern University Medical School, Chicago, in 1898, died in the Mercy Hospital, Dubuque, Iowa, on October 31 from pneumonia, aged 42 years.

Dr. Oliver C. Ormsby of Rexburg, Idaho, a graduate of Rush Medical College, Chicago, in 1870, died at his home on October 26, from cerebral hemorrhage, aged 73 years.

Dr. Marvin Fisher Smith of Hampton, N. H., a graduate of Dartmouth Medical School, Hanover, N. H., in 1883, died at his home on October 31, aged 64 years.

Dr. Wade H. Chase of Rutland, Ohio, a graduate of the Starling Medical College Columbus, Ohio, in 1897, died at his home on October 8, from carcinoma, aged 56 years.

Dr. Louis Edward Gott of Falls Church, Va., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1861, and a member of the Medical Society of Virginia and the Fairfax County Medical Society died in the Georgetown University Hospital, Washington, on October 29, from prostatic disease, aged 76 years.

Dr. Lewis A. Burck of Frederick, Md., a graduate of Atlantic Medical College Baltimore, in 1895, and a member of the Medical and Chirurgical Faculty of Maryland and the Frederick County Medical Society, died in the City Hospital of Frederick on October 16, from cerebral hemorrhage.

Dr. John F. Maddox of Orlando, Fla., a graduate of the Eclectic Medical College, Cincinnati, in 1877, died in Edinburg Ind., on October 18, from cerebral hemorrhage, aged 71 years.

Dr. Henry D. Long of New York, a graduate of Johns Hopkins University Medical Department, Baltimore, in 1903, and a member of the American Medical Association, the New York State and County Medical Societies, and the New York Academy of Medicine, died at his home on October 22, from septicemia, aged 40 years.

Dr. William Lee McKibben of Amaranth, Pa., a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in 1869, died at his home on October 12, from injuries received by a fall, aged 79 years.

Dr. Horace William Johnson of Little Rock, Ark., a graduate of the Northwestern Medical College, St. Joseph, in 1886, died in a hospital in Little Rock on October 14 aged 64 years.

Dr. Merari B. Stevens of Defiance, Ohio, a graduate of the University of Michigan Medical School, Ann Arbor, in 1869, and a member of the American Medical Association, the Ohio State Medical Association, and the Defiance County Medical Society, died at his home on October 19, from heart disease, aged 73 years.

Dr. P. D. Spiron of Collinsville, Ill., a graduate of the National Medical University, Chicago, in 1898, died in his office on November 4, aged 50 years.

Dr. Henry L. Gosling of Washington, D. C., a graduate of George Washington University Medical School, Washington, in 1886, died at his home on November 1, aged 61 years.

Dr. Harriet D. W. Showers of Meridian, Miss., a graduate of Cornell University Medical College, New York, in 1900, died in Brooklyn, N. Y., on November 29, aged 47 years. Dr. Showers had been resident physician of the Women's College in Meridian for eight years.

Dr. John Halsey Benjamin of Riverhead, L. I., a graduate of Bellevue Hospital Medical College, New York, in 1876, and a member of the Medical Society of the State of New York, the Suffolk County Medical Society, and the Associated Physicians of Long Island, died on November 26, aged 61 years.

Dr. James O. Green of Long Branch, N. J., a graduate of Bellevue Hospital Medical College, New York, in 1866, died recently in Long Branch, aged 76 years.

Dr. George Douglas Ramsay of Newport, R. I., a graduate of Tulane University of Louisiana, School of Medicine, New Orleans, in 1896, and a member of the American Medical Association, the Rhode Island Medical Society, the Newport County Medical Society, and the Medical Reserve Corps, died at his home on November 27, aged 47 years.

Dr. O. J. Shepardson of Chester, Mass., died in the Springfield Hospital on November 24, aged 64 years.

Obituary.

ALICE MITCHELL, M.D.

WOODSTOCK, INDIA.

DR. ALICE MITCHELL, principal of Woodstock College, India, died after an operation for goitre, at the Augustana Hospital, Chicago, Ill., on Tuesday, November 21, aged 54 years. Dr. Mitchell was born in Morristown, N. J., and was graduated from the Woman's Medical College of the New York Infirmary in 1885. She was appointed an interne in the Presbyterian Hospital of Chicago, Ill., and was the first woman in this country, if not in the world, to occupy the position of hospital interne on an equal standing with men physicians. On the maternal side she was the granddaughter of Dr. Charles Alfred Post of New York City, and possessed by inheritance a strong bent toward surgery. From her father, Rev. Arthur Mitchell, she inherited the initiative, executive ability, the strong faith, and zeal for missions which so characterized her work.

Her experience as a surgeon began at the time of the Haymarket riots in 1886, when explosive bullets were a new weapon in warfare, and many victims of these bombs were brought to the Presbyterian Hospital. During her term of service as interne she was admitted by special courtesy of Dr. Malcolm Gunn to his clinics at Rush Medical College, where the pitiable plight of women who were to be operated on with no member of their own sex present excited her sympathies, and she was able to induce the authorities to allow a nurse to accompany women patients to the clinic operating table—a custom since generally adopted. In 1895 she sailed for India as a missionary under the Presbyterian Board of Foreign Missions, and took the position of resident physician as well as that of an instructor at what was then Woodstock School. Besides the development of adequate care of the sick and preventive measures which reduced the sweeping epidemics which had formerly so often more or less disorganized the school work, her judgment and prompt action at one time checked the spread of cholera which had broken out in the adjoining village and threatened the school when a servant brought the infection there and died of it. As the years went on her time was more and more claimed by the educational and executive side of her work, although she never gave up her medical activities entirely, even when she was finally appointed principal of what is now Woodstock College.

Correspondence.

MEDICAL RESERVE CORPS, U. S. A.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In your editorial comment, issue of October 21, 1916 (Vol. 80, No. 17), you take the viewpoint always taken by the Medical Corps in regard to the Medical Reserve Corps, which relates to the large inactive list of those who contemplate service in time of war only, entirely ignoring the small body of Medical Reserve Officers who have devoted their life to the army active service.

For one reason or another, usually the age limit, they come in as contract surgeons for temporary service (some were captains and majors during the Spanish-American War and Philippine Insurrection with volunteer organizations) and preferring the service to civil practice have remained in on active duty in the Medical Reserve Corps. The inefficients have long ago been weeded out or resigned, and those who have continued on duty (liable at any time to be relieved from active duty) have emphatically made good or they would not have been retained. They are and have been used interchangeably on any duty with captains or majors of the Medical Corps, except that their lack of rank has generally given them the more undesirable stations, and at these stations the most undesirable quarters, as they take rank *after* all other first lieutenants in the army, and a second lieutenant is a rare bird at the present time.

They are the only officers in the army who received no benefit whatever from the recent legislation. The Dental Corps were jumped over the Medical Reserve Corps and given proper recognition, promotion, and retirement. The Veterinarians the same, and the Philippine Scout officers have promotion to captaincies with retirement (these were former enlisted men, and compared with the Medical Reserve Corps officers their educational requirements were trivial). Even the non-commissioned officers of the Hospital Corps gained two new grades of hospital sergeant and master hospital sergeant. The only corps absolutely ignored was the active list of the Medical Reserve Corps. That conditions of their service are unsatisfactory is amply testified to by the number of resignations and requests for inactive assignment among the newer men; the older ones with ten or more years of active service behind them have no practice to return to and so continue to render the same service for which their colleagues in the Medical Corps receive major's rank pay, and prospective retirement.

A bill has been introduced to correct this manifest injustice by commissioning the former contract surgeons who have been active Medical Reserve Corps officers since 1908 as captains in the Medical Corps, but unless the American Medical Association takes an interest in the matter as did the Dental Association for the Dental Corps, and the Veterinary Association for their men, nothing will come of it, and these trained officers of long and excellent service will be lost in the new medical section of the Officers Reserve Corps.

ONE OF THEM.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MEDICAL SOCIETY PRESIDENT'S ADDRESS—ROYAL SOCIETY OF MEDICINE—OBSTETRICAL SECTION—RENAL CALCULI—ACCIDENTAL HEMORRHAGE—ACUTE TOXEMIA OF PREGNANCY—CESAREAN SECTION WITH HYSTERECTOMY.

LONDON, November 4, 1916.

AT the opening meeting of the Medical Society of London's new session, announced in my last, the new president, Lieut.-Col. D'Arcy Power, F.R.C.S., delivered his address, taking as subject "John Ward and His Diary." This Ward was the vicar of Stratford-on-Avon, whose 16 notebooks are one of the prized possessions of the Medical Society. From them Dr. Severn's extracts made in 1839 have so far been the only authority, so that Mr. Power's further notes on them will be welcomed by all interested by our earlier contributions. They are not ordinary diaries, but would be rather classed as commonplace books of an author residing at Oxford from 1652 to 1660, at which time most of the original members of the Royal Society were also there

resident. Ward was intimate with many of them and seems to have assisted several in their work. His notes, therefore, may be regarded as of special interest as those of a resident graduate at a period of great importance in the university's history. William Harvey was there working with Dr. Bathurst on incubation. Dr. Willis was in practice near Christ Church, with his two assistants (Lower and Wren). Dr. Wallis, friend of Pepys, was working at the circulation of the blood. Barlow was studying oriental languages at the Bodleian. Ward went to London and studied medicine for a year or two, but eventually he entered the Church, and in due course became vicar of Stratford-on-Avon.

At the obstetrical section of the Royal Society of Medicine some interesting specimens have been exhibited and three papers read.

A lipoma of the broad ligament was shown by Dr. Griffith which weighed 13 pounds. At the operation it was found to be retroperitoneal and extended from the right broad ligament to the under surface of the liver. The capsule was incised and the tumor gradually enucleated from above downward. The chief vessels were found down in the pelvis, where the tumor had exposed the right side of the cervix and uterus. The cavity left was closed by a purse-string suture and the abdomen closed without drainage. Good recovery followed. The tumor was composed of adipose tissue and fibrous tissue-strands. Only two other specimens of lipoma of the broad ligament seem to have been recorded.

Dr. Hubert Roberts showed a large calculus of the ureter, removed by abdominal section. It weighed 275 grains. The patient, female, aged 30, had been in several hospitals from the age of 17 with symptoms which suggested renal calculus or tubercle. In 1914 patient was pregnant; after delivery she was not seen until June, 1916, when she was admitted to hospital. The stone was felt as a mass to the right of the cervix, painful to the touch, and fixed. Laparotomy was done and the ureter seen, much dilated and thickened. It was incised after temporary clamping, the stone removed, and drainage made by an opening in Douglas' pouch through to the vagina, uninterrupted recovery following.

A large vesical calculus, 3½ oz. in weight, was shown for Mr. Frank Belben. It had formed round a slate pencil, which the patient, a female of 17, had introduced into the urethra on account of irritation, and it had slipped into the bladder two years ago. It was discovered by cystoscopic examination and removed by suprapubic cystotomy. Another smaller stone was also found and removed at the same time. Some difficulty was met with the larger stone as the bladder had contracted round it and the pencil had ulcerated into the vesical wall, but this was overcome, removal completed, and the patient made a good recovery.

Dr. Hubert Roberts showed an instrument, the invention of the late Dr. Wallace, for opening Douglas' pouch per vaginam, during an abdominal operation.

Dr. Cuthbert Lockyer showed a series of calculi removed from four patients: (1) a small one from the upper ureter removed by abdominal section, incising the pelvis of the kidney, pushing the stone up to the incision, and extracting it. (2) Two calculi from lower end of ureter of a woman aged 63, who was under operation for a uterine fibroid and a solid ovarian tumor. The entire ureter was removed after clamping both ends. A perinephric abscess formed, which had to be opened and drained, somewhat prolonging convalescence. (3) A calculus from a patient from whom previously had been removed the uterus, part of the rectum, and part of the vagina. It had formed at the rectovaginal junction in consequence of an uteric fistula and was removed per vaginam. (4) A large calculus, 5½ inches in circumference, from a case of vesico-cervico-vaginal fistula following a difficult labor. It was removed during on operation for closing the fistula.

Some remarks on this case were made by Dr. H. Roberts, Mr. D. Drew, and Dr. Griffith, after which three papers were read: (1) "Concealed Accidental Hemorrhage with Intraperitoneal Bleeding," by Dr. McNair; (2) "Acute Toxemia of Pregnancy," with accidental hemorrhage treated successfully by cesarean hysterectomy, and (3) "Cesarean Section with Hysterectomy for Accidental Hemorrhage," by Drs. Oldfield, Hann, and Fletcher Shaw.

CANADIAN LETTER.

(From Our Special Correspondent.)

POLIOMYELITIS IN CANADA—COLONEL BRUCE'S REPORT ON CANADIAN HOSPITALS IN ENGLAND — NEW MILITARY CONVALESCENT HOSPITAL AT WHITBY, ONTARIO—MEETING OF THE CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS—MEETING OF THE SASKATCHEWAN MEDICAL ASSOCIATION—A CANADIAN SOCIETY IN PARIS—THE PROBLEM OF THE TUBERCULOUS SOLDIER—OPENING OF A CONVALESCENT HOME IN HALIFAX—PROHIBITION IN MANITOBA—OBITUARY.

TORONTO, November 18, 1916

POLIOMYELITIS, although not by any means prevalent in parts of Canada, is not extinct. New cases continue to crop up here and there. In Montreal and in other points in the Province of Quebec there are several cases. Indeed, the Ontario Board of Health have taken drastic steps to prevent the disease from being conveyed into Ontario. Dr. J. W. S. McCullough, Provincial Officer of Health, has sent the following notice to the railway companies: "Please take notice that the Provincial Board of Health of Ontario requires that all persons under sixteen years of age coming from points in the Province of Quebec to points within the Province of Ontario must have a medical certificate dated within 24 hours of the time of departure that they are in good health and have not been exposed to infantile paralysis. In addition to notifying the railway officials, Dr. McCullough has sent to Montreal Dr. P. J. Moloney, District Officer of Health, to make an investigation of conditions. If the situation seems to demand such a procedure, it is likely that special officers will be appointed to see that the railway companies are observing the order. As to the extent of the epidemic, if it may be termed an epidemic, in Montreal there is no very definite evidence. Official reports, however, show but ten cases.

Somewhat interesting testimony has been afforded as to the ignorance which prevails with regard to the manner in which poliomyelitis may be conveyed. It has been suggested that the disease was brought into Montreal by the agency of dogs from New York. This suggestion was rightly flouted by Dr. C. J. O. Hastings, Medical Officer of Health, who said that while the disease might be transmitted by domestic pets, dogs, and particularly big dogs, are not, as a rule, greatly petted by small

children. He pointed out that in taking precautions against the spread of infective poliomyelitis they were acting not so much on what they knew as on what they did not know.

Col. Herbert Bruce, Inspector General of the Canadian Medical Service, in the course of a report he has made recently with respect to the conduct of the Canadian hospitals in Great Britain and the care taken generally of wounded and sick Canadian soldiers in that country, criticizes the system in vogue inasmuch as there has been no medical inspection by the Canadian Army Medical Service of Canadian Soldiers in Imperial hospitals, and no efficient medical inspection of Canadian hospitals. As a consequence of this neglect Canadian soldiers are retained in hospitals in Great Britain, many of whom should have been returned to duty and others should have been returned to Canada, where they could have been more economically and efficiently treated. Other details of the present system are adversely commented on with regard to the question of segregation for Canadian soldiers, a point upon which particular stress has been laid in the report, opinions appear to differ considerably. However, after all it is a matter which rests almost wholly with the Canadian Government and the military authorities. If segregation is deemed to be to the best interests of the soldiers themselves and consequently to those of the country, then segregation should be introduced and established. New brooms sweep clean and perhaps new brooms were needed so far as the management of the Canadian hospitals in Great Britain were concerned.

The arrangement has practically been concluded whereby the extensive buildings and their equipment known as Whitby Institution for the Insane will be turned over to the Canadian Military Hospitals Commission for the treatment and care of returned soldiers during their period of convalescence. By this arrangement, it is understood, the Whitby Institution, as soon as the buildings already erected are ready for occupancy, will become the centralization point within the Province of Ontario for convalescent soldiers. This is in accordance with the policy of the Military Hospitals Commission to concentrate at a certain selected point within each province the work of caring for convalescent men returned from service overseas.

At the Whitby Institution 1,200 convalescents, or men suffering fram physical disabilities, total or partial, excepting, of course, men with tuberculosis, will be accommodated. The buildings, which are several in number, are beautifully situated on high ground overlooking Lake Ontario, and are especially well adapted in all respects to the purpose for which they will be used.

Slight reference was made in a previous letter to the fifteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis which was held in the Hôtel de Ville, Quebec, on September 12 and 13, under the presidency of Senator J. W. Daniel, M.D., of St. John, New Brunswick. The importance of the meeting, however, calls for a more extended account of its doings or rather the fifteenth annual report of the Executive Council is deserving of closer attention. The report was read by its energetic secretary, Dr. G. D. Porter of Toronto, to whose efforts, by the way, the success of the Association is largely due. Among the many statements of interest in the report is that in 1908 there were only 250 special beds for patients suffering from tuberculosis available in the whole of Canada. In 1911 there were 900, while at the present time there are 2,000 among the various special hospitals and sanatoria throughout the Dominion. The report goes on to state that the necessity for this increase, which is as yet far from sufficient, is most apparent and as the number of returned soldiers who have developed tuberculosis at the front are added to the number already in the country, the need for further accommodations will be still greater. The fact must be borne in mind that the strenuous trying life of the trenches, together with the continual nervous and physical strain of this most modern warfare, the prolonged exposure, and the effects of inhaling the German gases will inevitably in many instances bring on tuberculosis to those predisposed. All these untoward happenings will lower vitality and leave the system open to the invasion of the germs of tuberculosis, or what is far more frequent, will arouse and develop latent seeds of the disease. Colonel Primrose has already reported from the front that in a large percentage of the cases examined, which proved to be tuberculous, it was obvious that an active condition had been engrafted upon a healed lesion. Consequently, there is little doubt that the measures of relief for the tuberculous instituted in Canada in the past will be most useful in the future when a larger number of such cases may be looked for.

The ninth annual meeting of the Saskatchewan Medical Association took place at Regina on July 18 and 19. The meeting was very successful. Dr. George P. Bawden of Moose Jaw delivered the presidential address. Dr. Myers of Saskatoon read an instructive paper entitled "The Returned Disabled Soldier," in which, referring to the problem of providing for the disabled soldier on his return to Canada, Dr. Myers expressed the opinion that the solution of this problem should not be left entirely to the Military Hospitals Commission, but that each individual should take his share of the responsibility. Up to July 13, 1916, 236 disabled soldiers had returned to Saskatchewan and of these 150 required further medical treatment. Dr. Myers thought, when feasible, that crippled soldiers should resume their former employment, and should not be segregated or gathered in large colonies. Occupations in the open, such as market gardening and poultry raising, should be made available for those suffering from arrested tuberculosis and nervous diseases, and small sheep ranches might be established on land given by the government, the money for the purchase of the flock being advanced. He further suggested that a census be taken of all employers of labor in the province and of positions that are or could be made available in the various services of the government. The paper met with the approbation of those present at the meeting and at the business session the following resolutions were passed: "Resolved, that it is the sense of the association in session that the government conduct a census of all available positions of employment within its service and among the employers of labor in the province, with a view to the employment of disabled and unfit returned soldiers. Also that the Saskatchewan Medical Association feel constrained to offer their services to the government for use in the solution of these problems in whatever way the government may see fit."

A Canadian society composed of nurses and medical men has been formed in Paris and meets once a month for the discussion of scientific and medical questions. The first meeting took place on Sep-

tember 4, in the great theater of the Sorbonne under the presidency of Professor Landouzy, the dean of the Paris Faculty of Medicine.

Reverting to the question of the tuberculous soldier, it may be said that so far as those of the Canadian force are concerned, it is regarded by the Military Hospitals Commission as serious. On September 15, Dr. Baldwin of Saranac Lake, Drs. Parfitt and Elliott of Muskoka, and Dr. Byers of Ste. Agathe, met some of the Commissioners to discuss the matter. It was reported that there are at present about 397 soldiers under treatment in the various sanatoria for tuberculosis throughout the country. Nearly 60 per cent of these men have never been overseas. Together with those from overseas and cases which develop in the camps here it is computed that in the spring there will be in the neighborhood of 800 cases to be provided for. As mentioned before in this letter, the accommodation for the tuberculous is fairly good in Canada but not adequate for the many extra cases due to the war. Therefore, arrangements must be made at once to provide for the care and treatment of a large number of tuberculous soldiers.

A convalescent home, known as the Clayton Home, presented by Mr. W. J. Clayton of Halifax, has been opened recently in Halifax, N. S. The event is of particular interest as it is the first institution to be established in Canada for the definite and sole purpose of the educational, vocational, and physical training of disabled soldiers. Statistics got together by Mr. J. N. MacLean, chief of the license inspectors in the province of Manitoba, appear to show that the vigorous enforcement of the Temperance Act there is producing splendid results. Drunkenness is said to have been reduced by 80 per cent.

Dr. Gilbert Tweddie of Toronto died on August 23, in the ninetieth year of his age. He was born in Dumfrieshire in Scotland.

Dr. F. D. W. Bates of Hamilton, a well-known specialist in diseases of the eye, ear, nose, and throat, died after a short illness on August 25.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 23, 1916.

1. The Physically Defective. Edward O. Otis.
2. Fractures in a Base Hospital. Frederick A. Coller.
3. Speculations Regarding the Pancreas and Metabolism in Diabetes. Hugh P. Greeley.
4. A Report of Three Cases of Typhus Fever. M. G. Berlin.

1. The Physically Defective.—Edward O. Otis, like a great many others, wonders whether any of us are mentally perfect, and suggests that most of us have a mental bias. Fortunately, the "weakest spot" in the majority of men does not incapacitate them for a man's career in the world. Only some marked and glaring physical deviation from what is considered the normal places a person in the category of the physically defective, and this class is what Otis now considers. Mind will triumph over matter, and when the will power is intelligently directed and grimly determined it will make a defective body do its bidding. The men and women, however, who have achieved marked distinction in spite of acquired or congenital physical defects are the exception, for besides the will to succeed, and an exceptional mind, they have usually enjoyed exceptional opportunities for education. Not so with the great mass of the physically defective; but granted that they are of sound mind, much is to be hoped for in their care. The majority can be trained to become self-supporting and to employ the faculties that remain to the best advantage, and thus discount their handicaps. The legitimate duty of the State is to provide for the welfare of its people; and each State must decide for itself in what way and how far it will and can do this. Two fundamental objects are the duty of every well-ordered State: First, to protect its citizens from injurious influences, such as contagious diseases, by controlling pure food, factory conditions, and child labor, etc. Second, to afford an opportunity for development, equality, freedom, and the pursuit of happiness, which is supposed to belong to all in this country as a birthright. The public has largely taken this matter in hand and provided in many cities and States proper measures for the supply of these benefits for the defective as well as the normal individual. While discussing the situation with reference to all defectives, Otis is especially interested in the situation with regard to the crippled and deformed, for whom the States do not appear to have made equal or adequate provision, although this class probably largely outnumbers the other two classes. How many crippled children and adults there are in the United States no one knows, for no census of them has ever been taken. Dr. Orr estimates the number as 259,000, many of them growing up illiterate and without training. The State should supply for these defectives schools and industrial training, whereby they could be made self-supporting and independent instead of a burden. There are only five institutions for crippled and deformed children maintained entirely by State appropriations, one each in Massachusetts, New York, and Nebraska, and two in Minnesota. Some of the similar institutions receive public aid but are controlled and administered by private boards. Otis makes mention of several institutions, especially the Massachusetts Hospital School, maintained by an annual State appropriation of $80,000. The crippled children in the rural districts need help in this direction, and the only institutions meeting this demand are the State institutions of Massachusetts, New York, Minnesota, and Nebraska. At present only about 5,000 of these defectives are being cared for. Apparently they do not make the same appeal to one's sympathies as do the blind, or deaf and dumb. Contrary to this state of affairs, more has probably been done for the blind and deaf than for any other one class of persons. Dr. Alexander Bell showed that there was a minimum of 64,763 blind persons in the United States, of which 8,000 were under twenty years of age. There are forty schools for the education of the blind in the States, with a census of 4,720 individuals; while the 43,812 deaf persons, ninety per cent. of whom became deaf before their twentieth year, many through accident and disease, are taken care of in every State except New Hampshire, Nevada, and Wyoming. Otis makes a plea for the care of individuals who have been made physically defective through cardiac, joint, and other infirmities; that public recognition and provision be made for them in order that they may be able to do useful service through efficient and happier lives.

3. Speculations Regarding the Pancreas and Metabolism in Diabetes.—Hugh P. Greeley offers his ideas on this subject in the nature of a preliminary statement. In discussing it he says that the work of the pancreas, or of its internal secretion, is almost as continuous as the heart-beat, and that almost all the organs of the body are provided with great reserve power; experimentally, one-eighth of a pancreas, or less, is usually sufficient to prevent the onset of diabetes. There is undoubtedly a differing pancreatic function in all of us, varying in the same way as our mental capacities vary; our pancreases are "geared" to a certain maxi-

mum metabolic activity and endurance, and the relation of functional capacity to total metabolism is a mathematical one. Supposing the normal figures are represented by 4/4 pancreatic capacity, covering a metabolic activity of 60 kilos body weight: If the body weight is increased by 40 kilos, the total metabolism requirement would be increased and the functional capacity relatively reduced 66 per cent. The amount of reserve power would determine its sufficiency. Failure of compensation would mean diabetes. In obesity, a similar condition is present, since it may be one of abnormal metabolic function, and is closely related to diabetes. An enormous increase in body weight so increases the total metabolism that the pancreas succumbs to the strain and diabetes ensues. In an opposite way, influences which reduce or retard metabolic activity benefit diabetes. In speaking of the relation of age to diabetes, Greeley shows that diabetes is the severest in infancy and youth and mildest in old age. The remarkable variations in sugar tolerance in the same diabetic individual has been suggested to argue the functional character of the disease. It does not necessarily follow, however. Severe organic disease in any organ is capable of the same variation of function under the sole influence of rest. Herein lies the benefit of the Allen fasting treatment. Greeley cites examples of cases of diabetes in connection with obesity in the adult and the curative effect when the fat was reduced; while in the case of a child with diabetes and relatively high sugar tolerance, with the gain in weight and on total sugar-free diet came improvement in diabetic conditions. He concludes by saying that it remains to be proven whether continuous successful management results in actual regeneration of power of the pancreas. The thyroid and liver are regenerative organs, but the pancreas, up to the present time, has seemed not to belong to this group.

New York Medical and Surgical Journal.

November 25, 1916.

1. The After-Treatment of Infantile Paralysis. Reginald H. Sayre.
2. Epileptogenous Zones in Organic Epilepsy. Alfred Gordon.
3. Injuries to the Spinal Cord Produced by Modern Warfare. C. Burns Craig.
4. The Treatment of Infantile Paralysis. Henry W. Frauenthal.
5. The Treatment of Infantile Paralysis. Frank E. Peckham.
6. The Speedy Cure of Tuberculosis. J. D. Gibson.
7. Health Insurance from the Viewpoint of the Physician. Ira S. Wile.
8. The Late Dr. Henry L. Elsner. Charles G. Stockton.

1. The After-Treatment of Infantile Paralysis.—Reginald H. Sayre considers that children who recover full or nearly full function of the muscles after an attack of infantile paralysis have, nevertheless, been through a very severe illness, and should be guarded against too much work, either physical or mental, for several months, as careful examination will show hyperexcitability of the nervous system in many who at first glance appear to be normal. Gordon says that the presence of the reaction of degeneration in the affected muscles is no indication, as it was once considered, that treatment should not be continued and persevered for years after the attack, as he has seen improvement in these apparently paralyzed muscles long after the supposed ordinary time for such results. Where the cooperation of the parents can be secured for a sufficient time, often a matter of years, improvement is often possible. Various methods of treatment may have to be resorted to in the same case: medical, electrical, manipulative, instrumental, and surgical. Strychnine is distinctly helpful in these cases, and should be given in increasing doses until some result is produced or the toleration point reached. Opinions now differ as to the benefits derived from electrical treatment. Gordon has obtained good results from the use of faradism and galvanism. There is no question but that cold, blue extremities are rendered warm and pink by the use of electricity, and subsequent improvement in the patient which would not have come without its use. The strength of the current should be just sufficient to produce muscular contraction; painful applications are unnecessary, and frighten the patient. Manipulations of the muscles are absolutely essential in these cases, but they should never be employed as long as tenderness of the peripheral nerves exists, but after the limbs have become tolerant of movement. Manipulations of the muscles, deep kneadings, rubbings, and superficial strokings are some of the most essential parts of treatment. The patient should be encouraged to make voluntary efforts of the paralyzed muscle or muscles. If the muscles are too weak to respond to the will, the masseur should put the limb through the required motions while the child endeavors to make the limb do the work which the masseur is doing for it. Very little exercise should be given, in order not to produce muscle fatigue, and in little children the same result may be obtained by the use of games. Heat applications by the electric light oven, and artificial congestion of the paralyzed extremity by immersion in a vacuum cup, are beneficial. The question of instrumental support comes up in many cases, and while it is of value in the lower extremities it is of comparatively little value in the upper extremities. It should be light, and should girdle the limb as little as possible, as the muscles are weak, and a heavy apparatus weighs them down. Even when the apparatus is employed other treatment must be continued in order to restore as much function as possible. It is essential that these growing bones should be held in as nearly a normal position as can be done, and deformities prevented, so that the skeleton may be straight. In adapting an apparatus to the deformed leg the joints of the apparatus must move in the same axis as the joints of the leg, otherwise twisting of the foot may result. Braces should be discarded as soon as the patient is able to balance and walk without the support. If the lower extremities and spine are both affected, and the paralysis persists, the patient is best treated in a wire cuirass, in which he can be carried about much like an Indian papoose. He considers the number of cases which are amenable to surgical treatment is comparatively small, but wonderful help can be given these few cases. Surgery is useful when tissues which are contracted can be elongated, but not otherwise. Subcutaneous tenotomy may be employed. The results of immediate suture of nerves in infantile paralysis has not been very successful. Bone operations to restore function must be done only on selected cases, as there is much to be taken into account, such as expense, time, and ultimate result in comparison to the relief given by prolonged treatment and braces. Gordon concludes as follows, after thoroughly discussing the different types of deformity which may require bone operation: "Do not do too much at first; give the patient absolute rest for many weeks. Prevent deformities by opposing contracting muscles. Later on use gentle massage movements, active, passive, and restrictive. Endeavor to re-establish the path of nerve control to the muscle. Aid this by electric stimulation in suitable cases. If necessary, employ support to prevent undue stretching of muscles or ligaments, or deformity of bones. Later on, if deformities have developed, do such surgical operation as may be necessary to put the skeleton in a position best to support weight, and to balance the opposing force of muscles so as to preserve equilibrium. By these means many patients who

otherwise would be hopelessly bedridden will be enabled to go about in comparative comfort."

Journal of the American Medical Association.

November 25, 1916.

1. Further Studies of the Protein Poison. Victor C. Vaughan.
2. A Study of Diarrheas in Boston for 1915. Joseph I. Grover.
3. An Analysis of the Mortality for 1915 in the Infant Welfare Stations of Chicago. H. F. Helmholtz and Walter Hoffmann.
4. Chronic Digestive Disorders in Children, with Roentgen-Ray Findings. Charles Gilmore Kerley and Leon Theodore LeWald.
5. Care of Troops on the Mexican Border: Four Months' Medical Experience with an Army of One Hundred and Fifty Thousand Men. Weston P. Chamberlain.
6. Shinguard Type of *Lichen Planus Verrucaformis:* A Contribution to the Rarer Forms of Lichen Planus. David Lieberthal.
7. Carcinoma of Esophagus with Perforation of Aorta. Moses Barron.
8. New Method of Injecting Facial Nerve for Relief of Facial Spasm. George M. Dorrance.
9. Bilateral Charcot Hips, Occurring Simultaneously. S. J. Wolfermann.
10. Coagulation Time in Lobar Pneumonia, with Statistics and an Experimental Study of Its Causes. J. M. Anders and George H. Meeker.
11. The Work of the American Medical Association Chemical Laboratory. W. A. Puckner.
12. Studies in Prophylactic Immunization with *Bacillus Typhi-Exanthematici.* Harry Plotz, Peter K. Olitsky, and George Baehr.
13. Treatment of *Bacillus Pyocaneous* Infection. Kenneth Taylor.
14. Chenopodium Poisoning: Report of Case. A. F. Coutant.
15. Perforating Wound of Globe, with Prolapse of Iris: Report of Case. J. Warren White.

2. A Study in Diarrheas in Boston for 1915.—Joseph I. Grover. (See MEDICAL RECORD, June 24, 1916, page 1164.)

4. Chronic Digestive Disorders in Children.—Charles Gilmore Kerley and Leon Theodore LeWald. (See MEDICAL RECORD, June 24, 1916, page 1159.)

5. Care of Troops on the Mexican Border.—Weston P. Chamberlain gives an account of his four months' medical experience with an army of one hundred and fifty thousand men, otherwise the part of the militia ordered to the Mexican border. He considers that the mobilization clearly demonstrated many of the weak features in all branches of our militia system, but he refers chiefly to the sanitary features, and states some of the lessons learned from the mobilization, as follows: 1. The physical standards of the regular army should be strictly applied to the members of the national guard. 2. All members of the national guard should be immunized against smallpox, typhoid, and perhaps the two paratyphoids, at time of enlistment. The former two procedures should be repeated in three or four years. The length of time the paratyphoid vaccination will protect remains to be worked out. 3. The states should organize sufficient ambulance companies and field hospitals to bring the allowance of each unit up to at least four for every authorized division of state troops. All sanitary equipment should be kept complete, serviceable, and up to date. 4. The medical corps of the regular army (even when it reaches after four years the recently authorized allowance of seven per thousand of strength in the army) will be insufficient to provide adequately for the needs of any such force as would be required in a war of the first magnitude. 5. Consequently, adequate medicomilitary training should be given to the militia sanitary organizations and to the Medical Reserve Corps. 6. The Medical Reserve Corps should be greatly increased in size—to 10,000, or perhaps 20,000. There were approximately 1,600 men in the corps last summer, and from these it has been difficult to get 350 for active service. Few wish to remain long on active duty. 7. Typhoid fever need no longer be dreaded as a scourge to armies. 8. State troops can be maintained indefinitely in camps in the South, and at the same time remain in excellent health, provided certain simple sanitary precautions are continuously and rigidly enforced. These precautions will not be continuously and rigidly enforced unless alert and experienced sanitary inspectors are placed in charge and vested with sufficient powers to enable them to compel the prompt correction of sanitary defects.

9. Bilateral Charcot Hips, Occurring Simultaneously—S. J. Wolfermann reports this case because Charcot's disease in both hips simultaneously is unusual, and to emphasize further the long period of latency of some syphilitic infections. The patient, a mechanic, aged 42, married, had always been healthy, and wife had borne two healthy children. He had had gonorrhea twenty-five years ago, with a nonsuppurative bubo. In 1891 there was a single hard chancre, and he was treated with baths; no secondaries were noticed, and there was no skin or ulcer. During the fall of 1912 he began to have "rheumatic pains," limited to the areas below the knees, these pains occurring only at night and usually along the inner side of the tibia. They occurred intermittently for about one year, and without any other treatment than the baths he became apparently well. Two other attacks about six months apart came on, the second one lasting about a month and the pain extended up the thighs, with a grating in the left hip, which symptom now appeared for the first time. Two months later the left leg felt "asleep" and became useless. The next month, September, the darting pains appeared in the right thigh, which became markedly swollen, but not affecting the right hip, while the right leg became useless. During October he experienced "a feeling of pressure toward the center at the waist." After physical examination the diagnosis formulated itself: "Lightning pains," suggestion of girdle pain, beginning sphincter weakness, hyperesthesia, loss of knee reflexes, Argyll Robertson pupil and bone destruction without pain or temperature was assuredly beginning tabes with two Charcot hips. Wolfermann adds that at this time, after a considerable amount of treatment with mercury, iodid, and arsenic, the grating is practically gone, hyperesthesia is diminished, and there are no bladder symptoms. Treatment is continued in view of later attempting to make new hip joints, if a negative Wassermann reaction can be obtained.

10. Coagulation Time in Lobar Pneumonia.—J. M Anders and George H. Meeker state that it is common knowledge that the time necessary for coagulation to occur is variable and depends on many conditions, and that bacteria and their toxins play a role in the coagulation process is undoubted, but their significance is not definitely known. The subject of the relation of infection to coagulation has been discussed by several modern writers, and, on the whole, the weight of authority is in favor of the view that infectious diseases retard coagulation. When normal blood coagulates, "about 0.1 to 0.4 per cent. of its weight separates as fibrin" (Krehl). In certain diseases, especially those accompanied by inflammatory exudates (as lobar pneumonia and pleurisy), a marked pathologic increase up to 1 per cent. or over may be found. In certain infections, notably typhoid fever, no increase is observed, although intravascular clotting is more common in this disease than in lobar pneumonia, if we except the large so-called marantic thrombi found in the great vessels after death. That the quantity of the fibrin factors has nothing to do with either extravascular or intravascular clotting is further shown by the fact that they are present in normal amount in hemophilia (Litten, Sahli). The coagulation time is found to be shortened after hemorrhage (severe pulmonary hemorrhage, hematuria), in carcinoma of the uterus, in abortion, after transfusion, in endocarditis, in dementia precox, and

after the administration of gelatin. The total number of observations was 138, and the coagulation time ranged from one minute to six minutes and twenty-five seconds. On the other hand, 100 tests on healthy individuals showed the coagulation time as distinctly longer in them than in lobar pneumonia, the mean difference being one minute and fifty-five seconds. They draw the following conclusions from their experiments: 1. The coagulation time is somewhat shortened in lobar pneumonia. 2. The cause or causes of this abbreviation are not definitely known. 3. The influence of a meal on the coagulation time is trivial, but practically constant. 4. The effect of the administration of calcium salts on the coagulative process must be quite inconsiderable. 5. The calcium present in the blood in lobar pneumonia does not exceed the normal amount.

The Lancet.

November 4, 1916.

1. Possible Function of the Cerebrospinal Fluid. W. D. Halliburton.
2. Further Cases of Kala-azar in Europeans Successfully Treated by Intravenous Injections of Tartar Emetic. Leonard Rogers.
3. Dental Disease in Nursing Women: A Note on the Association Between Oral Sepsis and Deficient Lactation. Harold Waller.
4. Massage and Medical Electricity in the After-Treatment of Convalescent Soldiers. Florence Barrie Lambert.
5. Ultra-Violet Radiation from the Tungsten Arc. W. J. Turrell.

2. Further Cases of Kala-azar in Europeans Successfully Treated by Intravenous Injections of Tartar Emetic.—Rogers, together with Hume, reported last February on six cases of kala-azar in Europeans treated by this method, with recovery in five and death from phthisis in one, after the kala-azar germ had disappeared from the spleen. During the last fourteen months they have treated eighteen new cases with remarkable success, and have been able to shorten considerably the time required for effecting a cure by increasing the doses more rapidly than they ventured to do at first. Reports on twelve cases are given showing the expected results, and in no case that they have been able to follow up from four to twelve months has there been any relapse. With reference to dosage, they now recommend adults to begin with 4 c.c. of the 2 per cent. solution of tartar emetic, to add 2 c.c. at the second injection, and, if no toxic symptoms occur, 1 c.c from that point to 8 or 10 c.c., above which it is not necessary to go. In patients with dropsy or albumin in the urine the dose should be increased cautiously, and in any patient, if toxic symptoms arise, other than cough, immediately after the injection, the dose should be reduced until no sickness or nausea occurs. In the majority of cases the injections have been continued for from several weeks to two or three months after the fever had ceased, and only stopped, as a rule, when signs of full recovery had appeared, such as increase in body weight, reduction in size of the spleen, an approximately normal blood, and when the parasites had disappeared from the spleen. When it is remembered that the most reliable data regarding the mortality of kala-azar under careful and prolonged treatment showed a mortality of 96 per cent. the results now obtained by Rogers and Hume are so remarkable that Rogers suggests that it is difficult to find a parallel case in which such a deadly and lingering disease has been brought under complete control by a simple medicinal remedy. The author further suggests that the use of tartar emetic appears to be worthy of especial study in cases of human trypanosomiasis and of sleeping sickness in Africa.

3. Dental Disease in Nursing Women.—Harold Waller gives a report of a successful outcome in a series of his cases in which deficient lactation in nursing women was due to oral sepsis. This does not mean that dental sepsis is responsible for all cases in which the child fails to thrive on the breast milk. But in the cases to which he has reference dissatisfaction with the breast feeds and vomiting are among the early symptoms, and the vomiting is of an intractable type, occurring at frequent, varying intervals, and is copious and forcible. The child loses weight, and there is a persistent blueness of the extremities quite foreign to one whose diet and digestion are in accord. Where there is a gain in weight it is unsatisfactory. The appearance of the mother may suggest ill health, for she often looks wan and frail, but not in all cases. It will be found upon inquiry that evidences of metastatic effects of oral sepsis will be given unsuspectingly. It is common to be told that the woman is rheumatic and is subject to recurrent sore throat. Attacks of neuralgia, stiff neck, gumboils, indigestion, vomiting, loss of weight and strength are complained of. Inspection ofttimes shows caries of the teeth, broken roots, probably covered with plates, and discharging sinuses, and loose teeth with a copious discharge arising from their alveolar processes. A chronically infected state of the tonsils must be added to the list. For years medicine has been resorted to for the debility and anemia. Cases presenting greater difficulty are those in which elaborate dental work has been done, covering up the true condition of the teeth and gums. The real importance of the question lies in the chance which treatment offers of effecting a sufficiently rapid improvement in a woman's health to raise her powers of lactation from a subnormal to a satisfactory level, and so avoid the need of artificial feeding for the child. The prevalence of this condition must be regarded as a disastrous one, claiming attention on national grounds of the first importance, in view of the interference it produces with the course of infant welfare. Waller found that the results obtained after proper or even inadequate attention had been bestowed upon the dental condition of the mother were (1) the increased rate of gain in the child's weight and (2) the length of time over which nursing can be carried should be prolonged. Also greatly improved health in the mother, with increased flow of good milk; a cessation of dyspeptic symptoms in the child, with general systemic improvement. Three cases are given, one of which describes the condition of the first-born of a woman of 29 years. The mother appeared healthy, but the baby at three and a half weeks of age began to waste away and gave the typical blueness of the extremities. While the mother's milk was copious, the child continued to grow worse. After careful dental treatment had been instituted in the mother the child's skin improved in color, the weight, which had been stationary at five pounds from the third to the tenth week, rose to ten pounds between the tenth and eighteenth week. The particular cases illustrative of this condition were chosen from nearly 200 in which dental sepsis interfered with the power of nursing an infant. Improvement capable of registration was achieved in 80 per cent., the remainder were nearly all lost sight of and did not complete the treatment. Waller suggests that it follows from what has been reported that the earlier treatment is obtained the better. It is difficult to suppose that a condition which can influence a child so profoundly through its parent after birth can fail to exert effects during intrauterine life. Research into the association between dental disease and the occurrence of miscarriage and the birth of premature infants of weakly physique might well produce important results.

British Medical Journal.

November 4, 1916.

1. The Possible Function of the Cerebrospinal Fluid. W. D. Halliburton.
2. Incidence and Treatment of *Entantœba histolytica* Infections at Walton Hospital. Clifford Dobell.
3. Note on Some Examinations and Treatments for *Entamœba histolytica* Infections. Margaret W. Jepps.
4. A Search for Dysentery Carriers among Soldiers Coming from Gallipoli and Egypt. J. O. Wakelin Barratt.
5. Note upon a Case of Jaundice from Trinitrotoluol Poisoning. Hugh Thursfield.
6. Hexamine in Acute Anterior Poliomyelitis. N. Fox Edwards.
7. A Simple Aseptic Way of Performing Vaccination. Echlin S. Molyneux.

1. The Possible Function of the Cerebrospinal Fluid.—W. D. Halliburton, in an address before the Neurological Section of the Royal Society of Medicine, gives the normal characteristics, composition, and fate of this fluid and its pressure. In speaking of the means of communication between the cerebrospinal fluid and other parts of the body, or rather the lack of it, he calls attention to the fact that Dixon and he found that dyes added to the fluid travel along the course of certain cranial nerves, especially the olfactory nerve. Such is not the case with the spinal nerves; no dye can be detected in their sheaths outside the spinal canal, and no dye is discernible in the lymph of the thoracic duct. Clinically the olfactory outlet is important as it affords an opportunity for the entry of infective agents. He draws attention to the apparently analogous relation of the cerebrospinal fluid and lymph, but while the essential feature of a true lymph is the free interchange between it and the blood in both directions, this is lacking in cerebrospinal fluid; at least it appears to be permeable to substances passing from it to the blood, but impermeable (except for oxygen) in the direction from the blood to the fluid. Halliburton says that he has been led to take the following view: The nervous mechanism being so sensitive, so easily influenced by anything unusual, the neurons must be bathed in an ideal physiological saline solution to maintain their osmotic equilibrium; the trace of protein it contains is probably quite sufficient for nutritive processes. The sugar would serve for a supply of energy. The choroidal epithelium is really exercising a protective function by keeping out harmful proteins (toxins, etc.), while some harmless ones are kept back almost completely; all share the same process of exclusion. This protective action also applies in addition to the majority of soluble drugs; this may operate so as to be detrimental in diseased conditions, but one can hardly expect discrimination on the part of the epithelial secreting cells. The nonaccess of metallic and other poisons to the nervous elements is such a *sine qua non* for their health that during those periods when such substances are given for the relief of disease or the slaughtering of parasites the choroidal cells are unable to change their habits, and so do not allow the drugs to get through. Such, Halliburton states, he believes to be the real significance of this remarkable secretion.

5. Note on a Case of Jaundice from Trinitrotoluol Poisoning.—Hugh Thursfield reports a case of a woman thus poisoned, and calls attention to the fact that only since the war have we known of the toxicity existing from the manufacture of explosives belonging to the group of the nitro-derivatives of benzine and toluene. Drowsiness, headache, and nausea, varying degrees of cyanosis, with anemia and jaundice, and in some of the cases of jaundice a proportion have proved fatal. Such was the case Thursfield cited. This young woman, strong and healthy, had been employed in munition work for about six months, and four months before her fatal illness became an examiner in a munition factory. She examined bags filled with the yellow powder, hence the atmosphere was powder laden. She tasted it even in her food. She wore a plate in the upper jaw and always cleaned it after meals, but never before eating. One month before her illness she noticed she was passing dark-colored urine, but did not feel ill until two weeks later. She complained of headache and nausea and loss of appetite. She became worse, and was taken to St. Bartholomew's Hospital. She was deeply jaundiced, and the urine was almost black with pile pigments. Her temperature was normal, and aside from the jaundice and vomiting she did not appear to be very ill. Two days later, however, she became drowsy and vomited excessively, and in two days, after delirium had set in, she gradually sank, and died in the evening. Autopsy showed fatty-degeneration of the liver and kidney tissues, with petechial hemorrhages in the pericardium, viscera, and parietal pleuræ. The history and course of the illness are those of an acute toxemic jaundice, nonobstructive in character, but the blood examination showed a normal condition, with 5,000,000 red cells per c.mm. and hemoglobin 90 per cent. This was rather remarkable in view of the fact that trinitrotoluol frequently causes anemia. Clinically, the most striking feature of the case was the suddenness of the onset of the fatal symptoms, for in less than two days before her death she seemed to be in good condition, without any serious symptoms pointing to a grave prognosis. Yet it was obvious at the time of the autopsy that the toxemia had already robbed her of any chance of survival.

7. A Simple Aseptic Way of Performing Vaccination.—Echlin S. Molyneux offers a method of vaccination which he has employed on recruits with good results. He suggests that while it may appear to seem laborious, with but a little method in handling the individuals, it is not so. He vaccinated 180 men in 231 minutes, or well under two minutes each. Each roll of gauze ten yards long sufficed for from twenty-five to thirty men, so that the expense was not great. Out of this number of vaccinations very few inflamed arms appeared, and the slight inflammation was soon reduced by boric-acid solution applications. The technic is as follows: (1) The patient's arm is first thoroughly rubbed by an orderly with methylated spirit to disinfect the skin. (2) A tube of calf lymph is taken and one end broken off; the broken end is held for a moment in the flame to sterilize it, as it may touch the patient's skin during the operation. A lighted match is then applied to the other end of the tube of lymph, which always contains an air bubble. The heat of this causes the air to expand, and, if held over the patient's arm, it blows the lymph on to the arm. (3) A needle is taken with a point that has been slightly blunted, and held for a moment in the spirit flame to sterilize it. The lymph is spread from the drop on the patient's arm with the sterile needle to as many points as it is desired to vaccinate, usually four. The skin is then scratched by the needle sufficiently to draw a little of the patient's lymph, but not sufficiently to draw blood. (4) A pad of sterile white gauze is immediately and firmly strapped on in the following way: A towel, wrung out in 1 in 40 carbolic, is spread out on a table, and on it is a roll of sterile gauze ten yards long. A piece of gauze is cut off and folded twice or three times and applied to the patient's arm in such a way that the inside of the gauze comes next his skin, and no part which has been touched by the operator's fingers lies near the vaccination wounds. Then a strip of 1-in. adhesive plaster is wound round and round the arm over the dressing to keep it secure. (5) The patient is told on no account to let the dress-

ing get loose, and to have it dressed immediately should it show signs of slipping. He is ordered light work not necessitating using his arm, and he is directed to come up in five days. The second and any subsequent dressings are of boric lint.

La Presse Médicale.

October 26, 1916.

Amebic Dysentery.—Mauté has studied this condition as it occurs in Morocco. At Fez it is endemic. Without giving the details of his studies, he proceeds to his results. Intestinal amebiasis is a chronic affection with acute exacerbations. The dysenteric crisis is only an episode in the course of the disease. If after injections of emetine the stools become formed, this does not mean that the bowel has become sterilized. This statement cannot be too strongly emphasized. The usual practice is as follows. When the stools have become normal the emetine injections are renewed (1 to 3 injections) and the patient kept under observation for about a fortnight. If there are no signs of recurrence he is discharged "cured." This custom is very dangerous, not only for the patient himself but for those about him. It has recently been shown that carriers of amebic cysts transmit the disease. In 8 cases out of 10 so-called emetine cures the author has found these cysts in the stools. The latter must be persistently followed up. If finds continue negative, a provocative test should be made. The author has succeeded best with iodized water 1:1000 (1 gm. iodine, 2 gms. iodide per liter of water). The injection should be given in the morning, and two or three hours later the patient will expel amid some gripes a certain amount of mucus filled with cells of all kinds. In rare cases the ameba will be present, both in the cysts and as free bodies, even in cases which have seemed to be cured for weeks and in whose spontaneous stools no parasite can be discovered. From another angle, amebic dysentery may be overlooked because of its mild character. In such cases, hepatic abscesses are more prone to develop than in the more severe forms; in fact, the abscesses may even seem to be spontaneous. In an endemic *milieu*, every intestinal derangement should be suspected and researches instituted. At Fez, in addition to the *Amœba histolytica*, the author found the trichomonas and other protozoans, and intestinal worms (triscephalus, ascaris). As these parasites appear to cause a sort of mixture of infection or symbrosis which is hostile to a good prognosis, santonin should be given as a vermifuge. Turpentine is said to be active against the protozoans. It is impossible to determine the duration of the evolution of intestinal amebiasis. In 22 per cent. of cases the author has seen the cysts disappear by the fifth week, and in 72 per cent. from the fifth to the tenth week. In 6 per cent. the disease was especially refractory, and failed to yield under emetine-arsenic treatment. Chlorhydrate of emetine is a veritable specific against the dysenteric crisis. If the diarrhea persists this is commonly due to the presence of worms or the trichomonas. The post-dysenteric management has already been outlined. Everything depends on a good quality of emetine. In refractory cases neosalvarsan treatment may be added.

Correspondenz-Blat für Schweizer Aerzte.

October 28, 1916.

Sepsis Lenta.—Deus refers to Schotmüller's discovery in 1903 of the activities of the streptococcus viridans. The latter, as is known, can cause either acute or insidious sepsis. In order to account for this twofold pathogenicity, Steinert laid down the law that insidious cases occurred only in rheumatic subjects; in other words, acute viridans sepsis may only attack subjects who have not been partially immunized—for we must look upon the rheumatic subject as enjoying a certain degree of protection. Another theory not involving the presence or absence of immune bodies is the saprophytic, according to which the viridans is essentially harmless but under unknown conditions may be roused to different types of pathogenicity. These two theories do not antagonize each other. The saprophytic view is reasonable and one acute attack of sepsis might well confer some immunity. Still another theory—anaphylaxis—might be called upon to explain why a mild attack of viridans sepsis could be followed by an acute outburst. Acute viridans sepsis usually takes its origin from the female genital. Especially fulminating cases are seen in connection with infected abortion. The viridans has been known to cause erysipelas and may complicate tetanus and diphtheria. The author describes a personal case in a man of 37 who had never suffered a rheumatic attack. About 18 months before consultation his health began to fail without apparent cause. Six months later he developed pleurisy with effusion, which, despite repeated puncture, did not permanently subside. Later ascites followed and dominated the entire disease picture. The general state grew progressively worse, and death ensued with the picture of failing heart and dyspnea. The autopsy finds are given in great detail. The entire picture was due to the lesion of the heart, and this is summed up as follows: An isolated endocarditis limited to the cardiac wall, and covered with organized fibrin, the valves being fully intact. In the right ventricle the process was undergoing resolution, while on the left side, despite evidences of present acute inflammation, a tendency in the same direction was noted. The absence of notable virulence and the consequent slow march of the process goes hand in hand with the progressive fibrous organization of the thrombi. Despite the venous stasis in the viscera the action of the heart was good and could be likened to that seen in well-compensated organic disease. The cardiac finds, while unique in this instance, differed only in degree from those usually encountered, in which valvular endocarditis occurs. In this case the inflamed ventricles presented dense adherent masses of organized fibrin. In various viscera in addition to the phenomena of stasis were found septic emboli. Save for the heart the anatomical picture was typical of sepsis lenta. Clinically the nature of the case was such that a bacteriological test of the blood was omitted. There is no intimation as to the source of the infection.

La Riforma Medica.

October 23, 1916.

Oxaluria Is Not a Disease of Metabolism.—Fittipaldi sums up a study of this subject as follows: Oxaluria as a disease cannot be due to an excess of oxalic acid or the oxalates in the food. There is no relationship between oxaluria and diabetes or between oxaluria and obesity. The coexistence of oxaluria and urticuria is of no significance in connection with the origin of oxalic acid. An excess of the latter, isolated from the blood in oxaluria, does not mean an oxalemia. There is no connection between oxaluria and gout when oxaluria appears because of deficiency in tissue respiration; it means that the sources of the acid have not been sufficiently oxidized in the blood. Oxaluria is not a disease of metabolism. but doubtless results from an enterogenous intoxication due to some specific enzyme as yet unknown.

Lactic Bacteriotherapy of Wounds.—Colombini, in writing on the sterilization of wounds, with special reference to the prophylaxis of tetanus, speaks favorably of the lactic acid bacteriotherapy of wounds as carried out in the Hospital of the Experimental and Bacteriological Agrarian Station at Crema. A liquid previously fermented is employed, consisting of whey and peptone, containing the products of metabolism of the lactic acid bacilli. Lactic acid is formed to the amount of 1 per cent. Owing to temperature conditions, living cultures cannot be used in wounds. This necessitates the practice of fermenting a substratum with cultures. Lactic acid is not the only product of bacillary metabolism. The mixture has striking anti-putrefactive properties and is able to cleanse an infected wound thoroughly in a few days. Whatever the theory may be, the fact remains that infected wounds have later been shown by the microscope to be sterile. A simple 1 per cent. solution of the acid exhibits no such properties. There is nothing which points to commercialism, as the liquid is prepared at a Government Experimental Station for Agriculture, which doubtless supplies details to any one interested.

Alcoholism in Italy.—M. L. reviews Professor Bianchi's recent memorial on this subject. Alcoholism in Italy is a problem in itself. There is an enormous production of wine, consumed mostly at home. Its use is a matter of tradition and custom. It is regarded as food, despite its small nutritive value. The author marshals the leading arguments advanced as to the essential harmfulness of alcohol by writers outside of Italy. In the latter country both acute and chronic alcohol poisoning are seldom met with. The author in thirty years of activity in Palermo and Naples has seldom seen delirium tremens. On the other hand, it is not impossible that a slow, insidious alcoholic intoxication of the Italians has been taking place through the centuries. This is chiefly in evidence in the greatest wine growing countries. It is rather a feeling that this is the case than anything demonstrable. There seems to be a subnormal efficiency in the worker, due to lack of endurance or persistency, and there is an abnormal tendency toward litigation. Alcohol must play a very small role in acute psychoses, but seems in evidence as a casual factor in various affections and attributes—epilepsy, delinquency, idiocy, arthritism, obesity, indolence, indifference, excitability, impulsivity, irascibility, etc. In the Northern countries this problem of racial characteristics does not exist, and is in part replaced by that of the excessive use of alcohol during short periods of time—something unknown in Italy, as is also the use of industrial alcohol as a beverage with the dangers of a methylism. The author from his immense experience with wine drinkers is able to detect much exaggeration in articles which emanate from the North. The amount taken daily and the proof of the wine are of great practical significance, as is also the vocation or absence of one. In other words, there is a utilizable limit. The alcohol percentage of the native wine varies from 10 to 14 (no other kinds are mentioned) and the use of small amounts with meals only is regarded as innocuous. A "small bottle" of wine which contains from 20 to 30 gms. of alcohol answers this requirement. Anywhere from 40 to 70 gms. alcohol daily is regarded as the limit of safety beyond which a definite action on the nervous system may be perceptible. A daily consumption of from 300 to 600 gms. of wine means the same thing. Aside from defending the minimal use of wine as not only innocuous, but even perhaps salutary, Bianchi's conclusions do not differ essentially from those of Northern writers.

La Riforma Medica.

October 30, 1916.

Diagnosis of Malignant Tumors of the Liver.—Ferrannini mentions a number of cases occurring in the past five years in which the diagnosis was made by necropsy, biopsy after exposure of the liver or borings. The necropsy in a woman of 63 showed the pressure of an endothelio-sarcoma. The organ weighed 3,100 grams and before section presented hardly any evidence of tumor formation. Upon section numerous tumor masses were seen. The stomach was normal, but the left kidney was greatly enlarged from the same disease process. Very small metastases were found within the thorax. No primary lesion is mentioned. In a man aged 55 there was ascites of high degree. Instead of a paracentesis laparotomy was at once performed, in order that the liver might be examined. Five liters of fluid escaped, and the liver was found to be the seat of numerous nodules. Attempts at aspiration ended negatively, showing that the latter were solid. There was a history of very severe, painful crises over the liver before the appearance of ascites. The latter by causing dyspnea led the patient to seek relief. The diagnosis of malignancy having been made, a systematic search for lymphnode metastases was begun, with negative results. There was, however, a notable failure of general health, of the type which suggests malignancy. The peculiar tint of the cancerous patient was missing, as was also the yellowish-gray color believed to be common in sarcomatous patients. The blood count was not suggestive of malignancy. Hydatids and tertiary syphilis had been excluded. As between sarcoma and primary cancer the evidence pointed rather toward the former, chiefly because of the absence of regional lymphnode metastases, especially in the left supraclavicular fossa. Sarcoma, so-called, of the liver comprises perithelioma, endothelioma, cylindroma, lymphosarcoma, and other subvarieties. There appears to have been no autopsy on this patient, as the author leaves the exact diagnosis to be worked out by clinical evidences. When the liver was inspected by laparotomy, lymphnodes as large as a walnut were seen in the omentum and retroperitoneal space. The evidence, however, leaned toward sarcoma, because of the absence of external lymphnode metastases and icterus.

Tuberculous Meningitis Simulating the Prodromic Period of Multiple Sclerosis.—Cammarata relates the following case: The patient was a boy aged 3 years, of good family and personal antecedents. Six months before consultation he exhibited a tremor of the right hand, worse in the daytime. Three months later his right leg lost its feeling and he walked with a tremulous, spastic gait. On examination he showed an intention tremor and could not raise a glass to his lips unless aided by the left hand. Meningitis could be excluded completely. Diagnosis, sclerosis *en plaques*. Some weeks later he was attacked by fever, headache, and vomiting, stiff neck, convergent strabismus, terminating after a few days in convulsions. Lumbar puncture was now practised. The fluid emerged under strong pressure and the sediment contained tubercle bacilli. There was some temporary improvement, but death followed an exacerbation. Autopsy was refused. The connection between the early symptoms of sclerosis and the meningitis was obscure. Sachs describes an abortive type of the former, which, however, is extremely rare at so early an age. By exclusion it is quite impossible to reach any other diagnosis. Cammarata suggests that a possible compromise diagnosis would be a focus of tuberculous meningitis behaving like a patch of sclerosis.

Book Reviews.

PYE'S SURGICAL HANDICRAFT: A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of House Surgeons and Surgical Dressers. Edited and largely rewritten by W. H. CLAYTON-GREENE, B.A., M.B., B.C.(Camb.), F.R.C.S. (Eng.). Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School, etc. Seventh Edition, Fully Revised, With Some Additional Matter and Illustrations. Price $4.50 net. New York: William Wood and Company, 1916.

THIS has ben a standard work for more than a quarter of a century and shows no sign of waning popularity. For this, the seventh, edition the subject matter has been thoroughly revised and considerable portions practically rewritten. While originally designed especially for the instruction of members of house staffs, it has gradually reached a far wider field of usefulness; and while still satisfactorily fulfilling its original design it has been amplified to a degree that renders it a valuable aid to the general practitioner also. This will be appreciated by noting the headings of the various sections. There are 53 chapters embraced in ten sections, the titles of which are: The arrest of hemorrhage; Apparatus for restraint and support (bandages, splints, etc.); Fractures, dislocations, and sprains; Wounds, ulcers, and burns; Cases requiring prolonged or mechanical treatment; Minor surgery and kindred subjects; Special cases connected with the head and throat; Certain emergencies, surgical and general; The administration of anesthetics; Miscellaneous. Under the latter heading there are chapters on the preparation of patients for operation and their after-treatment; the making of poultices, fomentations, etc.; urine testing; *x*-rays in diagnosis and treatment; and surgical history taking.

Upon looking through the work we find that there are many instances where procedures recommended are quite different from customary methods here yet are unquestionably good; and that a knowledge of them, as well as of the more common methods, cannot fail to add to the efficiency of the reader. On the other hand, we occasionally find that American methods are far in advance of those recommended in this work. For example, in the chapter on hemorrhage and transfusion we find the method for continuous saline flow into the rectum far inferior to the technique of the Murphy drip; while the discussion of transfusion itself is quite out of date according to our standards. The discussion of the truss treatment of hernia is generally poor, while we consider the advice given regarding the treatment of undescended testicle to be wrong.

The chapters on surgical emergencies and the treatment of various poisonings contain many valuable suggestions, and the same applies to that on pre- and post-operative treatment and many others too numerous to mention specifically. It is certainly not too much to say that while former editions of this work deserved popularity, the present revision and extensive rewriting should add greatly to its prestige.

THE PROBLEMS OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY OF METABOLISM. By Dr. OTTO VON FÜRTH, Professor Extraordinary of Applied Medical Chemistry in the University of Vienna. Authorized Translation by ALLEN J. SMITH, Professor of Pathology and of Comparative Pathology in the University of Pennsylvania. Price, $6. Philadelphia and London: J. B. Lippincott Company, 1916.

IN its original form this work of Fürth's has been familiar to many workers in biochemical fields as one of the most satisfying treatises on metabolic chemistry. The subject has become so complex in its ramifications that it is most useful to have a comprehensive summing up of the present state of knowledge in this direction, and the series of lectures here offered in printed form is designed to give a résumé of what may now be considered as fairly definitely established in regard to the underlying reactions of vital processes. Even the most seasoned plodder through scientific literature at times welcomes a journey that leads over less arid regions than usual, and the present volume is decidedly entertaining, as well as instructive, for its lecture character has enabled the author to adopt a somewhat easier style than is customary in purely technical works. The translation is very close, yet its form is admirable, and it is only rarely that some twist of phrase has been allowed to remain as a reminder of the syntactic peculiarities of the original. It was certainly the part of wisdom to choose first the latter of the author's two volumes for presentation to the English reading public, for the former of these, which is devoted to cellular chemistry, is much more technical and of less appeal to the general reader. In the present volume, as its title indicates, the problems of metabolism as a whole are discussed, both in relation to the normal processes, and as encountered in various diseases depending on disturbances of the body's chemistry. While in some instances not all of the latest work is included, as for example under diabetes and proteid metabolism, for the lectures on which the book is founded were delivered at the University of Vienna before 1911, yet there appears to be little of importance that has been omitted, and the book will undoubtedly be found of great value by all who are interested in this fascinating but difficult study. It is to be hoped that the translator will extend his labors also to the production of an English version of the first volume.

NERVOUS DISORDERS OF MEN. The Modern Psychological Conception of Their Causes, Effects, and Rational Treatment. By BERNARD HOLLANDER, M.D., Author of "The Mental Functions of the Brain." Price, $1.25 net. London: Kegan Paul, French, Trubner & Co., Ltd.; New York: E. P. Dutton & Co., 1916.

THE title of this book is somewhat too general, the author modifying it in the preface by limiting himself to functional disorders. It is addressed to the lay public and to the less well-informed members of the medical profession. The first part is largely occupied with an account of "nervousness" somewhat in the vein of Dr. Stephen Crane or Herbert Kaufman. Various neuroses, psychoneuroses, and anxiety states are grouped by the writer under this head. No attempt, of course, is made to explain phobia, obsessions, etc., by any of the newer psychological methods. In fact, the medieval explanation is the one adopted. In a chapter devoted to the "semi-insane," a brief description is given of cyclothymia and hypomania. Galvanism and psychotherapy constitute the author's therapeutic armamentarium. If the patient has pains in the stomach he applies the current to the stomach; if he suffers from any general nervous condition, it is applied to the spine.

NERVOUS DISORDERS OF WOMEN. The Modern Psychological Conception of Their Causes, Effects, and Rational Treatment. By BERNARD HOLLANDER, M. D., Author of "The Mental Functions of the Brain." Price, $1.25 net. London: Kegan Paul, French, Trubner & Co., Lt.; New York: E. P. Dutton & Co., 1916.

THIS book is a companion volume to "Nervous Disorders of Men," elsewhere reviewed, and many of the chapters differ from the first book mainly in a change in gender of the pronoun. Some discussion is given in the introductory chapter to the difference between the nervous systems of men and women. There is a chapter of psychoanalysis which, while superficial and dealing in generalities, is quite readable and probably better for the lay public than much about this subject which is accessible to it.

A MANUAL OF FIRE PREVENTION AND FIRE PROTECTION FOR HOSPITALS. By OTTO R. EICHEL, M.D., Director, Division of Sanitary Supervisors, New York State Department of Health. Price, $1. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd., 1916.

THE preface states that it is the purpose of this manual to provide in convenient form an outline of the principles of fire prevention and protection with indications for their application in institutions housing the sick. It is planned for use, not only by superintendents and boards of managers, but also by inspectors, architects, builders, and others who have occasion to consider the fire problem in hospitals. It is to be hoped that the book will have wide use, and that further study by those active in hospital management will be stimulated.

COLLECTED STUDIES FROM THE BUREAU OF LABORATORIES, City of New York. Dr. WILLIAM H. PARK, Director. Vol. VIII, 1914-1915.

THIS volume contains sixty-seven reports, of which twenty-three are not reprints. There are several extremely valuable reports having to do with diphtheria, Schick test and toxin, antitoxin activity, scarlet fever, poliomyelitis, and meningitis. Along lines of public hygiene are two good reports, one on public cigar cutters, and the other on the bubble fountain. Numerous other interests of the Bureau are indicated in the reports, and the volume is a great credit to the workers who are represented.

Society Reports.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-Second Annual Meeting, Held at Indianapolis, Ind., October 10, 11, and 12, 1916.

THE PRESIDENT, DR. WILLARD J. STONE OF TOLEDO, OHIO, IN THE CHAIR.

Protozoic Enterocolitis in the Middle West.—Dr. FRANK SMITHIES of Chicago presented the records of the last 100 stool analyses in his clinic at the Augustana Hospital, which indicated that there were 93 instances where protozoa were observed. The patients' ages ranged from 7 years to 82 years. The average age was 39. There were 51 males and 42 females. There was practically no difference noted in the sex age figure. Fifty-two patients were of Scandinavian birth or extraction; the remainder were Americans, Germans, Irish, Russians, Austrians or English. The geographic diversity of patients forming this group was as follows: Illinois 29, Iowa 16, Wisconsin 13, Nebraska 8, Michigan 7, Minnesota 6, Indiana 4, South Dakota 2, Arkansas 2, Ohio 2, Texas 2, Kentucky 1, and North California 1. Of 93 cases 66 were large eaters of fresh garden truck, unwashed fresh raw fruits and bananas. Diarrhea was complained of in 86 cases. The duration of the diarrhea varied greatly. Sixty-seven per cent. of the cases had been affected from one to five years; eight cases had been ill less than one year, while a like number had been ailing for more than ten years, the longest period being 43 years. Constipation occurred in 4 cases. Dyspepsia was prominent in 75 cases. Abdominal pain or discomfort was a complaint in 89 cases. Loss of weight was noted in 75 cases. The loss varied from 5 pounds to 104 pounds. The average loss of 17.3 pounds. Loss of strength was often striking, even though the weight might have decreased comparatively little. Anemia was usually evident, although melancholia was frequently observed. On physical examination these patients generally appeared both starved and toxic. The stools were commonly of a greenish-brown or yellow color and of a puree-like consistency, intermixed with flakes of mucus and food bits. They might be blood-streaked or foamy. The reaction was usually definitely alkaline. In his series there were 40 cases with gastric achylia; 33 cases with subnormal hydrochloric acidity, and 20 cases with normal or increased gastric HCl. In one instance of most pronounced acute infection with cercomonads and trichomonads the free HCl was 86. The gastric motility was normal in 83 cases. In 10 cases there was mild stagnation. In 16 instances albuminuria was noted. His study of specimens of gall bladders and appendices removed at laparotomy indicated that in these parts of the gut cysts of protozoa might lurk for years. Reinfection of the bowel was thus possible.

Treatment of Infected Wounds.—Dr. FREDERICK G. DYAS of Chicago drew these conclusions: (1) The application of voluminous dressing to infected wound surface confines the infective discharges and subjects the tissues to a bath of pus. (2) Exposure of infected wound surfaces to the air causes a rapid drying up of the wound secretion and a desiccation of the tissues by the evaporating action of the atmospheric air, which can be increased by playing a current of air from an electric fan on the exposed area. (3) Infection from the air is negligible. (4) The open method of treatment tends to convert the moist into the dry type of gangrene and produces unfavorable conditions for the growth of anaerobic organisms which are clinically more virulent than aerobic. (5) The period of infection is shortened by the use of certain solutions, as a bath or irrigation, unfavorable to the growth of bacteria, which must be discontinued as soon as the signs of infection subside.

Dr. HENRY T. BYFORD of Chicago said the principle of drying out the wound was the proper one. To do that the wound must be drained, not the surface of the tissue Convert a wound into a dry, cancellous condition and it would get well. In treating wounds he began using the old-fashioned method of dry dressing, for bedsores or where there was a cancellous area which required some time to come off. He used gauze, but he did not have the same result as when he used absorbent cotton. When he began to use absorbent cotton in the proper way he would have a wound dry up in two or three days until finally it needed no dressing at all. But he changed the cotton every hour or two for a few times. After a few hours it would not have to be changed so often, say every three or four hours, then once a day, and then he would leave it on a week or until the slough came off. It was better to use cotton for this than gauze because gauze rubbed off the granulation. In fresh wounds that were not infected he would put on some cotton, change it in a few hours, and after that there would be less serum, and in a day or two the wound would dry up so that he would leave it, and it would heal up dry.

Dr. DANIEL N. EISENDRATH of Chicago said we must change our present method of treating infected wounds. The European War had shown that the battle which had raged between the upholders of the use of antiseptics and the upholders of the Wright theory had been decided in favor of the latter. If we stopped to think how infections were propagated in wounds, there were practically only three methods: (1) By continuity of tissue; (2) by way of the blood vessels, and (3) by way of the lymphatics, and the more he saw of infected wounds the more he was impressed with the fact that the third method was the most important one to combat. An infection by way of the blood vessels only took place in very virulent infection, and the other (by way of continuity of tissue) could be combated by means of the principles Dr. Dyas had laid down. In the lymphatic infection the microorganisms were carried into the lymphatics and from there into the systemic circulation. The principle upon which Dr. Dyas' method depended was first of all to have free drainage, so that there would be no possible absorption through the lymphatics; in other words, that the flow from the lymph vessels carried the organisms away from them instead of allowing the organisms to be sealed up in the wound or be forced into it. The method of treatment which Dr. Dyas had outlined, supplemented by these other practices, to induce constant lymphatic flow, was one of the most important things we had to deal with to-day in surgery.

Dr. F. KREISSL of Chicago stated that about forty years ago Hebra installed in a sanatorium for skin diseases a so-called permanent water bath for burns of the second or third degree and for wounds that did not seem to heal. This bath was arranged so that the water ran constantly at body temperature, the patient being suspended on a bed sheet so that he was not exposed to the pressure of the modern bath. The patients did very well; there was no bad odor, and nearly all of them got well. The same method was applied to the cold water treatment as it was originally introduced by Winternitz, and he supposed those gentlemen who had been in England and Austria had had occasion to observe both methods. These gentlemen advocated it in an empirical way, but the underlying principle was the same as expressed in Dr. Dyas' very able paper.

Dr. WALTER F. MCGAUGHEY of Greencastle, Ind., asked whether in the case of an injured hand the essayist would let a man go without any dressing on it?

Dr. DYAS replied that one man was walking around in the ward with a piece of ordinary window screen to keep the flies off. He had used wire screen very extensively in laparotomies and infected herniotomies.

Secretion of the Mammary Glands; Its Relationship to Albuminuria and Eclampsia.—Dr. W. E. GARY of Louisville drew these conclusions: (1) Eclampsia is a toxemia arising from the accumulation of material in the blood of the mother intended for the nourishment of the fetus in greater quantities than is used by the fetus and greater than can be eliminated by the maternal organism through the ordinary channels. (2) The greater the number of leucocytes in the blood of the mother the greater the toxemia within certain bounds, of course, due to individual maternal resistive ability. (3) The presence of leucocytes in the urine in large quantities is the first symptom of impending danger. (4) Leucocyte count of the blood of the mother may be reduced, albuminuria may be cleared up by the elimination of leucocytes through the secretion of the mammary gland. (5) When the convulsive stage is reached, damage has already been done to the kidney and other organs, so that treatment must be given to overcome this damage. This line of treatment is suggested: Inflate the glands to start secretion. Empty the uterus to get rid of the exciting cause. Eliminate by purgation. Support the kidney elimination by proctoclysis, as the patient cannot drink water. Control blood pressure with veratrum viride. By these

measures you can keep your patient alive until full elimination can be secured through the glands.

Ectopic Pregnancy, Diagnosis and Treatment.—Dr. Richard R. Smith of Grand Rapids, Mich., said the treatment of ectopic pregnancy was the removal of the offending tube with its contents and extravasated blood. This should be done as soon as suitable arrangements could be completed, but it was unnecessary to so hasten matters as to interfere with the operation being properly performed. In the city he preferred to remove patients to the hospital; in the country he preferred to go to them, rather than submit them to a railroad journey unless the case was one of long standing. During severe shock the patient might be removed to the hospital, and then it was merely a matter of judgment as to whether one should watch and wait for a better physical condition or operate at once. If, after say a few hours, the patient showed no improvement, he usually operated; if she did he usually waited six, twelve, twenty-four, or forty-eight hours. Under gas or ether anesthesia a median incision was made, a walling off and scooping out large clots of blood, and a prompt approach to the tubes. Great gentleness was attended with safety. The tube should be gently grasped and gently loosened if it was adherent. Roughness at this point might easily tear the tube from its attachments, and the patient lose further blood. The ovary might ordinarily be preserved, but in old standing cases with dense adhesions the ovary was apt to be so torn in getting the tube into the field that its removal with the tube seemed wiser. It was well to excise the tube well into the cornu of the uterus, as with an infected tube covering the denuded surface might be omitted in critical cases. Attention was then directed to the opposite tube. What should be done with it? If it was adherent, a gentle loosening from adherent structures was good surgery when time permitted. In young women or in those who had had few children, or desired more, the tube, if patulous, should invariably be saved. He thought it well to talk this matter over with the patient and her husband before operation. In older women and those who had already borne children and felt that they were through with child-bearing, it was wiser to remove it, for repeated pregnancies occurred in something like 10 or 15 per cent. of those women in whom a patulous tube was left at the first operation, and normal pregnancies occurred in less than half of those already operated upon for this disease. The removal of the appendix was usually unwise, but when matters were less pressing, and the condition of the patient seemed likely to give rise to future trouble, it might be removed. Usually the less we did in the abdomen of a woman with an ectopic pregnancy the better. The removal of most of the unattached blood clots was necessary, but the removal of partially organized and adherent blood should not be attempted. It was surprising how well everything cleared up after operation, far better than in inflammatory cases. No drainage should be instituted unless, as rarely happened, we were dealing with an infected case. The closing and suturing of the abdominal wall should be well done, since postoperative distention was perhaps more common than following an ordinary laparotomy.

Dr. William M. Harsha of Chicago said he would like to say a word or two about diagnosis. The essayist spoke of the pain usually not reaching throughout the extent of the abdomen. In some cases he had seen the pain had been very severe and very extensive, often reaching up to the sternum. The pain was of that type which had been called an abdominal crisis and it was out of all proportion to the lesion that we recognized as occurring in ectopic pregnancy. Here was a small tube no larger than a rye straw letting out a little blood, which was normal to the human tissue, and that little bit of blood just started a frantic pain. He had never been able to satisfy himself as to the cause of the great pain that occurred in tubular rupture, but the extension of the pain, if we assumed that there was bound to be pain from that little escape of blood, and the explanation of its general character, was to his mind found in the so-called overflow or reflex; for there was the abdominal brain, it was the herald of some great danger and the impression of that pain conveyed to the spinal column and from that point was reflected and overflowed into the adjacent segment, and so we got a pain all over the abdomen.

Dr. Daniel N. Eisendrath of Chicago stated there was one feature in connection with this paper he would like to emphasize, namely, those cases which we did not see at the time of rupture or within a few hours of that time. We were accustomed to see these cases of ectopic pregnancy either with extreme pallor or with moderate pallor. The cases to which he referred were those which we see after twenty-four or forty-eight hours, when the blood in the peritoneal cavity gave rise to symptoms of peritonitis, for the presence of a foreign protein in the peritoneal cavity would cause the same symptoms as a mild degree of peritonitis. We had the tympany, the rigidity, the tenderness on pressure and, above all, there was a very marked leukocytosis. He had seen several of these cases that he thought were typical cases of appendicitis, with a mild form of general peritonitis, but when we entered the abdominal cavity we found the extrauterine pregnancy had ruptured two or three days before.

Dr. J. H. Peak of Louisville, Ky., said that the time when this condition was first noticed was usually dependent upon what was occurring in the tube and how long pregnancy had existed in the tube. If the pregnancy had occurred near the extremity of the tube there was liability of a tubular abortion, and that might occur frequently without many symptoms and the patient might get well because extrusion took place. Operate then before there was much possibility of hemorrhage, and the patient would get well. If the pregnancy took place in the isthmus and further towards the uterus, when labor took place the hemorrhage would be more severe, and the more severe the hemorrhage the greater the amount of shock and tenderness and pain, and the quicker a diagnosis could be made. He had quite a number of specimens in his laboratory in Louisville showing the development in the various locations in ectopic pregnancy.

Is the Genealogy of the Gonococcus the Same as That of the Meningococcus?—Dr. Charles E. Barnett of Fort Wayne, Ind., drew the following conclusions: It is quite desirable to diagnose the meningococcus complication early, because the period of prognosis will be calculated for months rather than weeks. The treatment will also be dissimilar. There is no known method of differentiation except in the treatment of the case with its own manufactured antibodies (antimeningococcus serum), because it has been the writer's experience to have acute gonorrhea cases react to meningococcus vaccine. The laboratory findings for both the meningococcus and Neisser coccus are practically the same. The almost negative findings in the rectal examination and the rapid dilatation of the urethra and bladder following resolution would indicate the inflammatory action superficial rather than deep in the genital tract. Meningococcus infection of the genital tract is rare, or else only the most virulent ones are recognized. The overload of the kidney is quite manifest during the active stage of bacterial body elimination. The continued alkalinity of the urine presents a hazard that requires constant diligence in order to keep it within the bounds of neutrality. The meningococcus in the genital tract simulates the gonococcus in its action, precisely, with the exception of showing a marked increase in virulency and persistency.

Dr. E. O. Smith of Cincinnati stated that he did not catch from the reading of the paper what was probably the source of the meningococcic infection. As he understood, it was a gonococcic infection.

Dr. F. Kreissl of Chicago said that we all saw cases sometimes where the patient presented himself with an actue gonorrheal urethritis, and upon microscopical examination we found the patient had a typical gonococcus, and then when the acute condition subsided suddenly we found on microscopic examination that other microorganisms had appeared which resembled these very closely, and if we sent the specimens to a first-class laboratory man, what did we get? A mixed report. One day they would report to us a diplococcus resembling a gonococcus, Gram positive; the next day it would be Gram negative, and the next day a staphylococcus, and the Lord knows what. If we treated that case, after a time it seemed that the gonorrhea disappeared, and we would not find a trace of diplococcus or gonococcus, and yet the patient kept on having discharges. The patient was not usually prudent, and then all at once the discharge stopped, and then, without provocation, or perhaps with provocation, the discharge reappeared only to disappear with a few treatments. If we made a culture of these discharges we got practically the same answer. He had examined a great many cases carefully for years, and he

had never yet been able to get a report from the laboratory telling him there was a meningococcus, although all the others were fairly represented. No matter what we did for these cases we could not cure them, and he had come to the point where he told his patients their condition and that he did not promise them anything.

Dr. P. E. McCown of Indianapolis believed that in a good many instances from sexual abuses and some other causes we had a prostatitis arise, and following that from some excesses such as drinking the patient would have a urethral discharge. He had felt in a number of instances where men had claimed that they had not been exposed to infection that we were dealing with a staphylococcus, and he believed Dr. Wardle's work in Chicago had shown conclusively that staphylococcus could be a diplococcus many times. He also made the statement that it was more susceptible to leucocytes than the gonococcus itself. He had felt in dealing with these cases, and he had two at the present time, that we were dealing with a staphylococcus which was growing as a result of a prostatitis, there being a lowered resistance of the urinary tract which permitted the staphylococcus to grow. The staphylococcus was in intimate contact with the urethra at all times. We could perhaps get a staphylococcus growth there almost any time. These discharges were sometimes very annoying. Patients believed they had gonorrhea, and where there had been no exposure they could not understand the condition. In two instances these gentlemen accused their wives of infidelity, but after going into the matter thoroughly he had persuaded them that this was not the fact.

Dr. Barnett, in closing, said that Dr. Smith had asked for the source of the meningococcus. One could never tell the source. We might have a hematogenous infection most anywhere. In this case the source was from the girl, and yet the infection of the other thirteen men did not seem to be as virulent as this one. His idea was that, for instance, this was his first infection. This man, in fact, had had very little experience in sexual matters, and the epithelium was quite green, so in this case we had a greater virulence than where the field had been traumatized a good deal. He would say that it came from the girl. In regard to the prostatitis that Dr. McCown had spoken about, the first infection we got was *staphylococcus albus*, and then the whole bacillus, and finally the meningococcus.

Some Clinical Phases of Focal Infection with Especial Reference to Its Location in the Head and a Plea for More Accurate Classifications.—Dr. Joseph D. Heitger of Bedford, Ind., stated that a great field in the treatment of chronic focal infections lay before us, but the still greater field of prevention of a large percentage of these cases lay ahead of us. Childhood was the time to forestall and prevent many of these infections, and there was no knowing how much of the morbidity of later life might be prevented by proper attention to these foci in the head, especially the teeth, tonsils, sinuses and ears. In order that the profession at large might obtain the greatest good from these advances, there must be continual exchange of ideas, not only between the general practitioner and the specialist, but also between the different specialists. The saddest thing about some of these phases of focal infection was that men were classifying patients, putting them into this or that group, who were not studying these patients; who did not understand focal infection in its broadest sense, or at least they were attempting to put the focus where they wanted to place it and the patient learned by sad experience of the mistake in diagnosis. Focal infection, when found and properly diagnosed, offered much that bordered almost on the miraculous. Its treatment should be judged not by the worst that was done by some in falsely interpreting its hiding place, but rather by the best that resulted in those cases which were carefully and accurately diagnosed and classified. A routine method for their diagnosis and classification could be obtained and it was to this work that he would invite all to lend their best efforts.

The Surgical Management of Acute Perforation, Complicating Intraabdominal Infections.—Dr. W. D. Haines of Cincinnati stated that the type of operative procedure would depend upon many factors, chief among which would be the patient's general condition, *i. e.*, his ability to withstand operation. The length of time which had elapsed since perforation took place, the surroundings, the actual findings at operation and the experience of the operator were important factors for consideration in planning the operation. Many of these patients were in such a desperate condition when they were brought to the operating room that locating and closing the perforation and providing drainage as quickly and with as little disturbance to surrounding structures as was consistent with making a watertight joint and placing the drainage would best subserve the interests of the patient. Latterly the tendency on the part of the surgeon had been to liberate adhesions, resect damaged loops of intestines, provide drainage by anastomosis and remove all visible pathology and while ideal when the patient's condition and surroundings would permit of extensive operation, still by far the greater number of patients suffering from gastrointestinal perforation were in such physical condition as to preclude other than the least and quickest surgery which would reach the goal of closure and drainage at the primary operation, leaving the more extensive and technical elements for subsequent operation. A bad surgical risk before perforation took place, was not improved by the incident of perforation and a live patient with his perforation closed and peritoneal cavity drained, although the operation was incomplete, with much pathology in his abdomen, which might be removed later if occasion demanded, was preferable to turning the patient over to the undertaker after a technically perfect operation. Much good might be accomplished in the presence of extensive soiling of the peritoneum by gentle mopping with dry gauze, conversely much harm might be done by flushing the peritoneal sac. Perhaps the most that could be claimed by the followers of this all but obsolete and archaic practice of flushing the peritoneal cavity was that it insured the widest possible distribution of infectious material, destroyed newly formed plastic material and materially increased the mortality.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

Anniversary Meeting, Held November 16, 1916.

The President, Dr. Walter B. James, in the Chair.

Dr. Walter B. James, in introducing the speaker of the evening, said that the Academy of Medicine had been founded in 1847 for the purpose of advancing the science and art of medicine in the city and the vicinity. Its halls frequently resounded to scientific discussion and to essays of highly technical character, but a very wise provision had been made whereby once every season someone outside the profession of medicine was asked to address them. There was a tendency in every profession to become narrow; one could often learn a great deal about his profession from those who claimed to know nothing about it. It had been said that after a man had reached the age of fifty years he was his own best physician. If that were true, and if it were true that a man grew better as he grew older, they had decided that Mr. Depew was good enough by this time to be accepted by the profession. He had gone away beyond the Scriptural three score and ten years and would tell how he had done it.

The Art of Growing Older, and the Value of an Interest in Public Life.—Mr. Chauncey M. Depew delivered this address in which he said, in part, he feared that if he revealed how often he had had to rely on a physician the old tradition about a man of fifty years being his own best physician would disappear. It was not often he confessed that he felt any trepidation in speaking in public, but he felt that it was dangerous to speak before such a highly specialized group of men. But if age meant experience, and no one could question but that a man past four score had had experience, then he was fitted to speak with authority unless there was some one older to gainsay him. It was true of all professions that their knowledge depended largely on experience (with the exception of the theologians) and that was the reason that they grew and changed and progressed. Seventy-five years ago, say when he was a boy seven and a half years old, his village had any number of old men and women. Every woman past fifty donned a cap which proclaimed her antiquity and wore a gray shawl, which advertised the poverty of her blood. Every man retired at seventy and lounged indolently about the house or sat on a nail keg in the village grocery store and discussed the events of the day. To-day one could not find a woman wearing a cap, and, indeed, it was difficult to distinguish the mother from her daughter. It was equally difficult to

find an elderly statesman on a nail keg, discussing politics. Modern inventions, the telephone, the cable, and easy and luxurious modes of travel had connected a far-spread world and did much to keep alive mental activity. Shakespeare, 350 years ago, applauded rapturously the seven ages of man. He died at the age of fifty-two, having given the world the greatest literature it had ever had, and at that time regarded himself as an old man. In his "Seven Ages of Man" he pictures the boy in the second age, with his satchel on his arm going whining to school. There was no such whining boy to-day; he was now either playing baseball or rooting for his side. In describing the sixth age of man, Shakespeare spoke of the old man as of "slippered pantaloon and shrunken hose" with his "shrill and piping voice"; to-day that man is at the bar—the legal bar, he meant—or in the pulpit giving to a listening world the best of his maturity. He spoke of the seventh age as "sans teeth, sans taste, sans eyes, sans everything"—now there was no such age, the dentist provided teeth, the oculist and optician provided better eyes very often than nature had given, and the housewife had better look out if the old gentleman found something on the table not equal to what he had been accustomed to in the old days. The ancients apologized for their age, and not only the ancients, but others. Cicero, at the age of sixty, wrote "De Senectute," in which he apologized at length for his old age. No one to-day would expect an apology from a man over eighty. To-day no one apologized for his age, but he was exceedingly proud of it. There were many ancient things of which one might well be proud. The oath of Hippocrates had never been improved upon and Hippocrates knew of many things that were still of value to the medical profession. Adam Smith of Edinburgh, the greatest political economist of his day, when an old man wrote the book entitled "Inquiry in the Nature and Causes of the Wealth of Nations." That book was responsible for England's policy of free trade and later for the adoption of a high protective tariff by America.

Mr. Depew declared that he knew of nothing which had had such a tremendous effect on the world as that utterance of David in the Ninetieth Psalm, "The days of our years are three score and ten, or even by reason of strength four score years, yet is their pride but labor and sorrow." No one knew how many untimely deaths this had occasioned. This had been proclaimed from the pulpit as an inspired saying and men and women died because they believed it. That psalm has caused more deaths than the war now raging in Europe. Dr. White, who formerly lectured in anatomy and physiology at Yale, said you could get any disease you wanted if you thought of it hard enough and long enough, and you could die when you wanted to. He spoke of having heard men say, "People in my family never live over seventy years," and they believed they could not live beyond that time. Dr. White said there was such a tradition in his family, so when he reached the age of seventy he decided to retire and to engage in a different occupation; he believed that in this way he could break the record, and he lived to be over four score. Some preachers believed and preached not only that man's allotted time was three score and ten years, but they believed and preached that if the time was extended to four score years it was as an actual punishment for sin. They took this view without taking into consideration the life and character of David. David grew up in poverty, became the leader of the army and then king of a small tribe. He gradually extended his power to the borders of Egypt. He had wealth and power and could enjoy every luxury that money could buy, and "he lived the life." When we take these facts into consideration in connection with his condition and attitude in old age we get a different point of view; the three score and ten years limit loses its power over us.

The speaker related that his great grandfather lived to the age of eighty, lamenting the decadence of his age, and bemoaning the fact that the end of the country was near and he was glad he would never live to see its downfall. The reason of this was because a Federalist (Jefferson) had been elected President. Jefferson had spent some time in Paris and was reported to have imbibed atheism, French culture, and radicalism. To turn to the other side of the picture, during his term as senator, Senator Hoar of Massachusetts, Senator Pettus of Alabama, and Senator Morgan of Alabama, all of them about eighty, were the leaders of the House, because of their wonderful grasp of all questions, their vast knowledge of history and their intellectual vigor and alertness in debate. Their longevity and their vigor of mind and body were due to the fact that they felt their responsibility to one hundred millions of people; they took very seriously their high office. It had been his good fortune to have been in Paris at the time that Michel Chevreuil celebrated the 102nd anniversary of his birth. He had entered the government service when eighteen years of age and had been promoted from time to time until he held a high position in the scientific world. He gave to France the dyeing process that assured to her the supremacy in the silk trade. His birthday was celebrated with great festivities. A gala performance was given at the opera at which he received a great ovation which he met with enthusiasm. He did not leave his box until two o'clock in the morning. The following morning he reviewed a large army of troops; in the afternoon he read a highly scientific paper, and in the evening attended a banquet at which Mr. Depew had the good fortune to be placed beside him. He asked Chevreuil how he had attained his one hundred years. The reply was that he had held a government position with regular salary and periodical increases, so that he had never had any financial worries; he had never used alcohol, but drank only the waters of the Seine (the Seine at that time was a sewer). While this conversation was going on an old man on the other side was filling his glass repeatedly and drinking to the health of every one. This occasioned Chevreuil much anxiety and Mr. Depew asked who the old gentleman was. Chevreuil replied, "that is my son." Mr. Depew asked how old the boy was and received the reply, "seventy-six." This child was the only real care Chevreuil ever had.

Mr. Depew stated that in his own experience and observation the fact that had impressed him most was the absolute control of mind over body. He felt quite sure that there was something in a man's mind which, if he could concentrate and control, would place him where nothing could ever happen to him. When a man lost control over his mind he lost his best asset for attaining longevity. To lose control of one's temper was absolutely destructive to the possibility of longevity, because this used up vitality. When a man carried his business always with him, to church, to the opera, to his home, it was fatiguing to him and he was making a great mistake. It was likewise a mistake to retire from business. The process here was always the same, unless one retired into another vocation in which he was as much interested as he had been in his business. The usual process was to retire to his old home town and settle down expecting to enjoy life with the same vigor that he did when he was a boy working in the village store. It went fairly well the first year; the second year he grew irritable; the third year he began taking medicine; the fourth year he took patent medicine, and fifth year one usually saw his obituary while those younger and better able were enjoying his estate. The question was, "What could man at this age turn to?" "Should it be sport or another occupation?" It was not always possible to engage in another occupation, but sport was always possible. Formerly elderly men turned to horses and took great pride and satisfaction in their paces. A man got a great deal of pleasure in seeing how much speed he could get out of his horses and in watching the superb play of muscles and nerve. This was invigorating and absorbing, but the automobile had destroyed this sport. After the automobile came golf, and now everyone was playing golf. Then there was billiards, but here there was the disadvantage that one must play at the club, and this meant smoking cigars and drinking a few cocktails. But a time came when a man could no longer even play golf or billiards and what was he to do then? There was always one field left and that was service; this would last to the end. There was service for one's country, for the State, for the municipality, for the church, for the hospital, everywhere. This was the one thing that would last for ever. Public life always provided an interest. Every man should be interested in government, for it was a personal matter, determining the conditions that governed his property and the amount of money that he could accumulate. If the methods of government were not what they should be this was the fault of the people. An interest in politics might be aroused just before a presidential election but it was then forgotten for the next four years. The primaries had been devised to overthrow the power of the "political boss," but the people took no interest in them, so the "boss" ran the primaries and he was now greater and more powerful than ever before because he had the sanction of the

people. There was no body of men better fitted to take a part in politics than the doctors, but they had failed in this matter of public service. All lawyers took an interest in politics because there were great prizes to be won, but not so the doctors; nevertheless there was no one of whom men were more afraid than they were of the doctors because of the confidential relation existing between the doctor and the families in which he practised. The doctor should bring the weight of his influence to bear at the caucus and at the primaries and all the way along to the polls. This, however, was not a subject for anyone to take up as a relief from professional duty. In government there were always with us the conservatives and the radicals, the Hamiltons and the Jeffersons, and just as long as one party was about equally balanced against the other we would not go over a precipice nor die of dry rot. Conditions today were parallel to those of the days of Hamilton and Jefferson; Hamilton stood for strong central government, Jefferson thought the central government should place the least restriction possible on the States. From the combination of these two views Washington produced the Constitution of the United States, the first constitution to survive for one hundred years. There was the same struggle between conservatives and radicals today, though perhaps Jefferson would be astonished at some of the things his party was doing. So long as there was this balance of power and people were interested the country would grow and prosper.

But, no doubt, someone was asking, "How about yourself?" For the benefit of that person he might relate that at one time, under the stress of affairs, he had reached a point where it became evident that he must have relief from the strain, and then he made the platform a way of escaping from busines and freshening up his mind. On one occasion he had had a very trying conference and went home completely exhausted. He had promised to make a speech in the evening. He lay down and rested, then prepared his speech, and appeared at a banquet at Delmonico's, where he delivered the speech in due form. He went home at twelve o'clock, slept well, and appeared at the appointed hour for further conference. Another man was there who said he had just seen a column in the newspaper about the speech Mr. Depew had delivered the night before and that he was destroying his reputation as a business man, for no one could see how he could attend to any business and have time left to prepare and deliver so many speeches. This man then told that he had played billiards, smoked, and drank a few cocktails the evening before and did not retire until two o'clock; he confessed that he did not feel good for anything. One must insist on regularity of habits, that a man get up early, and that he give up liquor and tobacco. There was no need for anybody being a mollycoddle or an insipid Pollyanna, but he should keep up an interest in all public questions, do his little charities and acts of kindness, not because he ought to but because he wanted to, and then he might go to eighty, to ninety, to one hundred years of age, feeling that it was a glorious thing to have lived in this beautiful life and to have enjoyed all that there was of it.

Role of the Endocrine Glands in Mental Disease.—Serradell in a recent thesis of Toulouse refers first to the psychic disturbances which accompany menstruation, and which are characterized by irritability, exultion, motor excitability, and also by indifference and apathy; while in certain cases true psychotic states are present. After ovariotomy women show apathy, irritability, sadness, weakening of memory, suicidal ideas, etc.; also psychoses of confusion or melancholia. The mental peculiarities and psychoses of the menopause are well known. But nearly all endocrine organs may play some part in mental troubles. In exophthalmic goiter maniacal states, melancholia and mental confusion have at times been seen. In acromegaly dementia, melancholia, and delirium of persecution may occur. In adrenal insufficiency the syndrome may include slowing up of the intellectual faculties, melancholia, and neurasthenia. Furthermore, in autopsies on the insane alterations of the endocrine glands are often apparent even although certain symptoms may have been absent. The good results of opotherapy on the insane represent further documents, the most striking having been noted in connection with psychic and somatic infantilism. The glands chiefly given are the thyroid, ovary, and adrenals.—*Journal de Médecine et de Chirurgie Pratiques.*

Therapeutic Hints.

Hydrotherapy as an Agent in the Treatment of Convalescents.—Radcliffe offers the various baths as a curative measure for those suffering from nervous disorders due to shock, or in cases of disordered action of the heart, giving defective circulation. In cases of frost-bite the running water bath improves the circulation, and the symptoms disappear after a few immersions. Sprains which present a sodden appearance, under this treatment, become filled with blood and reparation takes place. There are two types of baths—one for arm and one for leg. The running water is kept at a temperature of 105° to 115° F., depending on the susceptibility of the patient to heat. The arm, leg, or foot is placed in this bath for 35 minutes, then light massage and exercises are given. The pool bath for full immersion, in cases of heart and nerves, is given in a large tub with running water at a temperature of 92° F. Immersion lasts for an hour, after which the patient is made to rest. This bath must be given in a quiet room, softly lighted. The treatment usually lasts in all these cases from fourteen to twenty-eight days.—*British Medical Journal.*

Treatment of Tonsillitis.—Bush advocates absolute rest in bed even in light cases of this condition, particularly since the streptococcic type of tonsillitis seems to be gaining in ascendency, and is credited as the cause of certain types of rheumatism. Aside from the use of the salicylates, which is strongly advocated, alkaline or astringent treatment must be given the tonsils. The most rational treatment is the prompt preparation of an opsonic autoserum, and administration in proper doses, thereby affording nature a better opportunity for the production of those antibodies without which a cure is impossible. Antitoxins are nature's treatment for diseases and drugs are either accessories or mayhap impediments. It seems unnecessary to state that a brisk, but light purgative, such as Rochelle salts, should be given at the onset and low, nourishing diet maintained.—*New York Medical Journal.*

Nuts and Fruits in the Diet of Children.—Scott suggests the dietetic and nutritive value of these foods for children because they are palatable and enjoyed. The nutritive value of fruits is found in the salts they contain, and their therapeutic value in their laxative, diuretic, and antiscorbutic actions.—*New York State Journal of Medicine.*

Determination of Sex.—J. S. Freeborn gives a record of a series of 1,000 cases as a basis for his theory of determination of sex, in which a correct diagnosis was made in 97½ per cent. of the cases. Note is made of the occurrence of date of conception in the first or second half of the intermenstrual period. Conception occurred for females usually 5⅗ days after the last menstruation; for males, usually 19 days after the last normal menstruation. He is of the opinion that sex is fixed at time fertilization occurs; the ovum determining the sex independent of any inherent quality of the spermatozoon, and all ova maturing in the first of the intermenstrual period are female-producing ova and the later maturing ones are male-producing ova. Marital relations should be limited to the first ten days after the menses for girls, and to the last ten days of the intermenstrual period for boys.

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COMMENTS UPON THE PERSONALITY, BEHAVIOR, AND CONDUCT OF CONVICTS IN SIBERIAN PRISONS, AS TAKEN FROM DOSTOEVSKY'S "HOUSE OF THE DEAD."

BY L. PIERCE CLARK, M.D.

NEW YORK.

MORE than a few workers in psychiatry have wished there were a psychological dictionary of human behavior and conduct, as a normal guide or standard to life reactions, by which they might, within relatively precise limits, judge the degree of variation of mentally abnormal and psychotic individuals. It is precisely the lack of this norm or pattern that brings out the innate defect of case reports in a just estimation of the actual beginning of psychotic reactions. Inasmuch as the new advance in psychiatry, as Hoch justly contends, must be made in gaining a scientific analysis and evaluation of ideational or delusional mechanisms, or mental symptoms of the older psychiatry, in any given psychosis, the need as above outlined becomes the more urgent. Had traditional psychology given us a good account of the emotions, we should not now find ourselves so destitute and in such great need for this aid.

In the absence of a normal psychology of the emotions, one turns to the careful analysis of personalities and characters made in neurotic and psychotic individuals in the newer studies on these subjects. But often enough these individuals have already shown exquisite or pronounced departures from the commonly accepted standards of individual and social conduct, so that almost any one may detect the glaring fault. The psychoanalytic movement in handling the neurotics and psychotics has demonstrated that the future of prevention in mental hygiene must rest largely in the early detection and correction, if possible, of the earliest abnormalities of these persons. Everywhere attention is being paid to the study of human behavior and conduct in the schools, juvenile courts, and in mental clinics. To analyze and give the excellent results already accomplished in this field would carry us too far away from the present purpose of this little essay.

It is not only desirable that the personality, behavior, conduct, and emotional reactions shown therein should be studied in the psychoses, and in so-called normal individuals, but we need equally careful studies on the interned criminals.

I venture to say that there are none so dull of comprehension that they may not find glaring faults in our prison administration, and that all will admit our approach to the problem of its correction must be based not upon a study of the prison inmates *en masse*, but upon an exact study of the individual criminal. Such studies should be made by trained criminologists in laboratories connected with the prisons, just as the insane are observed and studied in psychiatric institutions in our State hospitals. In search for some careful analyses of the personality of criminals, their behavior and conduct in the fine relief of a strict standard of discipline and accountability which close prison surveillance brings out, I came upon a description of the personalities, behavior, and conduct of convicts in Siberian prisons, as revealed in a critical study of Dostoevsky's "House of the Dead," recently translated. In this work I found many points of interest which I have judged of sufficient moment for review and comment.

It must be borne in mind that the prison buildings were dormitories only, and that all the men worked, either in the prison yard, or in the region surrounding the prison. Hence we find no mention of convict's pallor and certain other phenomena associated with prison life. Their faces were branded so they were marked men for life. It is not surprising to learn that prison life teaches the prisoners patience, yet, if one may judge correctly, but few profit from the instruction. We find that the effects of prison life are to age a man greatly, despite freedom from many causes of death and disease. The cause for this would seem to be largely or solely mental—the loss of hope being the greatest factor. The men in prison never fell asleep readily; as they lay thirty on a "bed" it would often take four hours before all were asleep. Therefore, a good night's rest was rarely experienced by any of the prisoners.

As already mentioned, the "branded face" was a constant reminder throughout life that they were outcasts. After the sentences expired they lived near the prison or in some other village as a "settler" and were for the most part considered "broken men."

It was noted that convicts seldom talked of their misdeeds or asked questions of others. It was considered bad form. Those convicts who bragged of hideous crimes were soon silenced, although not from indignation. It would seem to have been motivated from being bored than otherwise.

The chief personal qualities of the convicts were sullenness, envy, vanity, boastfulness, proneness to take offense, and great sticklers for form, all rather childlike traits. They never showed surprise at anything. The great majority were given to constant slander and backbiting. It was "good form" to submit to prison regulations and disciplines.

There was often a peculiar personal dignity about the convicts, although much of it seemed a bit stiff and overemphasized. There was never a sign of repentance or remorse; however, they seemed to

feel that they were there by their own fault, and have many sayings to that effect. But let one fully agree with them, and they often took offense, which makes one doubt their sincerity. When reproached or censured by a non-convict they cursed him terribly, as though the burdens they bore were quite enough without additions being assessed thereto. Often their behavior made one compare them to a lot of old women, so prevalent were backbiting, intrigue, slander, envy, and quarreling. Yet they instinctively respected a strong, dominating fellow prisoner.

They never by any chance brooded over their crimes. They even thought their behavior was ethical, which was no doubt in part due to extreme vanity. In other ways, too, they often exhibited a childlike naïveté.

It would seem that prison confinement and severe labor develop hatred, a lust for forbidden pleasures, and a "fearful levity"; the hatred always extends to society. After his punishment the convict feels purged of his crimes, and that in consequence he can begin again with a clean slate. Only in a prison does a man sometimes own up to most vicious crimes with a light heart.

As an instance of extreme repression of psychiatric interest is the fact that the prisoners almost universally form the habit of raving and talking in their sleep. They say, "we are a beaten lot; our guts have been knocked out, and that is why we shout at night."

Work as prisoners was hateful, but private work for which they received some compensation probably saved them from an increase of viciousness. It was shown here, as elsewhere, that a man must be able to work for himself and own property. This as a rule was not strictly forbidden in the Siberian prison, and there were cases, like that of a convict jeweler, in which a man's services were in demand by the villagers. They sometimes received alms when going to work. On long winter nights men worked with hidden tools, learned trades, etc. The chief proscription was in regard to owning tools. The graft system, in some respects, was like that in our own prisons, but no high officials took part in it.

Now that we have learned that the drug habit is either contracted or greatly augmented in all prisons, it is interesting to note that in Siberian prisons vodka was smuggled into the dormitories and sold, and some prisoners actually grew rich. But as money was of no value in prison—to the long-timers and lifers, at least—the money saved was nearly always spent in gambling, drunkenness, or on prostitutes. (This latter condition was rare, extremely expensive, and involved bribery; the usual substitutes were common.) Every man pilfered from every other man, and was usually thrashed for it.

The subject of a trade or calling pursued in prison, almost always in secret, was very diverse. Nearly every calling was represented, including money lending, teaching, valet work, trading, etc., etc.

Under the system of the prison in question there was much spare time in winter. The men thus thrown together were hopelessly bored. There is something peculiar and trying about life in common. The most energetic men are bound at last to "start something," a row, an intrigue, drinking, card playing—in which latter act a convict often lost his last shirt. About one-third of the convicts, however, worked at something, as already stated.

While real fighting was "bad form," men often "faked" fights for the entertainment of the others. They would insult, threaten, etc. But if they seemed about to fight in earnest they were pulled apart. Real fights are always reported by the guards, and an investigation follows. Swearing was not forbidden, and cursing matches were common. A connoisseur in cursing was respected.

A newcomer was viewed from various angles, one being in regard to the amount of money he might possess. They were anxious to get his money for personal service, tips about prison life, or by theft or fraud. Newcomers who looked like gentlemen were regarded with hostility and dislike. This persisted even after the gentlemen had become inured convicts. While the feeling of the peasant convicts toward the gentlemen convicts was a deep-seated hatred, some of it was from jealousy, as the latter had, as a rule, money, and could buy special privileges.

Convicts like piecework. They work hard until all is finished and they can then return to the prison and have time to themselves. As already stated, the convicts loved to have special work and own property. When this chance was cut off they grew depressed, and stopped at nothing to get money. It never stayed long with them, being either spent or stolen.

All convicts in the prison described seemed to be attached to a religious old man whom they called grandfather. He was free from disagreeable mannerisms, seemed childlike, bore everything bravely, was greatly cast down, but always strove to hide his melancholy, and would laugh in such a way as to compel liking. He was communicative, but never argued. In most ways he was the very opposite of the men in his special church. The convicts honored him by giving him their money to keep. "Grandfather," despite his simplicity, devised a most ingenious hiding place for it, where it was safe from theft.

It is unnecessary to state that a convict is eager for freedom. Yet money is seldom saved. When enough accumulates, his repression breaks forth in various ways. Some spend their savings in new clothing, usually of an assorted lot. Their pleasure in these clothes is quite childlike. They soon go to pawn, or are sold to others. If holidays were near at hand, the new clothes came handy. The clothes might be associated with a feast ending in a debauch. Very seldom indeed was any one asked to share it.

When a convict got drunk on vodka he was always shielded by his fellows—an example of communal action. All Russians, and especially convicts, have sympathy with a man who is helpless or irresponsible from drink. Although great precautions were always taken to prevent the report to the governor, usually the inferior custodians had no mind to interfere.

A talebearer, traitor, or spy among the convicts is never humiliated or shunned, and such a man even makes friends. The convict, as a rule, cannot be made to see anything wrong in treachery.

The prison reaction differs much with the prisoner and his crime. Some convicts enjoy prison life, become criminals in order to be imprisoned. Many find prison life no worse, or even better, than their outside existence. For the educated man, however, if he realizes what his life means, prison is a torture.

Convicts are not dangerous in the sense that they attack innocent people. All who come in business

contact with them fear their treachery; the convicts realize this fear and it makes them conceited. The keepers and higher officials must be firm and fearless to gain their respect, and must at the same time trust them. A high official who visits them unguarded is popular. Had any convict acted in a threatening manner, others would have suppressed him. Many wardens in our own prisons can testify to similar experiences. Nevertheless, one infers that the intense dread universally inspired by convicts must have some reason. Aside from their appearance, numbers, attitude toward society, etc., which give rise to theoretic insecurity, the narrator in the book of "The House of the Dead" knows of but one actual motive which is in evidence but rarely. The man who is to be flogged soon is in a state of fearful apprehension, and will do anything to "change his luck." Such a man may assault a keeper; it will, at most, cause an investigation which will defer the punishment for a short time. In the end the latter will be worse.

The convict has an extraordinary love for physicians, who can sometimes prevent floggings for the time, although he knows that punishment is coming to him as soon as he leaves the hospital.

Any convict, however sturdy, will put off a flogging. The ordeal seems to be too severe for them to want it over at once. Some proud ones try to seem unconcerned before the act, but they deceive no one. The convicts show humane impulses by their failure to make comments on such men.

When the convicts are locked up in their sleeping room with no keepers present, conditions become "homelike." The lights supposed to be doused were at once relighted, for each man had a candle and stick. The workers took up their private labors already mentioned and others played cards. At times card playing never ceased until the doors were unlocked in the morning and never until the great majority were broke.

As regards class spirit in prison, it was shown there was a special type, down and out, and devoid of pride or initiative who were content to wait on the others, run errands, act as sentinels, etc. For a few kopecks a night one will act as outside sentinel and nearly freeze. The free-hearted convict, possessed with money and filled with vodka, is never generous with these fellows, and always beats them down to the lowest figure and insists that they carry out their agreement faithfully.

A convict is sometimes tricked into "changing names" while en route. By impersonating another convict he is sure to have much the worst of it, while the other gets a lighter sentence. The price paid is usually ridiculously small. Such victims always remain objects of derision, which is chiefly because they did not hold out for a large sum of money.

Toadying and spying have been mentioned before. Some of these men were actually admired because of their art in getting around the superintendent and often deceiving him to their own advantage.

A convict without one kopeck in his pocket was tenfold more dejected than one who had a few of them. Had the chance to work for themselves and the possibility of private gains been eliminated, these men would either have gone mad, pined away, or committed some outrage for which death would have been the penalty. No class of men is so greedy for money, none spend it so rapidly or foolishly. To possess it they cheat and rob one another; they will do anything whatever. Yet despite their passion for freedom, they never save up against it, for to be able to spend money, to buy vodka, to meet with women makes him feel that he is of some account for a time even in prison. This harmonizes with the fact that convicts have a tendency to assert their individuality by bragging, bullying, etc., and money alone can make this attitude real.

Of great interest are the occasional instances of running amuck, so to speak, in men who have been model prisoners for years. Their behavior is demoniacal, and they may commit murder or rape; they get drunk and disorderly, play pranks, etc. Their "crushed personality" rises and asserts itself until it reaches a pitch of fury, spite, mental aberration, or fits and convulsions, quite terrible to contemplate.

Every expression of personality on the part of a convict is repressed as criminal by the authorities. Dostoevsky calls the explosions or reaction engendered by continual suppression of his individualistic desires poignant hysterical cravings for self expression. He believes that a man buried alive might act in the same irrational manner when he realized his condition.

Convicts either show scowling brows or overjubilant faces. Volunteer entertainers, buffoons, etc., while they may at times divert the convicts, are despised and abused. This seems to be due to their lack of repose and self control. In a word, it is "bad form," for the convicts wish to be stoical, reserved, and dignified. Occasionally they tolerated this sort of man if he would strike back at them.

Convicts look down on peasants, although half of them are from the peasant class.

When set to a task, convicts are unable to agree among themselves as to how it should be performed. An outside foreman seems necessary. Once they have received their orders, they work with surprising energy, such as breaking up an old barge and saving what was worth while. This speed was due, perhaps, to the piecework concerned. But by working with speed they saved a half hour a day, though they worked very hard.

The prisoner's first dream on entering a prison is always freedom. Hope would seem to be a much stronger feeling in a convict than in a free man. He has an unconquerable feeling that he is merely "on a visit" and must some time return home. When he first enters there is apparently no difference between a two-year and a twenty-year sentence. He pictures himself released with all the qualities of youth unchanged. Even after a long sentence life is still before him.

If a man is fond of ordinary prison labor (perhaps only because the exercise is good for him), the convicts gibe him. Shoveling snow was agreeable to the convicts and they worked in gangs in order to quickly release buildings snowed in. Nearly all became cheerful. Snowballing was frowned on as undignified.

It is interesting to note that convicts perhaps unconsciously demand some respect from others and wish humane treatment. Food and shelter are not enough. Good men with kind words can do much with them. But the convict does not wish his officials to be soft, for then they could not respect them. They have some pride in their governor and wish him to be dignified, with decorations which point to past honors. They like it if he has a "pull." From him they demand strictness with justice.

One man of the "comedian" type whom the convicts call both "foolish and useless," had no use for

the men who despised laughter and because of this resentment was treated with respect.

The convicts appear to have been religious throughout, crossing themselves, praying to ikons, etc., and at Christmas denied themselves in various ways, by avoiding swearing, etc. While in general decidedly unfriendly to one another, on Christmas they at least tried to be friendly, giving Christmas greetings to those whom they had always disliked.

The intense delight of the convicts in the private theatricals given during Christmas week was, of course, natural, relieving the prison monotony. Nearly all wished to help in some way and only the best men were in demand. Even the author, as an educated man, was for once treated with respect by his enemies. Outside the prison some bluffer might have secured prestige but in prison the convicts are not deceived. Under these conditions justice becomes a virtue. The best man for the place will have it whether or not they are on good terms with him. The author comments that no wise man can teach these convicts, but often could learn from them.

At the Christmas entertainment there were not enough seats for the convicts, but there was no scramble. It would have been very bad form to have behaved badly on such an occasion.

The audience at the entertainment was carried away; their faces softened and even seemed childlike. Applause was generous. The music and acting seem to have been superior. The play was one which dealt with a knavish servant, and his pranks were wildly applauded. The convicts were proud that they could turn out such an entertainment.

It seems that the convicts never tired of praising the doctors. They often compared them to fathers.

Some patients in the hospitals were really ill; others were sent by the doctors "to have a rest." If there were plenty of spare beds the doctors filled them with patients who while not really ill were deserving of sympathy.

Some patients were suffering from the effects of flogging. Their reception by the inmates depended on the offense for which punishment was given as well as the extent of the latter. A very bad man who had been beaten hard enjoyed more sympathy than a runaway recruit. No comments of any kind were made. Orderlies' services were not required. The convicts who were able took full charge of the beaten man and better care he could not have had. The author gave one such man a cup of tea. He was too dazed to thank him. After having done all they could the convicts at once ceased to notice him.

The doctors treated every man with kindness and spoke friendly words to all. The convicts knew the physicians were not obliged to do this, and therefore appreciated it. They would not have minded rough treatment. Therefore the doctors were strictly on the level.

It is surprising to learn that no convict, however sick, ever had his fetters removed, they died in them. Even the doctors did not interfere. The weight was ten pounds and they were so little in the way that they did not interfere with escapes. On the other hand, in wasting diseases they became a burden. The author came to regard them as a mere badge of degradation.

The "ward doctor" was so kind as to be looked on as "soft." He could be imposed upon, was also diffident, blushed easily, etc.

A number of the men who rested up were untried prisoners—detained in unsanitary quarters. These men were really much worse off than convicts; as a rule they were pale, thin, and weak. They had no disease, but the sympathetic doctor gave them some imaginary affection, and did not have the heart to mark them "cured" after a long rest. The head physician, however, was just and much respected because he would not stand for malingering.

The men bore no vindictiveness for their beatings, but would goodnaturedly discuss them, the number of them, those who did the beating. The men seemed to realize that, having broken laws, they should be punished. They showed much fatalism here as elsewhere.

It is rather surprising to learn that some floggers compel a certain affection. They do not play tricks, such as pretending to let them off and then suddenly flog them. The popular kind, while they flog hard, speak a kind word, or otherwise inspire a friendly feeling. The man referred to after he left the prison was always remembered as a "jolly good fellow," a "father to us."

Time in the prison hospital was passed in telling stories, looking forward to the doctors' visits, and in eating. Individual feeding was the custom, and the man with scurvy fared best of all—beef with onions or horseradish, vodka now and then. The special diets did not please all and trading rations was common. Some had no desire for food and gave their ration to a neighbor.

Nothing pleased the convicts so much as the admission of an insane man, but the latter soon got on their nerves. Insane recruits had to stay there until other quarters could be secured. Straight jackets were applied but did not help much.

Convicts who were not very ill disliked medicine, and at times would not take it. But a very sick convict liked to be fussed over—bled, cupped, poulticed, etc. Some found cupping painful—men who had lived through the worst beatings.

"Candle light" was the worst time of the day for the prisoners. It is a time for thinking, dreaming, reminiscences, and speculations as to the future, such as what will one do when his time is up.

We note that spring has a peculiar effect upon the convicts. It arouses desires, cravings and a yearning melancholy. They are impatient and restless and more apt to quarrel. There is more noise and shouting at this time of the year.

To "change one's luck" is a characteristic expression. The convicts, despite the impracticability of getting out before their time is up, always have hopes that luck will change. This wish seems to concern only the prison that he is actually in. He might possibly be transferred to another one, and there are other hazy possibilities.

The convicts took the sacrament once a year and had a week to prepare for it. No work was done, and they went to church two or three times a week. They attended a church in the town, but were not allowed to pass beyond the background. The convicts prayed devoutly, put in their penny in the collection. Reference to the thief on the cross was looked upon as personal, and all kneeled in a body at this moment.

When the convicts had time some one subject usually came up for general discussion. These were often rumors. However improbable these were, the convicts showed all the credulity of children—even when the rumor came through a notorious liar.

One of these rumors actually came true. It referred to a tour of inspection by a high official.

Convicts delight in discussing officials, rank and precedence, and who has the most power when a quarrel comes. They almost quarrel in these arguments, one saying a certain general is superior to another. These discussions are regarded as more refined than any others.

There was a regular prison horse and when it died another would have to be supplied. The convicts took the greatest interest in picking the successor. They seemed to be buying him for themselves, and were as delighted as children. A large proportion of the men were "horse jockeys," many lived on horseback when free. Some wonderful "judging" was seen.

The convicts in general were zoöphiles, although for some reason they disliked dogs, regarding them as filthy brutes. They utterly ignored them (this is the peasant idea of dogs). Pets were not allowed, but at different times there were goats, geese, etc., beside the prison horse. Most remarkable was a wounded eagle who would not make friends. When finally they let him go, they sympathized with him. He had never shown the least friendliness. For awhile he was forgotten in the prison ward but someone always fed him.

Convicts, especially lifers, including the most sensible among them, led a strange inward life, a sort of dream existence accompanied outwardly by restlessness. The peculiar facial expression of most convicts, gloomy, sullen, unnatural, was also an index of this dream life. At times the dream was almost a delirium. An illogical sense of hope was part of the mental state. There was also the almost delusion that they were only on a visit, after all. Such men must necessarily dream. Such psychic life is seen outside of prisons only in the psychoses and psychoneuroses.

Convicts always regarded candid, simple, honest people as the worst of fools. The ill-humor, the vanity of the convict would make him antagonistic to such opposite types. The few really good-natured people among the convicts had to dissemble. Sometimes a very religious man got comfort from feeling that he was a martyr.

There was once a complaint by the convicts about the poor quality of the food. A committee waited on the superintendent. The "gentlemen" convicts held aloof. After the strike had ended disastrously, the beaten convicts made no reproaches to the "gentlemen." Neither did any of them take any action against the agitation. The whole matter was definitely dropped.

The convicts actually loved one of the superintendents, although he did not remain long. They spoke of him as their father. He seldom passed a convict without a kind word or humorous remark. He did nothing to bring about want of respect. He was a small, cocky kind of person, looked very dissipated, had no air either of authority or patronage. The convicts actually smiled when he addressed them. He looked absolutely fearless and self-confident.

When a convict actually escaped the men were tremendously excited. Prison monotony vanished. All were joyful. These escaped men had actually "changed their luck." The convicts began to swagger in the presence of the guards. In the interim the escaped convicts were discussed fully. But in a few days they were brought back. The convicts then became angry and depressed and abused the men because they were taken. From then on they had no use for the losers, and ignored them.

Something of humanizing value has been obtained in the reform of the Russian exile system, if various reports are to be believed. Unfortunately, however, the treatment of the criminal class has not been as sharply demarkated from that administered to political offenders as one might wish, as yet. Much of the punitive, instead of the reforming and constructive upbuilding of personal character still obtains.

The modern view of reform treatment in our States' prisons has been on trial among us for several years. It remains to be seen if it is not too late to bring about a great moral regeneration in the confirmed criminal, one in whom the anti-social attitude is so definitely formed that new habits of proper adaptation cannot be instituted. However this may be, I think that most psychiatrists are anxious to see what some real studies in this direction will produce. Undoubtedly a broad and comprehensive study of the various types of criminal behavior and attitude from the first apprehension and infringement against the law and social order to that of final incarceration of the old offender in our States' prisons, will be very useful in determining the correction of much of the new attitude in prison reform and point the way even more closely to sane and safe methods conducive to future progress.

If one were to propose a scientific method of approach to the whole problem it might be formulated as follows:

There should be centers for study of the anti-social or criminal tendencies in the confirmed group as in our States' prisons, in the less severe grades of criminal acts as in our male and female reformatories and in the mildest or most benign offenders as in the juvenile courts and first offenders. Then if these careful case-history studies and the environmental influences in which the criminal acts had their origin could all be assembled for group and mass analysis we might have a fairly comprehensive understanding of just what types of inherent traits in different individuals are likely to be benign and what are malignant. It would then be possible to formulate a diagnostic and prognostic attitude toward the whole problem of criminality, one of the most pressing issues that confronts society to-day.

This hastily sketched scheme would probably require at least several autonomous research groups of workers over a period of several years' study. From time to time, general conferences between the different groups of workers could be held and thus find where their individual studies dovetail together, and also find where they could help each other on methods and material studied. Research of this character would require the very best trained men and would probably be rather costly. It is obvious that from the very nature of the study it should be done under private grant of funds.

Since the foregoing article was written, the Rockefeller Foundation has seen fit to aid in establishing a psychiatric clinic at Sing Sing Prison. The same agency has already undertaken similar research work at the Bedford Reformatory for Women. Both efforts give promise that we may soon be in possession of actual clinical data which will be of the highest value in shaping a more enlightened policy in the care and training treatment of criminals.

128 East Sixty-first Street.

REMARKS ON ANTERIOR POLIOMYELITIS.

WITH REFERENCE TO THE PRINCIPLES OF TREATMENT AND THEIR PRACTICAL APPLICATION.*

By ROYAL WHITMAN, M.D.,

NEW YORK.

THE present epidemic of anterior poliomyelitis has been so thoroughly exploited in the newspapers that it may be the general impression that the disease is a new one, that its characteristics are not well understood, and that novel remedies are now to be employed in its treatment. As a matter of fact, it differs from the epidemic of 1907 only in the greater number of cases, in the higher death rate, and in the larger proportion of complete recoveries.

What is actually new is the general interest that has been aroused in the subject, which will assure better opportunities for the scientific study of the disease that may eventually lead to its prevention, and which will certainly assure more efficient treatment of its effects than in the past. It is with this latter phase of the subject that we are at present concerned, and the most practical development toward efficiency is, it seems to me, the enlistment of the social-service workers; since they will have the opportunity to inspect the conditions of the homes, to send neglected cases to hospitals or to day nurseries, to instruct the parents as to the character of the disability, and to supervise the practical application of the treatment.

This is of the greatest importance for, as has been suggested, the present epidemic has brought out as yet no novelty, and the hope for the future lies in the more efficient and general application of methods which have been tested in the past. Under efficient treatment, by far the larger number of the patients may become, eventually, useful members of society, and the contrast in the final results between the patients who have received such treatment, and those who have been neglected is convincing proof of its value.

Anterior poliomyelitis is an acute infectious disease which involves the central nervous apparatus, and paralysis and deformity are its consequences.

During the early stages of the disease the paralysis is usually widespread, because many centers and conducting tracts are temporarily disabled by congestion and swelling. Others are damaged in a greater or lesser degree, and others are destroyed. At this time, therefore, it is impossible to predict what the area of permanent paralysis is to be. When the acute stage has passed, repair begins and proceeds rapidly at first, indicating that the congestion has subsided, and that motor impulses are again transmitted, and in possibly 20 per cent. of the cases this may go on to complete recovery. In the majority, however, the response in many of the muscles is feeble or absent, indicating that the centers that control them are severely damaged and that the process of repair will be long delayed.

What is called orthopedic treatment consists primarily in keeping the machinery in condition to take up its work, if repair of the nerve centers permits, and to adapt by some means the disabled members to the needs of the individual. In this treatment the prevention of deformity is of the first importance, because deformity throws the machinery out of gear so that it is unable to respond to the impulses that may be transmitted to it. From past experience it may be stated that by far the larger number of patients in all classes of society become deformed to a greater or lesser degree, and therefore unnecessarily disabled, deformity being the inevitable consequence of the disease unless it is prevented.

The causes of deformity may be classified as: (1) The force of gravity. (2) Persistent attitudes. (3) Unbalanced muscular action. (4) Weight bearing and locomotion.

1. The influence of the force of gravity is best illustrated by the hanging downward of a paralyzed foot when the patient is sitting or recumbent. After a time the habitual attitude becomes fixed by contraction. Thus the hanging foot or what is called equinus, is the most common of deformities.

2. Certain attitudes are often induced by discomfort, or they may be simply accommodative, as the sitting posture, in which the limbs are bent at the hips and knees. Thus flexion contraction at these joints is very common among patients who are unable to stand.

3. The muscles in health vary in strength according to their function, and are arranged to support and balance one another. The calf muscle, for instance, is large and strong, because it lifts and propels the body, while the smaller muscles balance the foot. Paralysis of the calf muscle causes great disability with but little immediate tendency to distortion, because it is opposed by the force of gravity; while paralysis of lateral muscles of comparatively slight importance will induce deformity, because the foot is drawn to one side by those of the opposite group.

4. Locomotion and weight bearing upon a weak and unbalanced extremity exaggerate existing deformity, and increase the resistance to correction. Deformity develops, therefore, more rapidly and to a more extreme degree in early childhood than in later years.

Prevention of deformity is the most important part of the treatment from first to last, since if it is present, it is impossible for normal muscles to act effectively, and for weak muscles to respond to impulses and to regain their strength. It develops insidiously and far more rapidly than is generally believed. More rapidly in the partly paralyzed cases than in those of complete paralysis, because the influences of the force of gravity and accommodative posture are increased by unopposed muscular action and by retraction of active muscles that are never as in health stretched to their normal limit.

The first indication of deformity is the evidence of discomfort when an habitual attitude is changed. When, for example, a hanging foot is pushed upward. And, in cases in which the muscles of the front of the leg are paralyzed and the calf muscles are active, this discomfort is often apparent within a few days of the paralysis. In fact, much of the pain supposed to be symptomatic of the disease is actually induced by tension on contracted tissues.

Preventive treatment consists in moving the joints of the affected part through their full range of motion at least twice daily in order that all the muscles may be extended to the normal limit. Postures should be alternated, and attitudes that lead to deformity should be restrained. If, for example, the trunk muscles are so weak that the body is bent forward or to one side in the sitting posture, the child should not be permitted to sit unless it is properly supported, nor to stand or walk on weak and uncontrolled limbs.

*Read before the New York Conference on Hospital Social Service at the Academy of Medicine, November 1, 1916.

The secondary part of the treatment is directed to the preservation of nutrition of the paralyzed parts. Nutrition depends upon the circulation of the blood, and the supply of blood is regulated by the work performed by the muscles. Paralyzed muscles do not work, consequently, they receive less blood. Paralyzed limbs become, therefore eventually shrunken, cold, and discolored; the capacity of the blood-vessels having been lessened because no demand has been made upon them. These changes are far more noticeable in deformed and unused limbs than in those which, although equally disabled, have by treatment been forced to carry out as far as may be their normal functions.

Massage.—Nutrition may be improved and in some degree preserved by local treatment. That which is usually applied is rubbing and friction, under which warmth and color may be restored to the paralyzed part. Parents do not understand the objects of so-called massage, but look upon it as a direct treatment of the disease, and what they rub in is of greater importance than the rubbing. Oily substances are supposed to feed the weak tissues; actually they only serve to lessen friction, which in these cases is desirable since only gentle rubbing should be permitted.

Baths.—Baths, to which in health parents are unaccustomed, are thought to possess mysterious virtues, and this belief may be encouraged. A warm bath in which the child may lie extended stimulates the circulation and assures the most favorable opportunity to demonstrate muscular activity in the floating limbs, because it is not opposed by friction and gravity.

Electricity.—The most impressive of all remedial agents is electricity, because the paralyzed muscles may, for a time, respond to its stimulation. It has been employed for many years in the treatment of all forms of paralysis, but no positive evidence has been presented that it has any effect other than as a local stimulant of nutrition. It is far better adapted to the treatment of older patients than of young children, who are usually frightened by even the slight discomfort attending its application.

Muscle Training.—The treatment that is in the air at present is muscle training. Just as strong muscles may be made stronger by systematic exercise, so weak muscles may be made stronger by exercises adapted to their weakness. This is, of course, self evident. There are very decided limitations to the method. Paralyzed muscles cannot be trained, and young children are usually poor subjects either for muscle training or muscle testing. The treatment is of great value in suitable cases. If properly applied it should lessen the tendency to deformity and aid the restoration of power in muscles in which such restoration is possible. If all the muscles are equally weak any improvement in strength is so much gain, particularly in an upper extremity. If, on the other hand, the weak muscles are capable of recovering but a fraction of their strength in opposition to the full power of an opposing group, deformity cannot be prevented in a weight-bearing extremity, except by mechanical or operative treatment.

Braces.—Braces are used to prevent deformity and to permit locomotion. If the paralysis is general of the trunk and limbs, the child may be placed on a recumbent frame, on which it may be carried about, because if permitted to sit, deformities of the trunk would develop, which are progressive and intractable. Or, as a temporary treatment, a plaster support may be applied, which, by fixing the spine, assures the rest that favors the repair of the inflamed spinal cord, and holds the uncontrolled and often sensitive limbs in proper position. Plaster supports are of value, also, as temporary braces during the early stages of the disease, before the extent of the persistent paralysis can be determined.

The chief value of braces is as aids in locomotion; for as soon as the discomfort has subsided a child will insist on moving about, if this is possible. Braces are employed to protect the weak muscles and to lessen the strain upon the joints which would otherwise induce deformity.

Functional Use.—Functional use, if properly regulated, is the most powerful of all the stimulants toward recovery, as contrasted with purely local treatment. For the muscles and the nerve centers are interdependent and if a limb is permitted to become deformed and shrunken from disuse, the nerve centers, although capable of transmitting impulses, may atrophy for want of practice, while those upon which constant demands are made should develop their capacity to the highest degree. Functional use is often impossible without support, and the character of this support is, therefore, of greatest importance in treatment, since it must be often changed in adaptation to the needs of the patient.

Prognosis.—It has been stated that it is impossible to predict the degree of final paralysis in any case, since improvement may continue for many years. There are, however, certain very definite indications on which to base the prognosis. In favorable cases there is evidence of returning power in certain muscles throughout the paralyzed limb, indicating repair through a corresponding area of the cord. The instances of practical recovery after many years of helplessness are cases of this type, in which restoration of function has been prevented by deformity, although the nerve centers have been repaired. The unfavorable cases are those in which, in spite of protection, certain groups of muscles in a definite area show no sign of power, while in other parts recovery has been partial or complete.

Operative Treatment.—When the area of permanent paralysis can be accurately determined, usually after an interval of several years from the onset of the disease, operative treatment may be indicated, and this is, from the positive standpoint, the most effective of all remedies. It consists essentially in transferring active muscles from their original insertions to points where they may work to best advantage, and thus to restore the muscular balance; and in operations on the bones and joints to assure stability, so that braces may be less burdensome or discarded altogether.

Having reviewed the principles of treatment, one may now consider their practical application.

It may be a general impression that the solution of the problem is hospital care, but this is as undesirable as it is impracticable, since we are dealing with a disability of indefinite duration, and not with a disease that will run its course in a few weeks. In many instances the disability is slight and even in the cases that might be benefited by hospital care the consent of the parents cannot be readily obtained, since no definite statement as to the time of separation, or the outcome of the treatment can be made. A large proportion of the patients are so young that they need a mother's care, and in the majority of cases home treatment is to

be preferred. We may conclude, therefore, that treatment must be adapted to patients of what is called the ambulatory class.*

In the present stage of enthusiasm, I am inclined to think that there is more danger of over treatment than of neglect, and that as far as young children are concerned, the possible benefits of massage, electricity, and muscle training in a crowded clinic are more than offset by exposure, fatigue, and excitement, not to mention the time consumed by the mother.

The clinic should be the central point for observation, supervision, and teaching, while the mother, properly instructed and aided, if necessary by the visiting nurses, must be depended upon to carry out the supplementary treatment. Muscle training, for example, however difficult in its adaptation to many patients, is very simple in its application to a single case; although it requires art, patience, time, and opportunity, qualities and conditions hardly available in a large clinic.

In conclusion, it seems to me that the contributions of those who are interested in this subject may be used to best advantage by increasing the facilities of the hospitals and clinics already equipped for the work, and by providing a larger number of social workers and visiting nurses, with adequate means of transportation, all under central control, than by establishing new clinics in more convenient localities, on the supposition that daily treatment is essential. In other words, that the best results from the educational, scientific and humanitarian standpoints may be obtained by a concentration, rather than by a diffusion of energy.

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SOME ASPECTS OF THE TREATMENT OF INFANTILE PARALYSIS.†

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The general principles regarding the treatment of the effects of anterior poliomyelitis are now quite generally understood and agreed upon; but the practical application of these is often neglected and the little details of treatment which count for so much are many times overlooked or but vaguely comprehended by both general practitioner and orthopedic surgeon. Were conditions otherwise we would not see so many preventable deformities in the clinics nor so many badly functionating limbs in faulty apparatus. However, another explanation of the large number of deformities seen on the streets of cities and in rural districts may be the still prevalent attitude of the laity and also of many general practitioners toward the treatment of crippling diseases, an attitude characterized by passive pessimism. Anyone who has worked in orthopedic dispensaries can recall numerous instances of preventable deformity in which the patients had been told that nothing could be done for them when most could have been done toward preventing deformity and thus ultimately securing good function.

Treatment of the Acute Stage.—Have we any therapy at hand which is in any way efficacious for preventing the extension of the acute process in the spinal cord or for hastening the resolution of this inflammation?

No statistics are available to decide this point. We can only speculate about it. Theoretically we can apply the ordinary principles of counter-irritation, elimination, and supportive treatment to the initial stage of poliomyelitis; these principles embrace such measures as cupping the spine, catharsis, diuresis and diaphoresis, and special attention to the proper nutrition of the little patient. Unfortunately, the disease does its damage so quickly and without premonition that these measures can avail little in most cases. There is one other principle which we are accustomed to apply to the subacute stage of this disorder which is even more in order during the acute phase; namely, efforts to secure complete rest of the voluntary and reflex mechanism of the motor part of the central nervous system. This principle of rest is a cardinal one in the treatment of inflammation in any part of the body; that it is not more definitely applied to cases of poliomyelitis is because of the inaccessibility of the parts involved. However, it would seem rational to attempt to cut off as much as we safely can do the afferent and efferent stimuli to the anterior horn-cells and to do this we might make more use than is generally done of plaster of Paris as a means of immobilizing the entire body during the very acute stage, *i.e.* for the first week, in order to lessen the irritation of the nerve-cell protoplasm which is already in an abnormal condition. Other measures directed to the same end would be the administration of chloral and bromides in sufficient dosage to keep the patient quiescent. The body should be well padded and the limbs placed so as to prevent the stretching of any muscle, *i. e.* placed in balance, before the plaster bandages harden.

We do not know how long the inflammatory reaction in the spinal cord is of an acute character, nor how long it will be before the tissues of the cord become normal or as normal as they ever will be. We need more data upon this aspect of the pathology. We therefore need to be conservative in discontinuing the measures which enforce complete rest of the central nervous system; certainly they should be carried out for the first ten days or two weeks, no matter how small an area of the cord we may presume to be involved, for all parts of the nervous system are very intimately connected.

Lumbar puncture is worth while in the beginning of the disease, especially if there are any meningeal symptoms;it may relieve congestion and certainly can do no harm.

The Subacute Stage.—After the first ten days or two weeks the therapy of this disease ceases to be a medical problem and becomes primarily an orthopedic problem. We can now estimate the amount of damage done to the cord and the nature of the mechanical defects to be remedied. Our efforts should be directed first of all and all the time to the preventing of the stretching of weakened muscles either by gravity or the pull of their antagonists, *i. e.* the maintaining of all muscle forces in equilibrium. This can be done by plaster splints most readily and efficiently during the first few weeks of the subacute stage; the foot and leg should be held in the position most favorable for later standing

*The Social Service Workers have analyzed for me 200 consecutive cases treated at the Hospital for Ruptured and Crippled.

Age: 20 of the patients were under one year; 76 were from 1 to 2 years; 54 from 2 to 3 years. (75 per cent three years or less.)

Size of family: In 54 instances the patient was an only child; in fifty-two there was one other; in forty-three there were two other children in the family. (72 per cent. of the mothers not overburdened with children.)

†Read before the San Francisco County Medical Society, May 2, 1916.

and walking as a general rule, but the factor of stretch upon weakened muscles must constantly be borne in mind. In the case of the upper extremity we must take care that a weakened deltoid or other muscles which hold the humerus in place are not stretched by the weight of the arm. The foot should be in dorsal flexion to ninety degrees with enough inversion and adduction to maintain the normal plantar arch; the knee should have about ten degrees of flexion, the thigh flexed about ten degrees with the hip and abducted and externally rotated about fifteen degrees. When the more unusual paralysis, such as that of the calf or gluteal muscles, is present this posture may have to be modified to avoid stretching these groups. If we are sure that the lower leg only is affected we may dispense with the splinting of the thigh, but we cannot be positive of this at this stage unless we test the muscles very carefully with the electric current.

During this stage of plaster splinting the apparatus should be so made as to allow of removal daily for the purpose of gentle massage and bathing; otherwise the weakened muscles will rapidly atrophy. This brings up the subject of braces *versus* plaster-of-Paris splints.

When should braces be ordered? The writer believes that they should be ordered and under construction just as soon as the attendant can determine the extent of the primary paralysis. By the term "primary paralysis" is meant the amount of paralysis resulting after the very acute stage is past, that is, after the second week from the onset of the disease until about the twelfth month, to put it arbitrarily; the "secondary" paralysis being that resulting finally after the period of probable recuperation has passed. There is now a tendency on the part of orthopedic men to regard the period during which more recovery of power may occur as longer than formerly was thought to be and that it is to a great extent dependent upon the care of the case during the first two or three months and also upon the overcoming of contracture; even as late as two years after the onset of the disease improvement in power may occur if contractures are overcome.

Anyone who has seen the atrophic effect upon the limbs of a little patient who has been encased in plaster of Paris for many weeks should be reluctant to use plaster in preference to removable and less constricting apparatus. Aside from the benefits of easy removal for purposes of bathing, massage, and muscle training which braces give, they also permit the patient to get about without detriment to the paralyzed part and with benefit to the general health and the nerve-centers by reason of the stimulation which comes from voluntary activity. These statements presuppose that the apparatus is made of as light material as possible and with proper attention to joints to prevent stretching of weak muscles. Unfortunately, braces are frequently ordered and constructed without due supervision on the part of the attending surgeon and are made much too heavy. The simpler the brace the better; all unnecessary leather work and straps should be avoided, as they add to the weight and also to the expense, which latter is an important consideration with dispensary patients. We will not get the results which are possible in these cases until our orthopedic clinics are equipped with an experienced mechanic and an up-to-date workshop.

In connection with the subject of braces, attention should be called to two conditions sometimes inadequately met because the brace is of the wrong type. The first condition is that of paralysis of the tibialis anticus muscle alone with good power in the calf group, common extensors, and the peroneals. Not infrequently one comes across such patients wearing a steel arch support and they have been told that this is all that is necessary. But an arch support cannot take the place of the tibialis anticus, nor will it prevent pronation and abduction of the foot, with ultimate breaking down of the arch of the foot from strain in the abducted position. The tibialis anticus not only helps very much to hold up the plantar arch, it also adducts the foot at the mediotarsal joint and dorsally flexes it as the tibio-astragaloid joint. An arch support can do neither, it can only invert the foot and so will not prevent the action of the peroneal and calf groups. What is needed in such a case is a brace for the lower leg with a bar on the outside attached to a foot plate and a catch in the joint to prevent plantar flexion beyond ninety degrees, full dorsal flexion being allowed as a rule.

Another condition to which a faulty brace is sometimes applied is that form of paralysis in which the tensor fascia femoris, as well as the quadriceps and the lower part of the great adductor are involved, while the sartorius, the gluteii and obturator muscles which rotate the thigh outward and abduct it are strong. In such a case a brace going only to the upper fourth of the thigh or even to the groin with a padded ring under the ischium is not sufficient to control the comparative overactivity of the sartorius, the gluteii and the other external rotators of the thigh; consequently the child walks with leg abducted and externally rotated, causing a dragging limp and a list of the pelvis which may ultimately produce scoliosis. This form of paralysis should be treated with a long brace having one outside bar or two lateral bars, the outside one running up as far as a point between the anterior superior spine and the trochanter, where it should be movably jointed with a steel pelvic band and leather strap, the band having peroneal straps attached to it. When the back and abdominal muscles are affected this sort of brace can easily have attached to it a light back brace, *e. g.* "Taylor assistant," at the pelvic band.

Electricity and Muscle Training.—How soon should these measures be instituted? Certainly not in the acute stage, and in the subacute stage they should be carried out very cautiously, the duration of the electrical stimulation or the muscle exercise being very brief and very gradually increased according to the type of response to these stimuli; this can be observed and estimated by watching the character of the contraction of the muscle during the course of the treatment. As soon as the response in the muscle-fiber requires more current or the contraction wave becomes more sluggish or the patient less keen in the voluntary movements, the exercise should be discontinued. Lovett advises such treatment only three times a week. He has also contrived an apparatus for estimating the strength of the muscle accurately and regulates the exercises according to the degree of response thus measured from day to day.

Electricity has no effect upon the anterior horn-cells or nerve-trunks so far as we know. It is simply a convenient means of exercising muscle-fibers. Electricity and muscle training undoubtedly have a valuable place in the treatment of infantile paralysis during the subacute and chronic stages and should be more often used, especially muscle training. There is less danger of doing harm by fatigue

of the muscles with muscle training than in the use of electricity, because a child will usually cease to react spontaneously at the point of beginning fatigue, whereas a muscle can be stimulated by the electrical current beyond this point. Muscle training also introduces the element of control by the higher centers and is therefore, I believe, a more rational and efficient form of stimulation; a good thing in spastic cases also.

In dispensary work the electrical treatments are often delegated to a nurse and not supervised by a competent attendant familiar with the case. Thus harm rather than good is done, either because of overstimulation or because of stimulating the wrong muscles, thus increasing the tendency of deformity, mechanical treatment being overlooked because the case is not entirely in the hands of the orthopedic man.

Fatigue may also be brought about by too much voluntary activity of the child. Frequent periods of absolute rest and relaxation should be enforced, especially in the subacute stage. Anything which overstimulates and exhausts the nervous system is detrimental to the recuperation of the local centers involved in this disease.

Treatment of Deformities.—What has already been said comprehends the prevention of deformity. There remains to be considered the correction of deformities which have occurred from inadequate treatment or neglect. Deformity is primarily due to muscle contractures, and secondarily to ligamentous strains and bony distortions from postural strain. To remove the former cause we may resort either to forcible manipulations with plaster dressings or to tenotomy and tendon lengthening. It would seem to the writer that forcible manipulation is bad treatment, and that gradual stretchings are an unnecessary waste of time. These procedures involve the return to plaster-of-Paris dressings for prolonged periods, thus hindering activity and the nutrition of muscles and bones which might be properly exercised in braces. Furthermore, forcible manipulation produces tear of muscle fiber and tendon, and this trauma results in connective-tissue formation which produces a less normal tendon or muscle than before. On the other hand, tendon lengthening, or tenotomy by an open operation within the tendon sheath, has the advantage of promptness in correction of deformity, requires no more than ten days of plaster dressing, and results in as good a tendon and muscle as before. Wherever tendons can be lengthened within their sheaths this should be done in preference to closed tenotomy, and it can always be done with the tendon achilles and the peroneals; also with the tibialis posticus, which, by the way, is frequently almost as potent a cause of deformity as the tendon achilles.

Arthrodeses and Tendon Transplantations.—Whenever a healthy muscle can be transplanted wholly or in part without weakening the most important function of the limb and the period of possible recovery from paralysis has passed, such an operation is worth trying, leaving as a second resource the operation of arthrodesis. Thus a healthy extensor longus hallucis, if successfully implanted beneath the periosteum at the points of insertion of the paralyzed tibialis anticus, will partly replace the latter without spoiling the most essential function of the foot; a peroneus longus tendon may do the same. A peroneus tertius may be inserted in the heel to add power to a weakened calf group, or the tendon achilles may be split and the proximal end of the slip can be inserted into the posterior surface of the tibia beneath the periosteum after the method of Gallie, this serving as a check ligament to dorsal flexion, in calcaneous deformity. Several other examples of the application of tension transplantation might be mentioned.

In deciding upon tendon transplantation, the age and probable occupation of the patient should be considered, also whether or not the ligaments have been so stretched or the bones so distorted that the transplanted muscle will be unable to hold the part in the position best for locomotion. This is apt to be an objection to tendon transplants in long standing or neglected cases of paralysis, for in these cases, in spite of the operation, the patient will require braces.

Arthrodesis has the advantage of doing away with apparatus, of giving a more stable position to the weakened limb, and of permanently correcting a disadvantageous deformity. Its adaptation is more useful in the foot than in the knee or hip. An arthrodesis between the head of the astragalus and the navicular, and between the articular surfaces of the calcis and astragalus is a useful procedure even in cases where a muscle is transplanted at the same time, *e. g.* in talipes valgus, for this operation prevents the lateral mobility of the foot at the mediotarsal joint, doing away with the chance of the valgus deformity recurring even if the transplant fails. To overcome a flail ankle joint, the Whitman operation of astragalectomy is valuable. At the knee, arthrodesis has been done, particularly by Hibbs, but has of late been given up. Most people prefer a movable knee, with a brace, to a permanently stiff one. Davis of Philadelphia has done an osteotomy on the lower end of the femur above the epiphyseal line, setting back the lower fragment and producing a more stable knee for weight bearing in cases of quadriceps paralysis.

The field for plastic surgery in infantile paralysis is still a green one, and full of possibilities. Neuroplastic operations are, as yet, in the experimental stage. The success of these operations depends upon the improvement in technique of the surgeon; to attain this, more opportunities for dissection and animal experiments are greatly needed. But in spite of surgical advances, the after-care will continue to be the important element in success, *i. e.* close supervision and constant vigilance to prevent the recurrence of deformity; the treatment of this disorder will, therefore, continue to be slow, painstaking and conservative, as indeed is true of all orthopedic work, and especially when the nervous system is involved.

PHYSICIANS' BUILDING.

AFTER-CARE OF INFANTILE PARALYSIS CASES.

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THE after-care problem of the cases of poliomyelitis that have had their onset during the past summer has been met in a very able manner by those responsible for it. By the establishment of the New York committee upon the after-care and the many associations cooperating with the orthopedic hos-

pitals and clinics as well as the old-established organizations (some with specially trained nures, social workers, and teachers) that have done excellent service for many years, much benefit will be derived by the victims of our recent epidemic. Many poor and afflicted cripples who would otherwise be neglected and delayed in reaching the hospitals will now be treated and if not cured will at least be so improved that they may later become useful members of society.

It has been a pleasure to see the excellent cooperation between the orthopedic hospitals, general hospitals, and the Department of Health, as well as between the doctors associated in this work. The sacrifices which many hospitals, doctors, nurses, social workers, committees, and contributors have made in this cause are great, but great in return is the good that is being accomplished.

The subject before us presents so many problems, and there are so many social service activities of vital importance that to discuss each of them at length would be impossible within the limits of a short paper. It therefore seems best to dwell briefly upon a number of issues of fundamental importance.

During the active stages of all epidemics the hospitals, physicians, and health authorities devote their full time in combating and controlling the disease. It is not until a later date that they are able to give the time and attention to a thorough and comprehensive study of the problem.

In the early stages of this epidemic, having in mind the inadequate histories of past epidemics of various diseases, especially that of 1907, I advocated, at a meeting called by the Commissioner of Health, Dr. Haven Emerson, the founder of the committee, and later at a meeting called by the Rockefeller Foundation, in which representative orthopedic surgeons of the East were present, that better clinical and social histories of cases of poliomyelitis occurring in this epidemic be made, not only in the Indoor department, but also in the outdoor department. Now that this policy has been adopted by our committee and the hospitals here as well as those in other States and communities, it is felt that within given periods reports upon all or groups of cases of poliomyelitis will be made, that will astonish the most optimistic and will be invaluable to those who are scientifically studying the problem. The medical profession and laity will unquestionably have the most valuable data upon the past epidemic and the after-care treatment.

The many policies as adopted by the committee, if properly carried out, should set a standard and obviate the inadequate facilities of many institutions, their varied fee systems, and their neglectful method of caring for dispensary cases, and their lack of identification of patients roaming from one hospital to another, thus causing a great amount of duplication of work and changes perhaps in the mode of treatment. Possibly the number of patients attending more than one institution is not so great as is commonly supposed and it is also possible that the amount of hospital and dispensary abuse is greatly over-estimated; nevertheless, such information will be available and the foundation erected for a central bureau or clearing house for the supervision of all dispensary cases in the five boroughs of New York.

Too little progress, however, is being made to provide facilities for treatment and care for people of moderate circumstances. Those who are striving in this direction have met with many stumbling blocks. We should give our united support to such a movement, but by so doing we should not overlook the private practitioner, at the same time the private practitioner should not overlook or underestimate the wonderful advantages of this movement for the ill and afflicted, many of whom eventually become crippled financially and their families impoverished as well as in many cases becoming a burden upon the community.

It is well to caution the many enthusiasts who are desirous of opening orthopedic clinics and braceshops to give the matter very careful consideration before their establishment, to discuss the problem with those who are qualified to speak upon the subject, and also to present their needs and facilities to the After-Care Committee. Otherwise they may find ultimately that they are carrying an inadequate and unnecessarily expensive burden.

From the time of the inception of our committee I have advocated that a general appeal for funds should be made by the committee in place of a multiplicity of appeals that would unquestionably be confusing to the public. The After-Care Committee upon recommendation of the Public Health Committee of the New York Academy of Medicine have now adopted this plan. It is now believed that the funds that we hope to raise will be distributed in a manner that will be most beneficial to the associated hospitals and organizations and to the patients.

To provide fresh air or convalescent home care and treatment for these children during a number of summers to come is one of the great problems that will soon be before us. With present and added facilities we shall no doubt be able to meet the situation in an efficient manner. However, we should not delay in giving this matter serious thought and consideration, for it may involve a change of policy in the management of some of the country homes or institutions.

In an address of mine, made previous to this epidemic, upon the history of the Hospital for the Relief of the Ruptured and Crippled, the following statement was made, and this is equally true today: "The work done in improving the condition of patients suffering from paralysis is remarkable; unfortunately in this branch of the work a cure is rarely possible, but by judicious and skillful treatment the condition of practically every paralyzed patient can be improved. It is no uncommon sight to see a child who was carried into the hospital in a totally helpless condition, or who got about only with the assistance of crutches, walk out of the hospital, after some months' treatment, wearing a light steel brace and able again to take an active part in the struggle of life."

Children suffering from paralysis under four years of age, when recommended, are now admitted to our wards, and our Board of Trustees have also made a special ruling that cases that cannot be properly cared for in their own homes can be admitted to our wards until proper provision is made for their care.

It is quite essential that hospitals caring for these cases should have an adequate social service in an endeavor to follow the patient's progress, to study his home conditions, and to see that the physician's directions are followed. Many patients will not return to a dispensary as often as their needs require unless encouraged to do so.

Each institution assuming the burden and re-

sponsibility in the care and treatment of infantile paralysis cases should consider this one of the most important phases of their work, otherwise the patient's progressive improvement may be retarded.

It is my belief that the Social Service should be an integral department of the hospital and, if thought advisable, there should be an auxiliary committee for the purpose of advice, consultation, and other assistance usually rendered by such a committee.

The present epidemic has added materially to the work of our Social Service Department. When the new cases come into the clinic, they are seen by the registrar, who issues them their cards. They are then taken to the department especially prepared for them, and are placed in charge of the Social Service worker. She interviews the parent and secures the social history and any interesting data to be had. Then the child is thoroughly examined by the doctor in charge, who dictates the notes to a stenographer, who later makes the necessary record on the medical history sheet. After the doctor prescribes for the child, the social worker is sure to see that the parent has thoroughly understood directions. She finds very frequently, when they speak little English, that these directions must be repeated several times before they grasp it. They are also impressed with the importance of returning upon the dates stated by the doctor. If they cannot afford the carfare, many coming from great distances, it is provided. The patients are visited in their homes, so the worker may have a good picture of the patient in home surroundings. Sometimes she finds these little patients need extra nourishment or warm clothing, or a pair of orthopedic shoes, which her fund, provided by a generous committee, permits her to secure. She also sees that treatments prescribed by the doctors are followed out.

321 East Forty-second Street.

THE FALLACY OF INTESTINAL STASIS.*

By MARTIN J. SYNNOTT, A.M., M.D.,

MONTCLAIR, N. J.

"Intestinal stasis," so called, was discovered by Sir Arbuthnot Lane of London. I have watched Lane operate during each of three visits to London. He is a very clever and skillful surgeon, and a kind, courteous gentleman. But I don't believe his "short circuiting" operation should be recommended as routine treatment for tuberculosis, gout, diabetes, etc., as I have heard him advise. I know he has not the confidence of his colleagues in England, and in this country his abdominal operations for stasis are rapidly falling into disrepute. A prominent medical authority of Boston regards Lane as the most dangerous man in the medical profession to-day, because he is sincere, and sincere men of strong personalities readily secure followers for unsound theories.

It must not be forgotten that the stomach and intestines functionate perfectly well even when the *x*-ray shows what appear to be marked abnormalities in position.

So-called remodeling operations on the abdominal organs for the relief of such *x*-ray abnormalities will, I believe, soon be given up. Attempts at such remodeling of the human body have not given satisfactory results. Failures have been more numerous than successes, and radical procedures of this nature are, I think justifiable only in desperate cases as a last resort where all other remedial measures have failed and where the patient would prefer death to continued suffering.

At the Massachusetts General Hospital in Boston, by the way, bismuth residue in the intestines up to seventy-two hours is considered perfectly normal, and they have a very active *x*-ray service there, keeping four machines going pretty constantly the greater part of the day.

The best thing Lane has done, in my opinion, is that he has called attention so forcibly to the value of Russian oil in the treatment of constipation. The Curtis belt which he recommends is of very doubtful value. I have had a good deal of experience with it and prescribed it rather often for a time after seeing Lane demonstrate it several years ago in London; but I have long ago lost my enthusiasm for it, and am not satisfied it has produced good results in a single case. Women will not wear it, as it is clumsy and bulky and does nothing that a properly fitting and properly applied corset will not do. Men find it uncomfortable and soon discard it.

As to medical stasis, as ordinarily understood, I am sure in many, if not the vast majority of cases, it seldom exists as anything else than constipation. I have seen this demonstrated over and over again. Patients diagnosed as "stasis" cases have been cured by measures adapted to the treatment of ordinary chronic constipation. Quite recently a patient of mine, suffering from a well-marked case of vagotonia, but also constipated, during a brief absence of mine from home, was advised by a friend to consult a prominent surgeon, who after *x*-ray and bismuth examinations, told her all her symptoms came from intestinal stasis, and that the Lane operation would cure her. She had made arrangements to have this done when I returned and promptly persuaded her otherwise, with the result that she is now well without operation.

The treatment of the symptoms of autointoxication sometimes met with in severe constipation should be by diet, exercises, and medical treatment without recourse to surgery.

We occasionally see stasis cases of the pronounced neurasthenic type which are undoubtedly chemical diseases due to autointoxication from internal glandular starvation, or excess. For some of these patients, gland extract therapy holds out hope of benefit.

The study of intestinal stasis is, I think, a phase of medical evolution brought about by an honest effort of sincere but mistaken men to solve the problems of old age, and to find a remedy for chronic incurable ailments.

Years ago it was the tonsils; when these were removed the arteriosclerosis would be relieved, the rheumatism cured, the arthritis deformans checked. Now we know that the tonsils may be organs of elimination of bacteria and toxins as well as foci of infection and that their indiscriminate removal is not to be advised. As good a man and experienced an observer as the clinical professor of pathology in one of our largest medical schools states that the worst cases of chronic rheumatism and its sequelæ he has seen, have occurred in individuals who had had their tonsils removed in youth; and he unqualifiedly condemns this procedure as lessening one's immunity to infection.

*Discussion of a paper on Intestinal Stasis read at a meeting of the Orange Mountain Medical Society, September 22, 1916.

Next came Metchnikoff with his elixir of life in the form of the culture of *Bacillus bulgaricus*, which was going to cure all human ills. But our present knowledge tells us that the only positive benefit derived from it is the production of Eiweiss milk and lactic acid milk for the treatment of the infectious diarrheas. Then came Lane. But Lane's stasis is rapidly becoming *passé*.

Now it is the blind dental abscess. The chronic patient, no matter what his history or ailment, must have his teeth *x*-rayed. If a shadow is seen, the tooth, even though apparently sound and giving no symptoms, must be extracted. An autogenous vaccine, usually of the *Streptococcus viridans*, which is the fashionable microbe at present, is prepared, and the patient inoculated with this. What could be more simple or scientific!

But this theory loses sight of the fact that most dentists use very crude technique in making their cultures, that special media are necessary for the growth of certain organisms. that the viridans is often found in healthy mouths, that dental pathology is very uncertain; that an encapsulated dental abscess may do no harm, but breaking into it may cause a general septicemia (I have recently seen a case of this kind); that bacterial vaccines do not eliminate toxins; and finally that autogenous vaccines have no special advantage over other kinds, as the most recent immunological research tends to show that vaccines are not specific in disease, and that a colon vaccine may be used successfully in treating typhoid, etc. Thus phylacogens are rapidly coming into their own.

To quote the German cynical philosopher, in spite of all our best efforts, life continues to be at best, a dangerous thing, and very few of us get out of it alive.

Of course, in what I have said, I do not refer to surgical stasis caused by some distinctly pathological process such as bands, kinks, adhesions, cancer, ulcer, etc. Only surgery can, of course, relieve a mechanical obstruction.

34 South Fullerton Avenue.

THE PRESENT TREATMENT OF DIABETES MELLITUS*

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In diabetes mellitus we have primarily a disturbance of nutrition in which the ability of the organism to utilize carbohydrates as it normally does is more or less impaired while in the more severe cases there is added to this a disturbance in the utilization of fats by the body. Treatment is directed toward the making of the urine sugar-free, and toward the prevention or control of acidosis.

To treat successfully any case of diabetes we must give the patient a thorough course of instruction in the nature of the disease, in the differences in foods, the carbohydrates, fats, and proteins; something of the food and the caloric values of these substances; in the effects of breaking the diet rules, and in the examination of the urine for sugar. We must not assume that the patient knows anything about the condition. He must be told that in diabetes he fails to get the full benefit of the starch and sugar eaten, due, we believe to impaired function of the pancreas—that it is frequently observed in people who are obese, or who have gained weight rapidly, and that it sometimes follows intense or long-continued nervous excitement. He must know and realize that faithful treatment accomplishes wonderful results, but half-hearted treatment avails little.

*Read at a meeting of the Brooklyn Medical Association, October 11, 1916.

Naunyn, who is perhaps the leading authority on diabetes now living, says: "From my experience, I consider it highly probable that among the early strictly treated cases which were originally considered severe, but later ran a favorable course, there is many a case for which one must thank this early strict treatment; while, on the other hand, there can be no doubt that the cases which run ultimately a severe course underwent little or no care."

The patient should be taught that as the urine becomes sugar-free the power of the body to utilize carbohydrates improves. If it is not sugar-free, the patient is only holding his own, or more likely growing worse. Attention to diet renders the urine more nearly normal, and this, the patient should understand, is why so much attention is paid to his diet.

Dr. Elliott P. Joslin gives his patients cards on which is a table of the carbohydrate content of many of the commoner vegetables and fruits, together with the protein and fat content of some of the commoner foods. They are advised to obtain for reference the United States Government bulletin on Principles of Nutrition and Nutritive Value of Food, by Atwater, and the bulletin of the Connecticut Agricultural Experiment Station on Food Products.

The diet of a patient is most readily determined by testing the effects of weighed quantities of various foods, and each patient is taught to do this weighing for himself, and should know the quantities of carbohydrate, protein, and fat he is taking daily and whether he keeps sugar-free on it. He knows that he is expected to become sugar-free during the early part of his treatment, and should observe and record how this is done, so that if sugar later reappears in the urine he can follow the same method and again become sugar-free. For this reason it is desirable for sugar to return while the patient is under immediate observation. He is told to eat too little rather than too much, and that all food must be eaten slowly. Especial attenion should be taken in the care of the teeth and gums. Care should be taken in avoiding injuries to the skin, and the body should be kept clean with warm baths. The bowels should move daily, but not be purged. If diarrhea occurs, the patient is instructed to go to bed at once, to apply external heat to the body, and to drink hot water, but not necessarily to stop food. He should exercise freely at short periods daily, never get overtired, and avoid athletic contests and all sources of anxiety and worry. He is told to sleep nine hours or more during the twenty-four.

The patient is taught to use Benedict's test for glucose in the urine, so that a daily examination can be made by him. A notebook is kept in which he records all questions for the doctor. The patients under hospital observation are allowed to mingle freely with one another and to compare conditions and results. Here they see the improvement in the more severe cases and are encouraged about their own condition.

These careful instructions to the patient may

seem too much in detail, but only by getting him interested can results be obtained. He must realize that extreme care is essential to recovery. This is just as important a part of the treatment as any dietary restrictions.

Can we accomplish anything in the prevention of diabetes? We know that in some families there seems to be a tendency to the development of the disease. We should urge all patients to have an examination of the urine at least once a year. This will sometimes allow us to detect the condition early. All the members of a family of a diabetic patient should have frequent urinary examinations. An early diagnosis allows time for much to be done toward the prevention of the development of the disease in those susceptible to it. Instruct the individuals of such a family about the evils of excessive eating, obesity, mental anxiety, nervous tension, and excessive physical strain. Every agency which promotes health and physical development tends to prevent an outbreak of diabetes in those with a tendency to the disease.

The employment of drugs as specifics in diabetes has been common. Many drugs have been used and benefit has been attributed to the use of these. Opium, or one of its derivatives, has been used, perhaps, more than any other drug. It may reduce the quantity of sugar in the urine in a small amount, but it has to be given in large doses, and when we consider the probable duration of life for the individual patient under dietetic treatment we are not justified in giving opium. Aspirin has been used much, but it eventually disturbs the digestion and the benefit of its use does not continue after the drug is stopped. Preparations of the pancreas have not given the results expected and are not used as much as formerly. The *bacillus bulgaricus* has been advocated, but has been found of no advantage in treatment. Calcium in the form of the chloride or lactate has been proposed and used by some of our own members, who report success in keeping the patient sugar-free on an unrestricted diet.

The alkalis have been used in diabetes, not for the glycosuria, but for the threatened coma. In beginning diabetic coma large doses of alkali, well diluted, will frequently change the drowsiness and exaggerated respiration to a more normal condition and apparently work wonders, but the use of the alkalis should not continue over a long period of time. In the ordinary case, however, it is seldom necessary to use the alkalis, as it is safer, more agreeable to the patient, and easier to bring about the disappearance of a slight or moderate acid intoxication by the omission of fat, followed by fasting, than to attempt to neutralize acid intoxication with an alkali.

Joslin says in reference to the use of drug medication: "Drugs may be very beneficial in the course of treatment of a diabetic case, as in any chronic disease, but this is not because of any specific action upon the diabetes. Nevertheless, scores of drugs have been employed with such a purpose. I use none of them, and I think the same custom is followed by those who have had a greater series of cases. If the patient is properly instructed and his interest in his own case sufficiently aroused it will not be necessary to give any drug to retain his confidence."

The Present Dietetic Treatment.—The present dietetic treatment had its beginning at the time of Rollo, an English army surgeon, who in 1796 limited his diabetic patients to a diet of animal food. Various modifications have been made at times by different workers, and our ideas at the present time are the results of the experiences of these men. Bouchardat and Cantani restricted the harmful excess of protein suggested by Rollo and employed green vegetables. Naunyn has wielded a powerful influence in favor of the restriction of protein and also occasional fast days. A number of years ago he called attention to the advantages derived from these fast days and said that one should not fear temporary undernutrition if thereby it were possible to remove the sugar from the urine. In his severe cases it not only made the patient sugar-free, but seemed to increase the carbohydrate tolerance and diminish the acidosis.

Van Noorden agreed with Naunyn that these days were never disadvantageous, and writes: "I make use of these, especially where there is a high acetonuria. It is astonishing how strikingly the acetone falls on a hunger day. Its effect stretches out for a number of days later. In numerous severe cases a hunger day has been instituted every week with excellent results."

In 1911 Hodgson emphasized the necessity of a low caloric intake for diabetics, commenting on the fact that it was not the amount of food that *should* be metabolized, but the amount that *can* be, which determines the amount necessary.

Guelpa of Paris, in 1909 and 1910, reported a series of patients treated by several fast days, combined with purgation, and his method has been followed by many.

With these clinical observations in mind. Dr. Frederick M. Allen experimented extensively on animals, principally dogs, and placed these observations on a proved experimental basis. His treatment consisted of a vigorous fast with black coffee and whiskey until sugar-free; then after 24 or 48 hours begin to feed slowly and cautiously. Any trace of sugar is a signal for a fast day. He published his suggestions for treatment in December, 1914, and since then there have been changes in our ideas of (1) the initial fast, (2) in the necessity for the use of alcohol, (3) in relation of the protein-fat diet in the production of acidosis, and (4) in the use of exercise as a therapeutic agent.

No two cases can be treated exactly alike. Hospital treatment is desired. It is surprising how benign severe cases of diabetes become when under constant supervision. Even in hospitals, however, we have to use constant care to keep some well-intentioned wardmate from giving a hungry diabetic a couple of slices of bread. In long-continued, untreated, severe cases caution is necessary in the first few days of treatment. The sudden breaking of habits of life and diet, together with the excitement of entering a hospital, should make us careful in the radical elimination of carbohydrate and the change to an excessive protein-fat diet. The ease of digestion, as well as the palatability of the changed diet, must be carefully studied, so as not to cause too much effort to the system.

In severe, long-standing, complicated, obese, and elderly cases, as well as in all cases with acidosis, without otherwise changing habits or diet, omit the fat. After two days omit the protein, and then halve the carbohydrates daily until the patient is taking only ten grams; then fast. In simple cases begin fasting at once. Fast four days, unless sugar-free earlier. During the fast the patient is allowed water freely, tea, coffee, and clear meat broths as desired.

Intermittent Fasting. If glycosuria persists at the end of four days, give one gram of protein and one-half gram of carbohydrate per kilo body weight for two days; then fast again for three days unless sugar-free. If glycosuria remains, give the protein as above, with no carbohydrate, for three days, and then fast one or two days, as necessary. This will usually clear up the glycosuria.

To learn the carbohydrate tolerance—when the 24-hour urine is free from sugar add 5 grams of carbohydrate to the diet. Continue to add 5 grams of carbohydrate daily up to 20 grams; then add 5 grams every other day until glycosuria appears.

Protein Tolerance. When the urine has been sugar-free for two days add about 20 grams of protein (3 eggs), and thereafter 15 grams protein daily in the form of meat until the patient is receiving at least 1 gram of protein per kilo body weight.

Fat Tolerance. While testing the protein tolerance a small quantity of fat is included in eggs and meat. Add no more fat until the protein reaches 1 gram per kilo body weight, then add 5 to 25 grams daily until the patient ceases to lose weight or receives 30 to 40 calories per kilo body weight.

The return of sugar demands fasting for twenty-four hours, or until sugar-free. Resume the former diet, except that the carbohydrate is diminished one-half, until the urine has been sugar-free for one month, and it should not be increased more than 5 grams a month. Whenever the tolerance is less than 20 grams carbohydrate fasting should be practised one day in seven. When the tolerance is between 20 and 50 grams carbohydrate, upon the weekly fast day 10 grams carbohydrate and one-half the usual quantity of protein and fat are allowed. These, therefore, are not strict fast days When the tolerance is between 50 and 100 grams carbohydrate 20 grams of carbohydrate are given with the one-half quantity of protein and fat. This outline has to be modified for the individual—the weight, age, digestion, tastes of the individual, and duration of the disease have to be considered.

The preparation for fasting is to prevent acidosis, as it is easier to prevent than to treat. While it is true that few diabetics develop acidosis on fasting, it is impossible to predict what will occur. Patients who have lived in a fairly comfortable condition, untreated for years, are predisposed to acidosis and frequently succumb to too active treatment within a few days of its commencement. The critical period in the management of diabetes, so far as acid poisoning is concerned, is that in which rapid changes in the diet are being made. All complicated cases, especially those in which the complication involves the kidneys, heart, thyroid, the obese, the arteriosclerotic, and patients about to undergo an operation, demand preparatory treatment, which, as we see, excludes the chief source of acid poisoning—the fats.

Any occurrence in a patient out of the ordinary should arouse suspicion, and we should immediately investigate any of the following symptoms: Anorexia, nausea, vomiting, restlessness, unusual fatigue, excitement, vertigo, tinnitus aurum, drowsiness, listlessness, discomfort, painful or deep breathing. The recognition of these premonitory symptoms of diabetic coma is of the greatest importance, for it is astonishing how insidiously coma steals over a patient. The treatment of threatened coma should be prompt. If this prompt treatment can be carried out without awakening the suspicion of the patient it avoids excitement, which is bad for him. Rest in bed at once is necessary, and warmth should be furnished to the body. The bowels should be emptied by an enema.

In threatened coma fasting is efficacious, due, probably, to sparing the patient's digestion, thus preventing vomiting. It also allows the patient fluids. It improves the tolerance for carbohydrates and thereby tends to overcome the acidosis.

If the alkalis are to be given at this time, give them freely and in generous doses at first. Fifty grams of sodium bicarbonate given within five or six hours at the approach of threatened coma are more efficient than double the quantity six hours later. Alcohol apparently does not reduce the acidosis and its usefulness seems slight in this condition. The patient's heart and circulation should be sustained during this condition with cardiac medication.

The question of surgery and diabetes is of considerable importance. In the last few years the mortality following surgical intervention has decreased, until now there is less need for conservatism. But whenever delay is not dangerous the rule still holds to defer surgical interference. Before undertaking an operation upon a diabetic the surgeon should thoroughly understand the dangers with which the patient has to contend and the elements which favor surgical success. The dangers are four—acid intoxication, slow healing of wounds, exhaustion, and lack of exercise.

The elements favoring surgical success are:

1. Good medical care before and after the operation, which should render the urine sugar and acid free, and keep it so.

2. The method of anesthesia. Every effort should be made to shorten the period of anesthesia and to avoid apprehension and excitement on the part of the patient. Chloroform is contraindicated. Ether has been used with success, but is dangerous. Nitrous oxide or nitrous oxide and oxygen appear to be the best anesthetics. Local anesthesia may be used, but allows of nervous excitement.

3. The employment of asepsis rather than antisepsis accounts for many improved results.

4. The avoidance of trauma is especially urged in diabetics. The greatest care should be used in handling the tissues.

Pregnancy in Diabetics.—A small quantity of sugar in the urine during pregnancy is not uncommon. As a rule in such cases the sugar permanently disappears after confinement, although it may recur with succeeding pregnancies, and untimately a severe form of diabetes may develop. In pregnant diabetics there is during the pregnancy an increased carbohydrate tolerance. Pregnancy is not looked forward to by the physician or obstetrician with much pleasure, although recent treatment is more encouraging in its results.

Joslin, who has followed several cases through pregnancy, has arrived at the following conclusions:

1. It is necessary to have the patient under constant supervision through the course of the pregnancy and for months and years after confinement, because it is not uncommon for the sugar to return.

2. Treatment should follow exactly the same methods which are employed in the treatment of the usual case of diabetes, with special care in regard to the fat in the diet.

3. Even when sugar appears to a slight extent in pregnant women it should be carefully watched and controlled by diet.

4. The advantages of a cesarean section should be borne in mind.

5. Ether anesthesia is not so safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be used. Local anesthesia should be considered.

6. Many statements occurring in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. If pregnant diabetic cases are suitably managed they will very likely abort less frequently. Nursing is not contraindicated following confinement, for the diversion which it affords the patient may offset the extra demands thrown upon the metabolism. The next few years may show that pregnancy may take place in diabetic patients far more readily than has been supposed.

I wish to take this opportunity to thank Dr. Elliott P. Joslin for his courtesy to me in allowing me to see some of his patients during the past summer. The above treatment follows his present method of caring for his patients. Acknowledgment is made also of the use of the writings of those who are doing research and clinical work in diabetes mellitus.

4 Lefferts Place.

THE RÔLE PLAYED BY FEAR IN DISEASES OF THE STOMACH AND INTESTINES.

By LOUIS HENRY LEVY, M.S., M.D.,

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The relationship of the element of fear to disease is well recognized and has an important bearing from the standpoint of diagnosis and proper treatment. Patrick (*Jour. Amer. Med. Assn.*, 1916, LXVII, 180) has described the rôle played by fear in nervous diseases and the case records of almost every physician contain other instances.

In the consideration of the part played by fear in the production of disease there must not be confused the symptoms of the various ailments as described by the neurasthenic or hysterical individual. These form a series of cases by themselves in which the phobia factor is a minor one. The cases in question are those in which the patient, always normal and well, seems suddenly to have become obsessed with the idea that he is the possessor of some kind of a pathological process. It is because of the fact that these individuals have always been free from symptoms that their complaints are carefully listened to and a suspicion aroused in the mind of the physician that there exists some definite organic cause. It is on this account that the fears of the patient are often increased, especially when he has been informed that from the symptoms there exists a possibility of the lesion in question.

The patient who acquires such a phobia is often of an intelligent type, one who more than the average individual is conversant with medical terms and phrases. As a rule it is an individual who either, through the perusal of medical literature or in the course of conversation, becomes acquainted with some of the symptoms characteristic of organic conditions. It is the case of a little knowledge producing considerable harm.

The public, as a whole, at the present time is better acquainted with medical matters than it has been at any previous time. This is due to the greater publicity given by hygienists and public health officials to the preventable diseases. Education, such as this, of the public is without doubt of inestimable value and has been the means of decreasing the death rate in several of the infectious diseases. It will also in the near future by the earlier recognition of symptoms produce almost as good results in other conditions, such as carcinoma. However, with the repeated precautions to watch out for certain symptoms there has been aroused in many an overcautiousness with the result that some of the ordinary minor ailments are often magnified to unusual proportions and interpreted wrongly by the person possessing them.

Another means of creating such a phobia is contact with a patient who has had symptoms of an incurable or serious condition resulting in death. Even knowledge of such a patient may result in producing fear in another person in whom one or more symptoms may arise. The process of reasoning is a simple one. It is well known that the deceased had definite symptoms of a certain kind and that after a varying period death ensued. Hence it is assumed that, one or more of the same symptoms being present, a similar condition prevails and may lead to a fatal issue.

As has been stated, the individual is usually one who has always been well. As a result of indiscretion or exposure an unfamiliar and disagreeable sensation will arise in some part of the body. Should this symptom recur or persist for any length of time the mind becomes focused on it. Attempts at removal by wrong methods resulting in failure initiate the fear and should these symptoms simulate those of some other case known by the patient, the fear is strengthened. With the increase of the fear new symptoms of psychic origin will arise and the symptom complex will be complete. Sleeplessness will result; the appetite will be lost; less food will be consumed, and following this there will be a marked decrease in weight—all tending to substantiate in the mind of the patient the fear of the presence of some malignant or hopeless disease.

Perhaps no field offers a better opportunity for the display of fear than the gastrointestinal tract. This is due to the ease with which the different parts may be disturbed. The slightest divergence from the regular daily routine of living, particularly in diet, will often produce untoward symptoms that may persist for several days and form the basis of an imagined organic lesion. Even the loss of appetite will predispose to other symptoms resulting in a phobia. Abdominal pains either gastric or intestinal, if persistent, have been the means of arousing unnecessary fears. The frequent belching of large amounts of gas in one who always has been free from this annoying symptom will give rise to apprehensions that there is present a serious gastric condition. Regurgitation of sour fluid, nausea, vomiting with or without bile, all have tended, when occurring at frequent intervals, to arouse fear in the mind of the patient of the presence of an illness of a serious nature.

With the intestinal tract, the occasional pain in the atonic intestine often present in constipation, the rumbling or gurgling sound of gas within the large intestine, distention of the abdomen in tympanites, these also have in many cases resulted in the phobia that some malignant disease was present. The presence of blood in the stools due, as a rule, to hemorrhoids, has from its unusual occurrence filled the mind of the patient with thoughts of ulcerations and even cancer, especially when associated with pain.

The treatment of such phobias is not always a

simple one. It is based first of all on the absolute proof that the condition is a phobia and not a true pathological condition. On this account it is often necessary to try every known test. It is only when these prove negative that the patient's confidence should be obtained and there should be described to him the reasons for the absence of any lesion. He should be convinced absolutely and often conviction is obtained only after the various tests have all been demonstrated and clearly explained. The cause for any abnormal symptom should also be removed and conditions brought to normal by both medical treatment and assurances. Each case offers a problem in itself, and hence the mode of treatment depends mainly on the individuality of the patient himself.

The following cases are selected from a large number seen in the private practice of the writer:

CASE I.—B. G., female, age 22. The original complaint was belching of gas which had first appeared two weeks previously, following the overeating of candy and pastry. Up to this time of her life, she had always been well and had never had any symptoms of any illness. With the appearance of the belching she was reminded of a friend of her family who had died following an operation for perforated gastric ulcer. The deceased had had as a prominent symptom, belching of gas. Miss G. became possessed with the idea that she also had a gastric ulcer. She consulted a physician who very indiscreetly suggested the possibility of such a diagnosis. Following this there occurred in rapid succession a feeling of pressure in the epigastrium with a burning sensation of the skin over this area. She also read a household medical advisor on ulcer of the stomach, and the fear that she had an ulcer became more firmly fixed in her mind. The constant worry resulted in insomnia. The administration of large doses of bromide produced a bromide rash which added further fear. Her bowels which previously had always been regular became constipated and could be moved only by the use of very active cathartics. At no time had she had pain, nausea, or vomiting.

Such was the picture when I was consulted. The patient had lost 14 pounds in two weeks, and was in a weakened condition. She came with the main purpose of having her stomach contents examined. The analysis following a test breakfast showed a well digested meal with free acid of 40 and total acidity of 80. Chemically tested there was no blood. The stool was negative for blood and the urine showed no abnormal substances. She was put on antacid treatment. Simultaneously with the medical treatment there was demonstrated to the patient in several ways the impossibility of the presence of ulcer. This required several visits and patience before she was finally convinced that her fears were groundless. One month after her last visit she was married and there has been no recurrence of symptoms after eighteen months.

CASE II.—D. A., age 42, male. His complaint was dull pain, irregular in time of occurrence, in the left hypochondrium radiating around the side to the back. This pain was independent of the time of eating his meals and never lasted over fifteen minutes. There were days when he was free from pain. He was constipated and felt relieved from pain after his bowels had moved. This was the only symptom at the onset. The patient first became conscious of these pains eighteen months previously, immediately following the death of his wife, who had died from carcinoma of the stomach. The fear that he had carcinoma of the intestine became strongly fixed in his mind and he was insistent that this diagnosis be verified and if necessary operative interference be resorted to. During the eighteen months he had made the rounds of several physicians and also a chiropractor and osteopath. He had lost weight, was very nervous, and could not sleep nights. His friends commented on his change in appearance and also suggested to him the possibility of carcinoma. This strengthened his fears.

It was at this time that I was consulted. The duration of the illness without a corresponding increase in the severity of the symptoms almost at once ruled against malignancy. In this case, however, before the patient could be convinced, it was necessary to examine his stomach contents on different occasions and stool examinations were also made. The urine was also examined. *X*-ray pictures of the left kidney and ureter and also of the entire gastrointestinal tract were made. He even insisted on a blood examination which included a complement fixation test for syphilis and a full blood count. All of the tests and examinations were negative. The *x*-ray photograph of the intestines showed an unusual acute bend with a slight twist of the gut at the splenic flexure. The stools had always been very hard, and it seemed plausible to conclude that the pains were caused by the hard stools passing over the sharp bend at the splenic flexure. This diagnosis did not satisfy the patient, and he visited a consultant in another city. Nothing new was learned and a probable diagnosis of appendicitis was made and laparotomy suggested. He visited me again and there was advised the use of an abdominal belt with a pad fitted over the splenic area, regulation of the diet and bowels. These were all tried. The pains gradually disappeared; the patient gained in weight, and after one year there were no further pains. With this change, the fear of carcinoma has entirely disappeared.

Perhaps as good an aid as anything in this case in removing the fear was the fact that the patient was accepted by two insurance companies for large policies after having told them in detail all his fears concerning the presence of carcinoma.

CASE III.—T. S., age 40, male. This patient had firmly instilled into his mind the fear that there was something fundamentally wrong with his stomach. This fear had been present for six years, during which time he had been treated by several men for various gastric disturbances. His only symptom was water brash which occurred at irregular intervals and seemed to come on when he wanted it to occur. At times, after severe retching the water brash contained bile. During the six-year interval every possible test and examination had been made, including several test meals, *x*-ray examinations, stool, urine, and blood examinations, all of which were negative. For an interval of over three months his stomach had been washed daily. At no time had he been placed on a normal diet and his caloric intake was always less than that required for a man of his occupation. As a result he lost in weight and this with the continued treatment strengthened his fear of some serious gastric condition.

When I first saw him I found him to be a very restless, active, and energetic individual. Physical examination was entirely negative. The irregularity of the occurrence of the water brash and his ability to produce it at will, together with the absence of other symptoms ruled against any organic lesion. A test meal examination showed a slight hyperacidity. The possibility that his condition was based on fear, and that the water brash and hyperchlorhydria were part of a nervous manifestation secondary to the fear, was explained to him and he was encouraged to increase the amount of food and gradually to change his diet. When he found that he could tolerate foods that he had been forbidden to eat and had not eaten for several years, his fear gradually subsided until at the end of two months after treatment, his diet was a regular normal diet. The water brash had ceased to occur and he had gained 10 pounds in weight. After an interval of eight months the symptoms have not recurred and he seems perfectly well.

CASE IV.—E. R., aged 50, female. In this case very little progress has been made, due mainly to lack of intelligence on the part of the patient and her unwillingness to cooperate. Two brothers of the patient had died of carcinoma of the stomach, and this had upset her to such an extent that she lost her appetite and would not eat. The color of her skin, which, normally had a slight sallow appearance, became more so. Her change in appearance attracted the attention of her acquaintances who insisted that she, too, might have carcinoma, and advised her to consult a physician. The fear was started in this way, and all attempts to convince her otherwise have resulted in failure. The usual examinations have been made and all have been negative. She has firmly fixed in her mind the fear that she has carcinoma and is going to die as a result of it. Due to this she will eat but little food and has become emaciated and weak and there is little doubt but that the prognosis will be as she has feared. In a case such as this there has come up the question as to whether there exists true fear or whether some form of dementia has not arisen due probably to the death of

the brothers. The idea of the presence of carcinoma is fixed and nothing seems to be able to remove it. Such a case is as much in the domain of the psychiatrist as it is in that of the internist.

1172 Chapel Street.

A PLEA FOR THE PREVENTION AND THE TREATMENT OF WEAK FEET OCCURRING DURING PREGNANCY AND THE PUERPERIUM.*

By JACOB GROSSMAN, M.D.,

NEW YORK.

ALTHOUGH much has been written about the hygiene of pregnancy and the puerperium, in which proper clothing and belts have been described and recommended, very little stress, if any, has been laid upon proper foot wear. Many authorities in referring to the subject, simply recommend a low-heel shoe. Others overlook the topic entirely. It is true that the weak feet occurring during these periods do not differ materially from weak feet in general, still the presence of pregnancy seems to distract attention from the feet, and one is very apt to believe that the various symptoms complained of are the result of pregnancy rather than those of existing weak feet.

That weak feet may be present for a long time without producing symptoms has been demonstrated time and again. It requires in such cases but a little added strain or perhaps a lowering of the general resistance of the patient, such as one would expect to occur during pregnancy, to produce symptoms. The symptoms rarely depend upon the amount of deformity present. A very slight eversion of the heels and heel cords may produce severe suffering and on the other hand a severe pes planus may produce very mild suffering. The relief of symptoms which occurs in the vast majority of the former type of cases, by the institution of proper treatment of the existing weak feet, proves beyond a doubt that the weak feet are responsible for these symptoms.

Many pregnant women, on reporting to their physicians the pain which they experience in the back, thighs, or legs, are dismissed with the statement that this pain is the result of pressure of the presenting part of the child upon the nerves and will disappear after labor. It is true that in a certain percentage of cases of pregnancy, pressure of the presenting part may produce various neuralgic pains referable to the thighs and back, which will disappear upon the termination of labor. In a vast majority of cases, these pains are the result of weak feet. In my observations of a series of 700 cases of weak feet, there were 400 in whom the pain was referable to the back and thighs and not to the feet (*Interstate Medical Journal*, May, 1916). From this one can readily appreciate that weak feet can be present even though the patient does not refer symptoms to the feet.

The mere recommendation to wear low heels is not sufficient, as many of these patients are accustomed to wear high heels and when they attempt to wear low heels they experience a sensation of falling backwards. To compensate for this they must assume an unnatural and tiresome posture forwards so as to balance themselves properly. This type of patient can wear a high heel with comfort and without serious consequence, provided the heel is square.

*Read at a meeting of the Lebanon Hospital Alumni Society, Oct. 3, 1916.

When one considers how important it is for pregnant women to obtain proper exercise, among which walking is the best, one would appreciate the importance of recognizing the presence of weak feet in these cases, so as to institute proper treatment and in that way encourage walking and other exercises. Walking for patients with weak feet is torture, hence they avoid as much as possible this beneficial and necessary exercise. As a result of this, weakness, nervousness, loss of appetite, and many other conditions may arise from the sedentary life which they are compelled to live.

Accidents such as falls resulting in fractures, sprains of the ankle, and miscarriages are not at all uncommon during pregnancy. These are usually associated with weak feet, and very often with improper foot wear.

Some of the patients experience very little or no discomfort during pregnancy and complain of pain during the puerperium. The following is a brief history of this type of case.

Mrs L., twenty-four years of age, primipara. Past history: No complaint referable to weak feet. Present history: Began four days postpartum, when she experienced a severe cramplike pain referable to the right calf. This pain was not relieved by local treatment, such as hot applications, massage, etc. Examination: Disclosed weak feet. There was no sign of inflammation. Treatment: Strapping, which at first only partially relieved the pain. Persistent strapping, however, finally overcame this distressing symptom. Later, when the patient left her bed, proper shoes were preseribed and to date, almost two years after the onset, she has been free from pain.

Pathology.—The pathology of the weak foot of pregnancy does not vary from that of the weak foot we ordinarily meet with. The early and moderately advanced cases usually show eversion of the heels and heel cords and a lowering of the arch as a whole. This eversion varies in degree from a mild to a very marked rolling out of the heels and heel cords.

In the advanced cases the head of the astragalus becomes partially dislocated inwards and downwards from the scaphoid and at times it may articulate only with the latter at the extreme outer part of the head; in consequence, the cartilage disappears from the portion of the bone that is thus exposed and the head forms a marked prominence beneath the skin on the inner border of the foot. The arch of the foot gradually diminishes, until finally the sole is applied flat to the ground. In well marked cases, the anterior part of the foot becomes abducted, and in very severe cases the inner border of the foot may be convex and the outer concave, so that the patient walks more on the inner side of the foot than on the outer.

In very severe cases the peronei tendons may be dislocated from their groove and lie upon or anterior to the external malleolus. In cases of long standing marked changes also occur in the bones; the uncovered portion of the head of the astragalus becomes enlarged, so that it cannot be replaced in position. Sometimes actual bony ankylosis may take place. There may be effusion into the sheaths behind the tendons and in the tarsal joints.

Symptoms.—The symptoms of weak feet rarely depend upon the amount of deformity present; cases with just a slight eversion of the heels and heel cords may suffer severely and on the other hand cases with a severe pes planus may suffer very mildly.

The subjective symptoms are: (*a*) Pain, present in the vast majority of cases, usually varies

from a severe cramplike shooting pain to a dull ache. In a number of cases the pain is not referred to the feet alone, but to points distant, *i.e.* back, hip, knees, thighs, and calves. The pain may be unilateral or bilateral; in some cases when both feet are weak, patients complain of unilateral pain. (*b*) Another group of symptoms which occur quite frequently includes weakness, discomfort, and tired sensation. These are especially evident after prolonged standing or walking. (*c*) Many cases complain of numbness and coldness in the feet. This is usually the result of the impairment of the circulation which is commonly associated with weak feet. (*d*) As a result of all these symptoms there may be mental depression, nervous symptoms, and loss of appetite.

The objective symptoms are: (*a*) The most constant, one can almost say the diagnostic sign of weak feet, is eversion of the heels and heel cords. This may vary from a very mild to a very marked degree. (*b*) In some cases, especially in fleshy patients, there may be a swelling at the outer side of the ankle. (*c*) Muscular spasm or rigidity is very common in the advanced cases. The spasm is due to the shortened and contracted muscles on the outer and upper surface of the feet, the result of the persistent attitude of valgus.

Treatment.—In general we can consider the treatment of weak feet or rather the feet during pregnancy and the puerperium under prophylactic and curative.

A. Prophylactic: (1) Proper footwear. Before describing in detail the shoe which has proven very satisfactory in pregnancy and the puerperium, a brief review of some of the possible conditions which may arise during these periods would not be out of place. We know that the circumference of the legs of many pregnant women vary from one part of the day to the other. Women will arise in the morning with very little or no swelling of the legs and as the day advances swelling appears. Very often associated with weak feet is a breaking down of the anterior arch. At times patients slip and fall, sustaining sprains and fractures; again they may trip because their heel catches in carpet, rug or their dress when they ascend or descend stairs. The added strain of pregnancy may aggravate an existing valgus of the feet, or if one is not present, produce one in a foot which has already been abused by improper foot wear. A proper shoe to obviate these conditions and accidents should be constructed as follows:

(*a*) There should be an expansion top to compensate for any degree of edema. (*b*) An eighth of an inch elevation in the inner border of the sole and heel to overcome the valgus or prevent one. (*c*) A cross bar of an eighth of an inch in the anterior metatarsal transverse arch to relieve and prevent metatarsalgia. (*d*) A cushion rubber lift in the heel between the top lifts and the under lifts to give soft and jar-relieving steps when walking. (*e*) A special anti-slip finish to the bottom of the sole and heel so as to prevent slipping and subsequent injuries (*f*) Rounded heel edges to prevent catching in carpet, rug or dress in ascending or descending the stairs. (*g*) Must be built on anatomical principles so that the body weight bearing is evenly distributed on the feet. (*h*) The heels must be of the height most comfortable to the patient. (*i*) Should be built so that they can be worn all day without requiring a change to low cut shoes or slippers.

The shoes which we prescribe and recommend, fulfill these requirements and have proven very satisfactory. They are designed for us by Mr. Max Deutsch of this city.

2. Exercises. Exercises should be practised twice daily and should not be carried to the extent of tiring the patient. Walking should be encouraged as much as possible.

Tiptoe exercises: The patient places the limbs in the attitude of moderate inward rotation, raises the body on the toes to the extreme limit, the legs being fully extended at the knees, then sinking slowly, resting the weight on the outer borders of the feet in marked varus, repeating about twenty to thirty times. This exercise if practised faithfully is all that is required.

B. Curative: The two types of weak feet which we commonly meet with in pregnancy and the puerperium are the spastic and the nonspastic. In the nonspastic passive motion of the foot is painless and free to the normal limit. In the spastic type passive motion is painful and restricted. The treatment of the nonspastic type consists of proper shoes and exercises. As a rule these suffice; at times it is necessary to supplement these with Whitman's braces.

In the spastic type of weak feet strapping, shoes, and Whitman's braces are necessary. A very good method of strapping follows; one end of a strip of adhesive plaster, about 15 inches long and 3 inches wide is applied to the outer side of the ankle just below the external malleolus; the foot is then adducted as far as possible and the plaster is drawn tightly beneath the sole up the inner side of the arch and the leg; it is kept in this position by one or two plaster strips about the calf. Narrow strips are then applied about the arch and ankle in a figure of eight manner. Strapping should be done twice a week and continued until the spasm and rigidity have been overcome. When this has been accomplished the brace and proper shoes should then be prescribed.

Conclusions: 1. All cases of pregnancy should be instructed as to the proper care of the feet.

2. Prophylactic measures should be instituted, regardless of the presence or absence of weak feet.

3. Where neuralgic pains in the limbs, back, sciatic region, edema about the ankles are complained of, the presence of weak feet should be eliminated.

4. Only by the institution of prophylactic and early active treatment can we hope to prevent untold suffering in one of the most trying periods in the woman's life.

1051 Boston Road.

REPORT ON AN OLD CASE OF PARENCHYMATOUS NEPHRITIS.

By FRANK MACKIE JOHNSON, M.D.,

Boston, Mass.

In the Medical Record of May 20, 1905, I published an article entitled "Cystoscopy and Renal Lavage," citing the following case:

Mr. E. H., age 61. History of illness of more than two years. Principal symptoms had been headache, nausea, indigestion, weak heart, dropsy, partial inability to walk, loss of flesh and strength. Had received treatment from many physicians and had been told when he was in some hospital that he had but a short time to live. There was a disfiguring skin eruption on his face. He had taken large quantities of digitalis and iron. On examination, a stricture of the urethra was

found. This was dilated. The prostate was enlarged. Urine examination showed the case to be one of chronic parenchymatous nephritis, chronic catarrhal cystitis, and chronic prostatitis. There was a fairly large amount of albumin present.

The bladder was treated by boracic acid washes and injections of protargol, mild solutions of silver nitrate, argyrol, etc., then cystoscopy was performed. The examination of the left and right urines showed chronic parenchymatous nephritis. Both kidneys were in about the same condition. After lavage, ½ to 1 per cent. of protargol was injected slowly. In all there were some eighteen cystoscopies and in the interim bladder washes of boracic acid, silver nitrate 1/5000, etc. Salol, alkalies, urotropin, piperazin, *et al.* constituted the internal medication. Digitalis I did not use. The patient showed marked improvement, was able to resume work, had a good appetite and gained sixteen pounds. His flesh became firmer, right and left urines showed less albumin, and casts almost disappeared.

Eleven years have passed, and it is now 1916. During this time he has been up and about, and feeling quite well. At different times I have given him bladder and renal lavage. The stricture has entirely disappeared, so cystoscopy is not difficult. Soothing diuretics, tonics, urotropin have been more or less continued.

Four years ago he had a hard attack of grippe. This caused an added irritation of both bladder and kidneys, and affected the heart's action. Small doses of strophantus eliminated this new feature. He is now 73 years old; his urine shows more albumin than when I was treating him constantly, and casts have appeared again. Realizing that his condition is a serious one, in spite of his assertion that he feels well, I advised him to resume the bladder and renal lavage. For some time past I have obtained remarkably good results in chronic cystitis, pyelitis, pyelonephritis, etc., from bladder washes of warmed mild solutions of boracic acid, followed by injections into the bladder of 2 to 4 c.c. of colloidal iodine. I gave these treatments every day, at first, and then three times a week; also capsules of this iodine internally, one t.i.d. Up to this time I have believed that the improvement of condition after lavage was due to the better drainage rather than to the medicament used. I am now giving him bladder washes of boracic acid, followed by injections of the iodine—about 4 c.c. After lavage of the kidneys I inject this colloidal iodine very slowly and carefully, a little at a time, using in all 1 to 2 c.c. Internally, he is taking the iodine capsules and nothing else.

Both urines have cleared and the albumin has decreased. Also the good after-effects of the lavage are more lasting. While I do not expect to make a cure, I am more than pleased with the results obtained. And these results have been obtained quickly. It is my firm conviction that if I had been able to use colloidal iodine years ago my report of to-day would fully demonstrate that in iodine we have an agent of real and positive value.

In the light of a newer experience, with cases that show real improvement and many that have been cured, I advise the employment of iodine locally and internally in diseases of the bladder and kidneys, when lavage can be given. The treatment should be begun as early as possible.

A few suggestions in the use of this medicament: The iodine used locally should be warmed; catheters and syringes being dry and sterile. The bladder and urethra should be made dry so far as this is possible. Lubricants should contain no water.

One case, however, does not prove a theory. The object of this paper is to report a case watched and treated for eleven years—one looked upon as incurable; also to emphasize the remarkable results obtained with colloidal iodine. May I make a request that some of my readers test the method mentioned, and give to the profession the result of their experiences?

43 Tremont Street.

Medicolegal Notes.

Offenses Involving Moral Turpitude.—In proceedings to revoke a license to practise medicine as an osteopath in the State of Washington, it appeared that the defendant was charged with having been convicted of an offense involving moral turpitude by using the mails to give notice to cetrain persons named when, how, and by whom and by what means an abortion could be performed. The Washington Supreme Court held that the statute providing for revocation of a physician's license for unprofessional conduct and including conviction of an offense involving moral turpitude, in which case the record of conviction shall be conclusive evidence, is a valid enactment. If conviction of an offense involving moral turpitude is shown there is no discretion in the board of medical examiners. The term "moral turpitude" is not so vague and uncertain as to render the act unreasonable and void.—State Board v. Harrison (Wash.) 159 Pac. 769.

Identification of X-Ray Photographs.—The admission of *x*-ray plates in evidence rests fundamentally on the theory that they are the pictorial communication of a qualified witness who uses this method of conveying to the jury a reproduction of the object of which he is testifying. This being true the *x*-ray plates must be made a part of some qualified witness's testimony, and the witness should qualify himself by showing that the process is known to himself to give correct representations, and that it is a true representation of such object.—Bartlesville Zinc Co. v. Fisher, Oklahoma Supreme Court, 159 Pac. 476.

Privileged Communications—Mental Capacity.—In a suit to set aside a will because of the testator's mental incapacity the California Supreme Court holds that a hypothetical question to the testator's family physician calling for an opinion regarding the testator's mental capacity was correctly excluded under the California statute providing that a physician cannot, without the patient's consent, be examined as to information acquired while treating the patient.—*In re* Ross's Estate, 159 Pac. 603.

Father's Liability for Operation on Partially Emancipated Child.—In an action by a physician and surgeon to recover for a surgical operation and attendance on the seventeen-year-old daughter of the defendant, Cox, it appeared that the latter formerly lived at Chattanooga, but about three years before the occurrence involved he had removed to the adjoining county of Bradley. Two of his daughters remained in Chattanooga to earn their own living. This they continued to do without aid from their father. They were boarding at the Y. W. C. A. building when the younger became ill. The plaintiff was called in by the matron, and, after prescribing for her for a time, decided that an operation was necessary to remove an ovarian tumor. The patient's sister telephoned the father that the doctor advised an operation. The doctor had stated that the operation would be a slight one, and when the father inquired whether an incision would have to be made the daughter replied that it would not, and that the operation would be a slight one. The father replied, "Well, then, if it must be done, it must be done." The daughter responded that her sister would go for the operation the next day. This assent of the father over the telephone was not communicated to the doctor until after the operation. It was held that there was only a partial emancipation of the sick daughter, and a promise on the part of the father to pay for the operation was implied by law. "Emancipation" of a child is the relinquishment by a parent of control or authority over the child, conferring on the latter the right to his or her own earnings and terminating the parent's legal duty to support. It may be express, as by voluntary agreement of parent and child, or implied from such acts and conduct as impart consent, and it may be conditional or absolute, complete or partial.—Wallace v. Cox, Tennessee Supreme Court, 188 S. W. 611.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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LESSENING THE DIFFICULTY OF CARING FOR DIPHTHERIA CASES.

CONTAGIOUS diseases always have been, and probably always will be, the *bêtes noirs* of the general practitioner. In the first place, there is the difficulty of diagnosis. The average medical school curriculum, admirably planned and balanced as it is nowadays, must necessarily, in its crowded four years, offer scant time to be spent on this particular subject. Cases may be very scarce in the hospital connected with the medical school at the particular time when the student is attending clinics. He goes then into the arena of active practice often poorly equipped to differentiate diphtheria from quinsy, chickenpox from smallpox, and scarlatina from a digestive erythema. In the second place, there is the difficulty of the family. The diagnosis of a contagious disease means excessive inconvenience to the household and the young practitioner holds his perilous course between the Scylla of losing the family practice forever with a wrong diagnosis and the Charybdis of delaying the report of the case too long, subjecting others to the disease and perhaps coming himself into serious conflict with the health authorities. In the third place, there is the diplomacy amounting almost to equivocation necessary if the physician would keep such cases on his daily visiting list and still retain the rest of his practice, particularly the children. In the fourth place, there is the difficulty of preserving quarantine; and in the fifth place, not to be too prolix, there is the problem of discharging the case from quarantine, not too soon from the view-point of the health officer and not too late from that of the family.

Let us consider briefly a case of diphtheria. In addition to all the drawbacks just mentioned the doctor hesitates, in the case of a family in poor circumstances, to make the diagnosis of diphtheria too readily on account of the cost of antitoxin. The family in question may be so poor that such an expense would be ruinous, especially should the case turn out not to be diphtheria after all, and yet too proud to accept the antitoxin from a charitable organization. Leaving out of consideration such a situation, however, in diphtheria we have, besides the ordinary disadvantages of contagious disease, the presence of what might be called a laboratory form of the disease. The health regulations of nearly all cities require the submission of cultures from the throats of diphtheria cases and one or more of these must be negative before the case can be discharged from quarantine. We are all familiar with the discouraging case which goes along showing plus culture after plus culture long after the clinical signs of the disease have disappeared.

In Public Health Reports for November 10, Assistant Surgeon Newton E. Wayson has reported a study of two diphtheria epidemics, one in West Virginia and one in Washington, D. C., with especial reference to the relation between morphology and virulence, in other words, to see how far a laboratory diagnosis of diphtheria could be relied upon in endeavoring to ascertain whether or not an individual was actually harboring germs capable of producing diphtheria. Thirty-seven cases were studied, the virulence being tested on guinea-pigs of from 200 to 400 grams in weight by injecting with pure broth culture of the organism, after two days growth at body temperature.

Not to go too much into detail regarding the various laboratory methods used by Dr. Wayson, his conclusions are well worth reporting. He decided that a test of virulence by injection into guinea pigs was a more practicable way of controlling diphtheria carriers than the method commonly in use in that it was more reliable and required less time. He also found that the solid-staining types of the diphtheria bacillus are usually avirulent, and that morphology alone is an insufficient index of the virulence of the organism. It is hardly necessary to point out the application of these results. They mean that the method commonly used by health departments in determining whether or not a case should be retained in quarantine is longer than is really necessary and furthermore that a case may show the organisms in the nose and throat and still be perfectly harmless. Surely the adoption of the guinea-pig method would result in pleasing our patients and their families by avoiding in many instances long isolation of children who feel perfectly well and who have long since ceased to show any clinical signs of diphtheria. Then too we would be able to deal in a more intelligent manner with so-called "carriers" when such occur in our practice. It is always irksome to an individual to be shut up for periods of time varying from a few days to many weeks merely because he happens to have germs in his nasopharynx. With this newer method we shall be able to tell quickly whether or not such germs are virulent and if they are not the alleged carrier can go on his way rejoicing.

FATIGUE, AND ITS EFFECTS ON EFFICIENCY.

A MALE or female of the human species, of youthful or adult age, is capable of working efficiently only for a certain length of time. Work done when a person is physically or mentally tired is not effective, and is often worse than useless. However, the fact must be taken into account that different individuals have varying degrees of endurance. Some can continue to labor effectively for a far greater length of time than others. It is a ques-

tion largely of mental and physical virility, and also, to some extent, an acquired habit. But there is a limit to the power for doing efficient work of every one, and, speaking generally, long hours of work are not conducive to good results, from whatever aspect the matter may be regarded. Physical work which calls for little or no skill can be persisted in without detriment to the quality of the work done for a much longer period than skilled work, and this result obtains, of course, more surely if such work is performed in the open air or under favorable sanitary conditions. Work which for its effective performance requires concentration of brain power is doubtless the most severe tax upon the resources of both mind and body.

According to Professor William Stirling, who has recently been giving a series of addresses on the subject, published in the *Medical Press* of Nov. 6 and 8, fatigue expresses itself in a loss of excitability, a diminished capacity for work or "output." The sense of fatigue, however, may not run parallel with the diminution of output. In mental work, decided sensations of fatigue may be experienced when the objective record shows that increasing amounts of work are being done. The output may be falling and there may be absence of the sensations of fatigue. Overactivity without sufficient and timely periods of rest leads to fatigue, but fatigue sensations are not to be taken as a direct index of the nature of fatigue. These sensations are Nature's warning signals, fatigue itself being a complex of sensations. Stirling puts fatigue down as due to two causes: (1) The using up of organic force or energy, and (2) The wear and tear of the organs which are overworked. Matter and energy are used up, restitution does not keep pace with waste, and there is a run on capital.

Perhaps the most instructive and valuable part of Stirling's paper is that which deals with industrial fatigue, and he points out the very obvious truth that in many factories the environment of the workers leaves much to be desired. It stands to reason that those who work in an overheated and moist atmosphere are far more apt to become fatigued than workers in healthy surroundings. In fact, such conditions lead to a disinclination or actual inability to perform effectively active muscular or mental work. The mental activities, indeed, are kept at a high pitch and both muscular and nervous activity are largely governed by the speed of the machine which the worker has to tend, while the noise is a most disturbing factor.

In Great Britain, at the present time, the question of fatigue in relation to efficiency is prominently brought to the front in regard to the manufacture of munitions. It is of the utmost moment to the successful prosecution of the war that munitions be turned out quickly, and in the endeavor to effect the object on an immense scale there has been a tendency to overwork. As said before, a fatigued person is incapable of doing good work, and good work is essential, quite as essential as speed, in the manufacture of munitions. The question of munition workers has been probed of late and it is found that hours of even moderate labor incontestably lead to fatigue, and consequently to lowering of output. The daily cumulative strain gradually but surely tells, the mill grinds slowly but effectively, the machine employed in many cases setting the pace, and in the "speeding-up" process the worker must draw more and more on his energies to keep up with the rhythm of the untiring machine.

But working at high pressure for some length of time produces not only fatigue but sickness. As Miss Hutchins has pointed out in her work, "Women and the Industrial Revolution," there is a close connection between working overtime, fatigue, and certain types of nervous diseases. Fatigue both causes disease directly and predisposes to disease in general. Stirling quotes Miss Goldmark to the effect that in the blast furnace industry of the United States, 88 per cent. of the 31,321 employees are regularly kept at work seven days a week, and young boys of fourteen may still be employed all night long in Pennsylvania.

With respect to the employment of girls and women, the British Munitions Commission are satisfied that the strain of long hours is serious, and are of the opinion that work in excess of sixty hours per week ought to be discontinued as soon as practicable. It has been proved that youths working for 70 hours a week turn out less work by 40 per cent. than when their working time has been reduced to 57 hours a week. The problem to be solved is to insure the maximum of output with the minimum of fatigue. This is from the economic standpoint. The problem from the public health point of view is even more important, for it concerns intimately the health of the race and the welfare of the nation. Overwork brings an over-fatigue which induces disease and which tends to the degeneration and deterioration of a population. Moreover, fatigue is an incentive to the use of alcoholic stimulants, another potent cause of race degeneration. Thus it would seem that from all standpoints overwork is a colossal blunder but one into which all industrial nations have fallen. Proper periods of rest and repose, especially in the case of the young and of women, are physiological and economical necessities, and the country that lavishly and extravagantly uses up her human material with the sole object of attaining industrial supremacy is doomed to decay. After all, it is upon a healthy stock that a nation mainly depends, and therefore it behooves us to see to it that men and women are not broken upon the wheel of commercialism.

TOXEMIA OF PREGNANCY.

When toxemia of pregnancy was first described it was thought to belong to the first seven months of gestation. In the latter months, and especially at or soon after labor it would have been hardly possible to think of any toxic process but eclampsia. To-day it is recognized that toxemia, in the sense of an acute lesion of the liver, may appear in close connection with labor, so that we are justified in calling it puerperal toxemia. It is also evident that several quite different conditions may be comprised under this one term. Neither eclampsia nor toxemia in the original comprehension was looked

upon as an infection, but of recent years the possibility that hepatic toxemia could be due to an ascending infection of the gall ducts by *Bacillus coli* has received consideration. In its mildest form it is perhaps expressed as a simple benign catarrhal jaundice, but in other cases the latter is a mere symptom of a much graver condition, a severe lesion of the liver which may be regarded as the preliminary stage of acute yellow atrophy. Aside from the rapidly fatal form there is another in which recovery takes place, yet the patients show notable symptoms of cholemia. In some cases the child is born jaundiced. Also of great interest is the fact that so-called "delayed chloroform poisoning" may readily be confused with post partum toxemia; so that if much chloroform has been given, a diagnosis of the latter would be impossible. To come back to eclampsia, it must be confessed that it is very difficult to distinguish the rare non-convulsive form from toxemia, and the latter is probably the better designation.

At the session last June of the Royal Society of Medicine Phillips described five cases of acute hepatic toxemia, all he had witnessed in 2,000 confinements. All the cases were in primigravidæ, and two ended fatally. In the first, labor was induced when the patient was near term and toxemia appeared 18 hours after delivery (jaundice, vomiting of blood, high temperature). Death 30 hours later. Autopsy showed some biliary obstruction suggesting an enteric infection. The precise lesion of the liver was not determined, but there was beginning acute yellow atrophy. The second patient became jaundiced on the second day post partum. She was almost unconscious—drowsy and apathetic; the liver was sensitive to percussion. Temperature subfebrile. Death occurred in 48 hours, no autopsy. In the third patient labor was induced in the thirty-fifth week. During this period the motions were clay like, and the temperature rose to 102° Fahr. The child was delivered by forceps. Within 24 hours jaundice appeared with subfebrile temperature but no evidences of sepsis. Not for more than two weeks did bile reappear in the stools, the temperature then becoming normal. The other cases were similar to the latter. The author regards the evidence of a mild ascending cholangitis as suggestive. He was in fact so convinced of this that he treated one patient with autogenous coli vaccine. In all the recovered cases the urine was loaded with *Bacillus coli*. To eliminate the possibility of chloroform poisoning as a factor some other analgesic should be used in suspicious labors, such as those in elderly primigravidæ, when there is absence of bile in the stools, etc.

The Height of Specialism.

There is an alleged joke which we have seen in various vestments in divers of the lay periodicals. A patient with an injured middle finger is shown into Dr. X's office. The latter, after a casual glance at the injured digit, says, "I shall have to refer you to Dr. Y, in the next block, who specializes in such cases. My specialty is wounds of the ring finger." We must confess that this burlesque of the present-day tendency of the profession is sufficiently near the truth to register a hit. Many of our conservative members are of the opinion that we will eventually carry our refinements to such an extent that each doctor will become something resembling a skilled mechanic, proficient enough in the details pertaining to that little section of the human economy which he has claimed for his own, but lacking the broader outlook, the comprehensive grasp of the organism as a whole, its material and spiritual needs, which the physician of the old school had. Too bad that Oliver Wendell Holmes is not living to express himself in this matter. The appearance of a large volume* dealing with the umbilicus and urachus has given us pause. We remember the awe with which our textbook on anatomy was regarded in our freshman year at college and it was of approximately the same proportions as the present tome. If we are to be governed by the relative importance of the subjects in question, we shall await a publication dealing with diseases of the stomach about the size of the Encyclopedia Britannica and if some enterprising writer should attempt a work on the nervous system he could fill about a dozen sections of bookcases. Seriously, the monumental work of Dr. Cullen on the umbilicus is excellent and since the stars ordained that it be written it is fortunate that it was undertaken by so able a scholar and surgeon. The subject has been so thoroughly handled as to discourage any one else from treading the same path for many years to come. Surgeons having to deal with hernias of this region or with the annoying infections which prove so difficult to handle will be grateful to the author for his painstaking researches which have been carried on for twelve years, and for the admirable illustrations with which he has illuminated his subject.

Hypertrophy of the Prostate and Senile Involution.

The question of the interdependence of prostatic hypertrophy and senile involution has often been raised and usually answered in the negative, and the counter claim is made that the senile prostate is an atrophic prostate. Leaving out of question the high incidence of hypertrophy in aged men, we may discuss the subject of the "youthful" prostatic, and it may be possible to show that hypertrophy in advanced age represents only a very slow, insidious evolution of a disease originating a score of years earlier. Well developed prostatism may be seen to occur before the age of 40—dysuria, tumefaction, and all. It is a disease of middle life, perhaps of early middle life, which may not become apparent until there is some senile involutional change in the bladder. The disease prevails very largely in the Anglo-Saxon race, with a history of long latency, and in hale and hearty old men, and the tumors removed by Freyer and others are often very voluminous. In an article in the *Gazette hebdomadaire des science médicales* for September 10, Loumeau reports two cases of early prostatic hypertrophy. The first was in a clergyman aged 41, general history negative. Slow urination at times in boyhood was attributed to cold, to which he was very sensitive; but seven or eight years ago and again three

*Embryology, Anatomy and Diseases of the Umbilicus, together with Diseases of the Urachus. By Thomas Stephen Cullen, M.D. Price, $7.50. Philadelphia and London: W. B. Saunders, 1916.

years ago, he noted some aggravation of this symptom until at present he was a marked sufferer from dysuria. There was no residual urine in the bladder, no urethral obstruction, but rectal exploration showed a bilobar enlargement of the organ which was also exquisitely sensitive to the sound. The prostatic urethra was very slightly retracted, enough to cause severe pain and tenderness, but not enough to cause obstruction. Here we have a "young" prostatic in which the hypertrophy must have appeared at least at the age of 38, and perhaps even as far back as 33. The second patient was 44 when first seen. For five years preceding he had suffered from nocturnal erections not relieved by sexual intercourse—in other words, priapism, for which he had come for relief. There had been no history of dysuria, and both urethra and bladder were intact. The priapism was relieved by treatment, but dysuria at once succeeded it. The two affections continued to alternate under the treatment proper for each. As in the first case the prostatic urethra was sensitive and slightly constricted. Rectal touch revealed a small unilateral adenoma of the prostate. This second patient should have been not over 39 years old when his troubles began. Nothing in the least to suggest presenile conditions was present.

Eclampsia and Fractured Basis Cranii.

One of the most extraordinary associations of disease ever recorded recently occurred in Switzerland. We are familiar enough with types of disease or injury which go to show that certain individuals can withstand almost anything, but cases like the one to be related go even further. The case was reported by Schweizer in the *Correspondenz Blatt für Schweizer Aerzte*. The woman after complaining of slight headache, was heard to fall heavily. A large, powerful woman, she lay unconscious for several hours before reaching the hospital with diagnosis of fracture of the base of the skull. No fetus could be mapped out as a condition of hydramnios was evidently present. The os was intact. The possibility of a twin pregnancy was borne in mind. The full bladder was evacuated and the urine contained albumin and casts. To account for so severe a fall in a woman who was simply clearing the breakfast table it was assumed that it had occurred as part of a general convulsion. Several tonic-clonic seizures had happened while the patient was on the examining table. These were mild, but were soon succeeded by others of greater severity. The woman had rallied from her coma, but was confused and restless and high temperature supervened. Cesarean section was elected because of the fracture and to give the child or children a chance of survival. Two children were removed; they were mature, not asphyctic, and both have thrived. Despite the difficulties of examination fetal heart sounds and movements could be perceived. The operation at once terminated the convulsions, and the woman made a good puerperal recovery. Mischief in the brain soon became evident. There were convulsive movements of cortical origin, almost total aphasia, total alexia, and agraphia. She was kept in bed a month and slowly improved, until she was able to leave for home. Seven and a half months after the injury but a single sequel persisted, a cloudiness of the vitreous in the left eye, not noticeable in binocular vision. It had been an early symptom and was evidently posttraumatic. On account of the patient's almost complete recovery much of the case remains obscure. Was there a causal relationship between the eclampsia and the focal symptoms, aside from the results of the accident? This is answerable in the negative. The author believes that in addition to fracture of the base and its immediate consequences there was more or less contusion of the brain substance due to the same violence. The author finds little help from the literature either of epilepsy or of eclampsia. The pregnant woman is almost always recumbent when the first eclamptic seizure appears. The case must remain largely a puzzle, but one thing seems certain, viz., cesarean section has a new indication in eclampsia.

The Milk Supply of London.

The milk supply of London has been unsatisfactory always, and while some progress has been made in recent years in remedying its defects, it is still a very long way from perfect. Some few years ago one of the *Lancet's* Commissioners investigated the matter and pointed out that the milk supply of London was carelessly handled, that the transportation was defective, that it was often sold in small stores in which it was subjected to contamination, and that, on the whole, the system required complete and thorough revision. It was pointed out too that the manner in which the milk supply of New York was handled was superior by far and that especially was this observed in the means of transportation, milk cans in America being refrigerated, a method unknown in Great Britain. Again, milk is not carried in sealed bottles in England, nor is the supervision of the milk in stores in that country strict. The question had been tinkered with by the British local Government Board but no really effective steps have been taken in the direction of improvement. In the London *Times* of September 25 it is stated that the Clean Milk Society of Great Britain is endeavoring to arouse the public to the menace of an impure milk supply. It is demonstrated that, as pointed out by the *Lancet* years ago, the milk supply of London is notoriously dirty from the bacteriological point of view, and the Society has recommended that the New York system of transporting milk in refrigerated cars and of bottling some of it in sealed bottles should be adopted. The whole of the London supply is carried in bulk. The charges brought against the London milk supply are that it is uncertified, there is no standard of quality, nor careful inspection by means of a score-card system as in America. The Society draws attention to the fact that such negligent methods are bad enough in times of peace, but in times of war they may be no less than disastrous when infant life is so precious.

News of the Week

Smallpox Prevalent.—The United States Public Health Service reports an alarming spread of smallpox through nineteen States, during the last week of November 58 new cases being reported in Connecticut, 125 in Cleveland, 87 in North Dakota, 67 in Washington, and 25 each in Virginia and Texas. The unusually large number of cases in Connecticut has caused some apprehension in New York City,

and the Health Department is urging the vaccination of every one in the city. The last outbreak in New York occurred in 1902, and past experience has shown that a return of the disease may be expected in seven to fourteen years, probably because of the neglect during the subsidence of the disease of the precaution of vaccination.

Openings for Psychiatrist.—The Municipal Civil Service Commission will hold an examination, open to both men and women, for the position of physician for the inspection of mentally defective children. Applications will be received up to 4 P. M. on December 16. From the eligible list resulting the Board of Education will fill a vacancy in the position of senior physician at a salary of $2,520 per annum, and the Department of Public Charities three positions of resident physician, at $1,500 per annum and full maintenance, at Randall's Island Hospital and Schools for Children.

Straus Milk Depots.—The report of the work of the Nathan Straus pasteurized milk depots states that during the year 2,000 babies were cared for, and during the summer 2,500 babies received milk.

Manufacture of Radium.—The Federal Bureau of Mines, according to the annual report of its director, manufactured during the year more than one million dollars' worth of radium. This was accomplished through the cooperation of the National Radium Institute, which furnished capital of $300,000 necessary to develop an economical method of extracting the radium from the carnotite ores.

Drug Traffic in New York.—At the hearings in New York last week of the joint legislative committee appointed last spring to investigate the drug-forming habit with a view to proposing remedial legislation, the estimate was made that the number of drug addicts in the city had increased to 200,000. The present law, it was asserted, acts as a bulwark and protection for unscrupulous druggists and physicians, and the committee was told that there was urgent need for new laws as well as for additional institutions where drug users can be properly treated. It is believed that American manufactured drugs are now being sold into Canada and Mexico and then smuggled back into the United States.

Bar Narcotic Drugs.—The New England Association of Boards of Pharmacy, in session in Boston the first week of December, adopted resolutions announcing a determination to suppress illegal sales of drugs in stores within its jurisdiction and to close stores that refused to comply with the State laws and regulations.

Good Health on Border.—"Above the average" is the report made by Col. W. D. McCaw, chief surgeon of the Southern Department, on the health of the troops at the border. Five base hospitals—at San Antonio, El Paso, Brownsville, and Eagle Pass, Tex., and Nogales, Ariz.—reported less than 2,500 beds occupied, and over 2,000 beds empty. The army usually, it is said, considers 33 1/3 per cent. of empty beds a good record.

Sugar Shortage and Infant Mortality.—A dispatch from Berlin states that it has been decided that the increasing mortality among babies in that city is due to an insufficient allowance of sugar, and it has been ordered that every child born after December 1 shall receive an additional half pound of sugar monthly. The allowance up to this time had been 750 grams monthly for each child.

Fake Paralysis Cure.—Upon a plea of guilty to having sold a fake cure for infantile paralysis, a baker of this city was sentenced recently to serve thirty days in the penitentiary. When examined the promised "sure cure" was found to contain the drugs usually put into the proprietary rheumatism remedies, and the seller confessed that until the outbreak of the paralysis epidemic it has been offered as a cure for rheumatism, but that he had decided he could increase his sales by increasing his claims.

Christian Science Sanatorium.—In furtherance of their purpose to maintain a sanatorium where treatment can be administered according to Christian Science theories, the Board of Directors of the Christian Science Church announces that they will establish a fund for $1,000,000 to be used for building, equipment, and maintenance. The sanatorium will be placed in Brookline, Mass., and will be under the immediate supervision of the Christian Science Benevolent Association.

Tuberculosis Day.—By proclamation of the Governor of the State, Sunday, December 10, was named as Tuberculosis Day in New Jersey. The Governor requested that public attention be called at that time to investigations made by the health authorities for the prevention of the disease.

Fresh Air Work.—The Association for Improving the Condition of the Poor reports that owing to increased contributions during the past season it was able to maintain its fresh air work in New York despite the increased expenditures for equipment and nursing made necessary by the quarantines against poliomyelitis. From June 1 to November 1 all the fresh air headquarters of the association were kept open continuously, including three not before used. Altogether 52,017 days of outings were given to 4,428 families.

Personals.—Dr. Carlos Chagas of the Institute for Experimental Pathology at Rio de Janeiro has been invited to conduct a course on tropical medicine at Harvard University.

A correspondent of *Science* states that Dr. H. B. Fantham of the Liverpool School of Tropical Medicine, who has been serving as chief protozoologist of the Allied forces at Salonica, has been seriously ill with amebic dysentery, but is now convalescing, and is again on duty at Malta.

The University of Illinois, College of Medicine, Chicago, announces the appointment of Dr. L. V. Heilbrun as instructor in microscopic anatomy.

Dr. Joseph M. Thuringer of Boston has been appointed professor of anatomy at the University of Alabama, School of Medicine, Mobile, and Dr. Claude W. Mitchell has been made head of the department of physiology and pharmacology.

The Long Island State Hospital of Brooklyn, N. Y., has recently changed its name to the Brooklyn State Hospital, the change being made to avoid confusion of the institution with the Long Island College Hospital. The similarity in the names of the two hospitals has been the cause of much trouble heretofore, in the misdirection of patients as well as of mail, etc.

Home for Nurses.—Announcement has been made of the gift to the New York Skin and Cancer Hospital of the four-story building at 338 Second Avenue, adjoining the hospital, to be used as a home for the hospital nurses. The giver is Mr. W. C. Van Antwerp, one of the governors of the hospital, and the gift is made in memory of his mother. The house will be remodeled to fit it for a home.

Belgian Contributions.—The Treasurer of the Committee of American Physicians for the Aid of

the Belgian Profession reports that the receipts during the quarter ending November 30, 1916, were $11.40, making the total receipts $7,958.26. The total disbursements, including 1,625 standard boxes of food at $2.20, 1,274 boxes at $2.30, and 353 boxes at $2.28, have amounted to $7,310.04, leaving a balance on hand of $648.22. Contributions may be sent to Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Penn.

Gifts to Charities.—By the will of the late Mrs. Josephine H. Dickman of New York, the sum of $5,000 is left to Dr. Benjamin Tenney of Boston, to be used for such charity or medical purposes as he may select.

The Goshen Emergency Hospital of Goshen, N. Y., receives a bequest of $10,000 by the will of the late H. W. Van Cortland of that city.

The University of Chicago has received from Mr. Frederick H. Rawson a gift of $300,000 for the medical school. The money will be used to erect a new laboratory building.

By the will of the late Col. W. G. Vincent, a bequest of $60,000 made to his wife, becomes available after her death for the uses of the School of Tropical Medicine of Tulane University.

By the will of the late Mr. Jacques Halle of New York, Mt. Sinai Hospital receives a bequest of $5,000, while bequests of $2,500 each are made to the Montefiore Home and the Beth Israel Hospital Association.

Medical Journal Changes.—We regret to learn that the Cincinnati *Lancet-Clinic* has ceased publication. The *Lancet-Clinic* was the product of the consolidation of the *Lancet and Observer* and the *Clinic*, the latter being the first medical weekly issued west of the Alleghenies, and was for many years a journal of high standing and authority.

The Louisville Monthly Journal of Medicine and Surgery has become the official organ of the Mississippi Valley Medical Association and has taken the name of the *Mississippi Valley Medical Journal.*

The *Texas Medical News* has died and been reincarnated as *Medical Insurance and Health Conservation.*

Medical Society Elections.—Tri-State Medical Association of Arkansas, Mississippi, and Tennessee: Thirty-third annual meeting at Memphis, Tenn., on November 23. Officers elected: *President*, Dr. James W. Gray, Clarksville, Miss.; *Vice-presidents*, Dr. H. Rogers Hays, North Carrollton, Miss., Dr. R. W. Griffin, Tiptonville, Tenn., and Dr. Floyd Webb, Turrell, Ark.; *Secretary*, Dr. J. L. Andrews, Memphis; *Treasurer*, Dr. J .A. Vaughan, Memphis.

Eastern Medical Society of New York City: At the annual meeting on December 8, 1916, the following officers were elected: *President*, Dr. I. Seth Hirsch; *Vice-Presidents*, Drs. H. E. Isaacs and G. G. Fischlowitz; *Recording Secretary*, Dr. J. F. Saphir; *Treasurer*, Dr. A. A. Hilkowich.

Ohio Valley Medical Association: Annual meeting at Evansville, Ind., on November 23. Officers elected: *President*, Dr. William Shimer, Indianapolis, Ind.; *Vice-presidents*, Dr. J. Rawson Pennington, Chicago, Dr. W. F. Boggess, Louisville, Ky., and Dr. Meyer L. Heidingsfeld, Cincinnati, Ohio; *Secretary-Treasurer*, Dr. Benjamin L. W. Floyd.

The Harvey Society.—The fourth lecture of the series will be held at the New York Academy of Medicine on Saturday evening, December 16, 1916, at 8.30 P. M., by Prof. Henry H. Donaldson of the Wistar Institute of Anatomy and Biology; subject, "Growth Changes in the Mammalian Nervous System."

Obituary Notes.—Dr. Ivory Lowe of Canaan, Me., a graduate of Albany Medical College in 1862, died at his home on November 26, after a short illness, aged 80 years.

Dr. Philip Mills Jones of San Francisco, Cal., a graduate of Long Island College Hospital, Brooklyn, in 1891, and a member of the American Medical Association, the Medical Society of the State of California, and the San Francisco County Medical Society, died suddenly on November 27, aged 46 years. Dr. Jones was secretary of the Medical Society of the State of California.

Dr. Jacob Brill Peters of Walden, N. Y., a graduate of New York University Medical College in 1885, and a member of the Medical Society of the State of New York and the Orange County Medical Society, died at his home after a lingering illness, on November 23, aged 63 years.

Dr. Ellera J. Whittleton of Webster, N. Y., a graduate of Cleveland University of Medicine and Surgery in 1884 and a member of the Monroe County Homeopathic Medical Society, died at his home on November 20, after a short illness, aged 57 years.

Dr. Joseph Stafford Horsley of West Point, Ga., a graduate of the Medical Department of the University of Georgia, Augusta, in 1870, and a member of the American Medical Association, the Medical Association of Georgia, and the Trop County Medical Society, died on November 17, aged 73 years.

Dr. Frederick James Sanborn of Spencer, Mass., a graduate of Bellevue Hospital Medical College, New York, in 1883, and a member of the Massachusetts Medical Society and the Worcester County Medical Society, died suddenly in his automobile while making a call, on November 20, aged 55 years.

Dr. Adrian Mathews of Providence, R. I., a graduate of Jefferson Medical College of Philadelphia in 1874, and a member of the American Medical Association, the Rhode Island Medical Society, and the Providence County Medical Society, died at his home on November 19, after a long illness, aged 66 years.

Dr. James Albert Breakell of New York, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1873, and a member of the Medical Society of the State of New York and the New York County Medical Society, died at Cross River, N. Y., on November 18, aged 65 years.

Dr. William Williams of Pittsburgh, Kan., a graduate of the Missouri Medical College, St. Louis, in 1886, and a member of the American Medical Association, the Kansas Medical Society, and the Crawford County Medical Society, died at the home of his brother in Niangua, Mo., on November 14, aged 55 years.

Dr. David Byron Todd of San Francisco, Cal., a graduate of the University of Michigan Medical School, Ann Arbor, in 1871, died on November 20, after a brief illness, aged 69 years.

Dr. Norman Howe Liberty of Mineville, N. Y., a graduate of Albany Medical College in 1912, and a member of the Medical Society of the State of New York and the Essex County Medical Society, was instantly killed in an automobile accident at Ticonderoga, N. Y., on November 13, aged 27 years.

Dr. Claude Bernard Foreman of Kane, Ill., a

graduate of the Missouri Medical College, St. Louis, in 1897, and a member of the Illinois State Medical Society and the Greene County Medical Society, died in the Springfield, Ill., Hospital, on November 27, from appendicitis, aged 40 years.

Dr. WILLIAM HENRY STRENG of Richmond, Ill., a graduate of the Chicago College of Medicine and Surgery, Chicago, in 1907, and a member of the American Medical Association, the Illinois State Medical Society, and the McHenry County Medical Society, was killed instantly in a collision at a grade crossing in Waukegan, Ill., on November 21, aged 38 years.

Dr. CLIFTON MAUPIN FARIS of Sacramento, Cal., a graduate of Johns Hopkins University Medical Department, Baltimore, in 1905, and a member of the American Medical Association, the Medical Society of the State of California, and the Sacramento County Medical Society, died suddenly at his home on November 16, aged 39 years.

Dr. ALPHEUS D. FINCH of Bellefonte, Ark., a graduate of the Medical Department of Vanderbilt University, Nashville, in 1885, died at the home of his son, near Bellefonte, on November 7, aged 67 years.

Dr. EDWARD DARROW of Aurora, Minn., a graduate of Rush Medical College, Chicago, in 1901, died in his office on November 12, from myocarditis, aged 42 years.

Dr. JESSIE VALERIA STAUFFER SMITH of Winterset, Iowa, a graduate of the College of Physicians and Surgeons, Keokuk, in 1892, and a member of the Iowa State Medical Society and the Madison County Medical Society, died on November 12, aged 50 years.

Dr. GEORGE P. MUNSEY of Suncook, N. H., a graduate of Dartmouth Medical School, Hanover, in 1879, died at his home on November 26, aged 61 years.

Dr. C. AUGUST W. SCHWAGMEYER of Cincinnati, Ohio, a graduate of the Medical College of Ohio, Cincinnati, in 1870, and a member of the Ohio State Medical Association and the Hamilton County Medical Society, died at his home on November 11, from heart disease, aged 72 years.

Dr. ANDREW JOHN CRIGHTON of East Hartford, Conn., a graduate of the College of Physicians and Surgeons, Baltimore, in 1891, died at his home on November 28, aged 52 years.

Dr. JAMES F. GARDNER of Capen Bridge, W. Va., a graduate of Bellevue Hospital Medical College, New York, in 1879, was killed in an automobile accident near Winchester, Va., on November 11, aged 73 years.

Dr. EDWIN R. MONTGOMERY of Louisville, Ky., a graduate of the Medical Department of the University of Louisville in 1867, died at North Birmingham, Ala., on November 27, aged 69 years.

Dr. WILLOUGHBY WALLING of Chicago, Ill., a graduate of the Medical Department of the University of Louisville in 1868, and a member of the Illinois State Medical Society and the Cook County Medical Society, died at his home on November 28, aged 68 years.

Dr. DECOU CARPENTER MOULDING of Chicago, Ill., a graduate of Dearborn Medical College, Chicago, in 1906, and of the University of Illinois, College of Medicine, Chicago, in 1909, and a member of the Illinois State Medical Society and the Cook County Medical Society, died in the Augustana Hospital, Chicago, on November 21, following an operation, aged 46 years.

Correspondence.

ETHICS OF LETTER WRITING.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—A recent incident gives prominence to the somewhat stupid custom of physicians in not answering letters that are of minor importance which come to them. A man was operated on successfully at a Boston hospital by an eminent surgeon. Later it occurred to him that he would like to make him a present as a token of his appreciation. Accordingly he wrote a very pleasant letter of thanks, without intimations of what he wished to do, expecting that the doctor would respond in some way that would promote a further correspondence. Weeks passed by and no response came, and fearing some mistake, he sent a special delivery letter of warmly expressed thanks. This brought no answer. The check of a thousand dollars that he intended to give him was then torn up, and a feeling of indignation and contempt took its place.

While this may be a very unusual incident, it gives emphasis to the stupid neglect of a great many physicians to recognize the ordinary correspondence which comes to them. Underrating the importance of a letter that calls attention to some fact or brings with it some compliment or suggests some change or even requests for opinions on minor matters, is a reflection on the physician's judgment and ethical sense and always brings with it suspicion of weakness. Two examples illustrate this: A physician and teacher of great reputation rarely writes any letters of thanks for favors and seldom replies to any correspondence. As a result, his judgment is discounted in innumerable ways and his ordinary courtesy is questioned and his personal reputation has suffered more or less seriously. When remonstrated with for this neglect, he gave excuses of want of time and so on. The second example is that of a popular teacher and practitioner who makes it a rule to answer every letter, acknowledge every favor, and respond to every request. As a result, his popularity and esteem among the profession are very pronounced. Every hillside physician, who has written him in a broken, confused way about some matter has received a reply which he treasures as a direct tribute to himself. Even quack drug men, who write sending him specimens are proud of his recognition in the simplest form of a letter.

Physicians, of all others, make a fatal mistake in not adopting the politicians' ethics of answering every voter who appeals to them in any way. The physician is a public man and his affability and courtesy to every one he comes in contact with is a very large asset in his success. To fear a correspondence that may be used in some way in the future against him is stupidity. A trained physician of all others should be able to write clearly and briefly in such a manner that no complications could possibly follow. He should show equal courtesy with the business man or politician who makes correspondence a large lever in his work.

T. D. CROTHERS, M.D.

HARTFORD, CONN.

Tetanus from Ocular Wounds.—Schneider states that about sixty cases of this sequence have been recorded within the past century and adds two personal observations. Apparently few or none of these occurred as a result of the war.—*La Presse Médicale.*

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE HARVEIAN ORATION—BENEFACTORS OF THE ROYAL COLLEGE OF PHYSICIANS—ENDOWMENT OF RESEARCH—RELATIONS TO ST. BARTHOLOMEW'S HOSPITAL—DR. VAUGHAN-HUGHES.

LONDON, November 11, 1916.

SIR T. BARLOW'S Harveian oration at the Royal College of Physicians, which I mentioned last month, may very well interest you further. It began with a commemoration of benefactors of the college, the first president, Linacre, being the real founder, for it was to a large extent due to his counsel that the charter was conferred by Henry VIII. But he must be reckoned further as a pioneer in the revival of learning and moreover as a physician in the highest sense. The early meetings were held in his own house, which he seems to have presented to the college during his lifetime. He was followed in his office by John Cains, who was elected president no less than nine times and who wrote the "Annals" with his own hand from 1555 to 1572. He was not only a great scholar, but the first teacher of anatomy in this country, an able naturalist, and writer on clinical medicine—witness his careful study of sweating sickness. The next president was Richard Caldwell, who was elected in 1570 and who jointly with Lord Lumley endowed the Lumleian lectureship. In 1600 the president was William Gilbert, the pioneer in the study of magnetism, who has been called the father of experimental philosophy in England and the inspirer of Galileo. He bequeathed to the college his library, globes, scientific instruments, and natural collections. To him succeeded Harvey, whose material benefactions to the college were enormous. In 1651 he had retired, being 73 years of age, but he still held the Lumleian lectureship and offered to build and present to the college a library and museum. In two years these additions, together with a large convention room, were completed and conveyed to the college. In 1656 he resigned his lectureship and added further benefaction to the college in the shape of his patrimonial estate, the value of which at that time was £56 a year. He expressed a wish that an annual feast should be held and an oration delivered in commemoration of benefactors, for which a fee should be paid to the orator, and a salary to the keeper of the museum and library which he had previously founded and furnished. In his will he provided for the completion of any part of the building which might not be finished, and bequeathed his books, papers, and furniture for the meeting-room which he had built. Theodore Goulston was contemporary for a time with Harvey and became a censor of the college and endowed the lectureship named after him which is given by one of the four youngest fellows. Sir Theodore H. Mayerne was also a contemporary of Harvey's, who after a distinguished medical career in France came to England, became a fellow of the college to which he bequeathed his library and was physician to James I and Charles I.

Baldwin Hamey, Jr., was one of Harvey's intimate friends; he served as treasurer of the college from 1664 to 1666 and gave anatomical lectures at the college. In 1651 the tenure of the land on which the college stood being in danger, Hamey bought it and presented it to the college. After the fire of 1666 the college was rebuilt and Hamey contributed to the cost. He also settled an estate in Essex on the college. The Marquis of Doncaster, one of the few honorary fellows of the college, was one of Harvey's friends and one of his sponsors on election to the college. Dr. Croone, one of the original fellows of the Royal Society, was censor of the college in 1679, and one of its most generous benefactors Mrs. Streatfield's endowment of research fund has been completed and £10,000 in 2½ per cent. annuities paid into the names of the two colleges as trustees for the promotion of research in medicine and surgery.

The relations between Harvey and the governors of St. Bartholomew's Hospital were cordial and revised regulations proposed by him in 1633 were at once adopted. These show that he stoutly maintained the supremacy of physicians over surgeons as then was customary. The surgeon was not allowed to perform operations without the consent of the physician and was required to declare what external remedies he applied in any given case. The surgeon visited the patients in the wards, but the physician only did so when a case could not be brought to the great hall.

Dr. James Vaughan-Hughes has died at the ripe age of 95 years. He wrote "Twenty Years of Life in the Victorian Era," in which he recorded his work with Florence Nightingale when he was attached to the medical staff in the Crimea. For his work there he was awarded double pay by Lord Panmure. He had charge for a time of Balaclava Hospital and attended Florence Nightingale when she had camp fever. On her recovery he obtained the loan of Lord Dudley's yacht to take her back to Scutari. Later he contracted cholera and he attributed his recovery to the attentions of Miss Nightingale and her nurses. Notwithstanding his great age, he rode on horseback and drove a carriage and pair until a few months ago.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 30, 1916.

1. A Clinical Study of the Secretions of the Digestive Tract Thomas R. Brown.
2. Psychic and Neuropsychic Affections in War. E. Régis.
3. Drug Addiction and Modern Methods for Its Control. Solomon H. Rubin.
4. Acute Primary "Idiopathic" Phlegmonous Gastritis. Emanuel B. Fink.

1. A Clinical Study of the Secretions of the Digestive Tract.—Thomas R. Brown gives a rather thorough report on this subject and states that the neglect of the study of the secretory side is most unwise if one wishes to have a broad conception of the diseased process in many and varied interesting digestive conditions. From the studies which he has presented the writer draws certain conclusions—some physiological, others clinical. Of the former the demonstration of the lack of influence of the gastric secretion upon the character of the saliva; the fact that saliva rich in diastatic ferment is secreted during the chewing of inert substances, stimulating neither to the taste or smell; the independence of rennin and pepsin, the lack of definite quantitative relationship between the pepsin and the hydrochloric acid of the gastric juice, and that in the absence of the normal mechanism of pancreatic stimulation some other mode of calling forth the ferment of this gland, probably nervous in character, is brought into play. From the clinical side, the large number of conditions met with in which the absence of hydrochloric acid in the gastric juice is encountered; the significance of an increase in the soluble proteid of the gastric contents in the diagnosis of gastric carcinoma; the importance of recognizing the

group of gastrogenous diarrheas, and the brilliancy of their treatment with hydrochloric acid; the fact that with a rigorous technique there are low normal limits to the quantity of diastase found in the stool, and that an absence of these ferments is very suggestive of cancer of the pancreas.

2. Psychic and Neuropsychic Affections in War.—E. Régis, of Bordeaux, France, strongly urges the establishment of hospitals for the insane in the army at sufficient distances from the field of operations. He has devoted much of his time to the study and diagnosis of the military psychoses, and finds that in case of need even special pavilions annexed to ordinary field hospitals would suffice on condition that their medical direction was intrusted to specialists. The psychoneuroses or psychoses from moral shock, which predominate in great battles, are essentially acute, transitory and curable in a few days, and no treatment is better suited to these cases than rest in bed. He divides the psychoses into two groups, those found in soldiers who have not been under fire, which are common, and merely supervening on the occasion of war (disequilibrations, degenerations, alcoholism and general paralysis). The second group composed of psychic and neuropsychic affections in men returning from the front and induced directly by battle. Of the former group he studied 62 cases, of the latter 88. It is the latter group of which he gives a detailed account. Among these, the principal psychic disturbances established by study of the cases, were hallucinatory oneirism and mental confusion. While epilepsy is rare, hysteria is common; also functional paraplegia or pseudoparaplegia. He considers that the cause of these conditions is not results from wounds, but emotional shock received in battle or the military life. Even in those wounded it is the emotional shock which precipitates the psychosis. Functional paraplegia following battle must be regarded as the effect of a violent emotional shock. He concludes that the subjects of neuropsychic disturbances should be separated from other patients and placed in a special neurological or neuro-psychiatric service, in accordance with local organizations, reducing to a minimum the chances of intermental action, that is to say, of reciprocal contagion.

New York Medical Journal.

December 2, 1916.

1. Psoriasis as an Hysterical Conversion Symbolization. Smith Ely Jelliffe, and Elida Evans.
2. Focal Mouth Infections. Their Systemic Effects and Treatment. Robert H. Babcock.
3. Traditional Fallacies About Tuberculosis. Maurice Fishberg.
4. Columnar Amniotic Epithelium. Herbert K. Thoms.
5. Oxygenated Milk. Clifford G. Grulee.
6. Ozena. Henry Horn and Ernst Albrecht Victors.
7. Malingering. Paul E. Bowers.
8. Syphilitic and Parasyphilitic Affections of the Urinary Bladder. A. Straschstein.
9. Epidemic Gastroenteritis, Infantile Paralysis, and Influenza. Bernard Frankel.

3. Traditional Fallacies About Tuberculosis.—Maurice Fishberg believes he is correct when he states that medical literature is apt to contain fallacies based on the assumption that because of concomitance of time and place, two or more phenomena are caused by the same forces. Tuberculosis seems to have had attached to it more than the usual number of fallacies, some of which are not only harmful, but decidedly detrimental to the individual and his surroundings. For instance, Fishberg says that in his long experience as physician for the United Hebrew Charities in New York, he has never observed a case of tuberculosis transmitted from one consort to the other. This in spite of the often unhygienic surroundings of the patients. They have children while sick with tuberculosis and while most of their offspring become infected, the unaffected consort remains so indefinitely. J. Petruschky has recently named "mother immunity" a phenomenon which has been observed for generations by physicians. A healthy woman marries a tuberculous man and bears him children that succumb to the disease one after another, yet she is spared and remains in good health. With reference to children, there is the fallacy of confounding *infection* with *disease*. While extrapulmonary tuberculosis is rather common in children of school age, real pulmonary tuberculosis is rare. Children with tracheobronchial tuberculosis are not all in danger; death due to this cause is so rare that it may be disregarded when formulating prognosis in the average case. Nor are these cases a menace to those associating with them because, as far as is now known, they do not disseminate the bacilli. It is a fallacy to treat every sickly underfed child as tuberculous; even when the tracheobronchial glands are discovered to be enlarged, there is no reason to prohibit school attendance, or to institute prolonged and costly treatment, except such measures as will enhance the nutrition of the child. He speaks further of the fallacies in connection with diagnosis, prognosis, prophylaxis, and treatment.

5. Oxygenated Milk.—Clifford G. Grulee gives an account of the process of producing oxygenated milk in the Presbyterian Hospital, Chicago. It was installed in 1915 by a Danish chemist, N. D. Neilsen, on a plan following the scheme of Doctor Budde in Copenhagen, where it was introduced in 1903. This milk takes the place of certified milk for children and infants, and is distinctly cheaper. The process is as follows: Good raw 4 per cent. milk is treated with hydrogen peroxide, one quart to twenty gallons; it is then heated to 122°—128° F. for one-half hour, being stirred by a fan in the reservoir so that it is kept in motion the whole time. The milk is then withdrawn and bottled hot, and kept on ice until used. This is a preserved milk without any preservatives, because at the end of a half hour's treatment only a trace of the hydrogen peroxide can be obtained. By this process the milk is made sterile and therefore all bacteria are inactive, rendering the milk safe from distribution of pathogenic organisms. The advantages offered by this process are that fresh milk can be obtained at any time of the day or night, its absolute safety, and the fact that it can be kept as long as two weeks at room temperature without souring during the summer months, thus insuring greater safety. Grulee says that theoretically the chemical change is only a destruction of the catalase enzyme in the process of splitting the hydrogen peroxide. However, he found that oxygenated milk cannot be used in the preparation of buttermilk, as it prohibits the growth of the necessary bacteria.

Journal of the American Medical Association.

December 2, 1916.

1. Acute Purulent Infections of the Nose, Throat and Ear: Our Responsibility to the Public. Hill Hastings.
2. Syphilitic Psychoses Associated with Manic Depressive Symptoms and Course. Albert M. Barrett.
3. Xanthosis and Other Septal Hemorrhages. Chester C. Cott.
4. Dermatological Dietetics. Ernest Dwight Chipman.
5. A Consideration of Some Selected Problems in a Year's Neurosurgical Service. Ernest Sachs and Sidney I. Schwab.
6. Experimental Endocarditis: Its Production with *Streptococcus Viridans* of Low Virulence. H. K. Detweiler, and W. L. Robinson.
7. An Apparatus Designed for the Use of Partial Vacuum in Diagnosis and Treatment. Harvey G. Beck.
8. Tuberculosis of the Mammary Gland. Gatewood.
9. External Nasal Deformities: Correction by Subcutaneous Methods. Lee Cohen.
10. Syphilis of the Stomach: A Case of Hour-Glass Contraction. R. M. Culler.
11. Angioma Serpingosum, with Report of a Case. Arthur W. Stillians.
12. The Quantitive Effect of Salvarsan on the Wasserman Reaction of the Blood. John T. King.
13. Development of Herpes Zoster in a Case of Chorea Treated with Autogenous Vaccine. Horace Greeley.

4. **Dermatological Dietetics.**—Ernest Dwight Chipman says that nutrition is upkeep and that it essentially deals with two vital factors, fuel and repair. He gives the caloric values required by men in various occupations and walks of life for basal heat production. In an average man of 156 lb. this will be 70 calories per hour; extra heat produced by the ingestion of food causes an increase of about 10 per cent., making a total of 1848 calories per day. This amount is divided among the different food constituents, namely, protein, carbohydrate, and fat in required proportion. Because of its nitrogen content protein is essential to the processes of growth and repair. In excess of the quantity required for these purposes it increases the level of heat production. As to the kind of protein, Voit would have one-third animal and two-thirds vegetable, though there seems to be no hard and fast rule respecting this ratio. Carbohydrates, protecting the albumin of the tissues from waste better than a similar quantity of fat, are called albumin sparers. A mixture of absolutely carbohydrates, fats, proteins and salts will not maintain life for a long time. The experiments of Osborne and Mendel show that a satisfactory complement exists in a powder obtained by evaporating milk from which the protein element has been almost entirely removed. They found further, in experiments with rats, that when lard was the sole fat element of the diet growth stopped, but when butter fat was substituted was resumed. A minute quantity of some certain substance seems quite necessary in food. It has been found that a group of so-called vitamins exists in the vegetable kingdom and that the members of this group are essential to growth and nutrition of animal tissue. Deficiency of these substances causes beriberi. Pellagra is undoubtedly of analogous origin. The nutritive values of any protein depend largely on the character and the extent of the animo-acids it contains. A knowledge of the basis requirements of nutrition is to be thoroughly understood in order to apply the principles of nutrition to the needs of dermatology. A mean average is necessary in diet lists between the extremes of generalization and detail. Chipman makes three divisions of the dermatoses according to their relationship to diet: (1) Those directly dependent on diet: (2) those in which diet may not be the cause, but in which it is of capital importance; (3) those in which diet may be an indirect factor. Beyond these three groups there remain certain morbid states requiring dietetic care, conditions which are often seen in association with various dermatoses and whose relationships with these dermatoses may be direct, casual or remote. The foodstuffs may act either reflexly, directly, indirectly, through insufficiency of certain food elements, or through excess of certain food stuffs, and through hypersensitiveness, producing a dermatosis according to type developed through any one or more of these conditions. Psoriasis can be much helped by placing the patient on a low protein diet, while eczema will almost disappear when the carbohydrates and starches are reduced. Acne can be controlled on a low starch diet. There are but few specific diets in dermatology, but an accurate perception of the individual's needs, from the standpoint of nutrition, is imperative. Much comfort may often be found in the three simple rules of Brocq: Eat sparingly; eat slowly; rest after meals.

6. **Experimental Endocarditis.**—Detweiler and Robinson have followed up a report of earlier work along this line and in following out the methods advocated by Rosenow they have elaborated a technic which has been thoroughly used and has given splendid results. The method in detail is described, and while recognizing its disadvantages they also consider the advantages far outweigh in results. The organisms used in this series of experiments were obtained from blood in cases of subacute and chronic infectious endocarditis. All of the strains belong to the family of *Streptococcus viridans*. The animal experiments have been confined to an attempt to produce in rabbits a condition analogous to that of the patient from whom the organism was obtained. Rabbits from 6 weeks to 2½ months old were used. The majority were Belgian hares. Of all the animals coming to necropsy, heart lesions were found in 56.6 per cent. The fact that none of the strains isolated from the blood in cases of endocarditis produced joint lesions, whereas arthritis was present in four cases from strains isolated from the mouth and tonsils seems significant to the writers. It suggests two possibilities: First, that an organism may have in some instances a dual affinity, and depending on environment and conditions existing in the particular individual in which they are present, they may attack one organ or another, or both. Second, that two types were present in one culture and each type produced its respective lesion. Pure cultures only of *Streptococcus viridans* were sought, and on being obtained, no attempt was made to grow the organism from one colony only. The writers venture to suggest that they have established three important points: (1) The *Streptococcus viridans*, isolated from the blood in cases of chronic infectious endocarditis, is of very low virulence, probably lower than any hitherto reported as being recovered from a similar source. (2) These streptococci are capable of producing lesions in animals identical to those found in the patients from whose blood the organisms were obtained. (3) The strains of *Streptococcus viridans* isolated from the mouth of normal individuals are similar to those isolated from the blood of patients suffering from chronic endocarditis, and are equally capable of producing heart lesions in the rabbit.

13. **Development of Herpes Zoster in a Case of Chorea Treated with Autogenous Vaccine.**—Horace Greeley reports the following case: N. H., boy, aged 8 years, in otherwise good general health, had been suffering with chronic twitching of the muscles of the right side of the face for four years. He had had the usual hygienic and tonic treatment with iron, etc. As is usual in such cases, the twitching was almost absent occasionally, as in the morning, and grew worse as the fatigue of the day accumulated; on some days it was almost incessant. Knowing that chorea was closely identified with rheumatism, and that rheumatism, both acute and chronic, had been demonstrated to be due to streptococci, and that, more than most conditions, the beginning chronic form was amenable to vaccine treatment, Greeley determined to try the effect of an autogenous streptococcus vaccine. Accordingly, a vaccine from a tonsillar streptococcus was prepared and given in nine doses at intervals of a week. The first three doses were 200 millions, the fourth 300 millions, and from then on the doses were increased each time 200 millions, until at the ninth dose the patient received 900 millions. On the second and the sixth doses there was a slight constitutional reaction. The herpetic eruption appeared on the day following the second dose and comprised fifteen distinct vesicles, which developed on the skin over and below the extremities of the three lower ribs on the right side. The eruption showed the usual symptoms, and was accompanied by a distinct exacerbation of the chorea lasting for three days. Since chorea is probably due to a low grade streptococcus infection of the connective tissue sheaths of motor nerves, or of some area sufficiently contiguous to them, or to their origin in the central nervous system, to influence their normal functioning, it is easily under-

stood that a focal reaction, following a dose of specific vaccine, would cause exacerbation of symptoms, Greeley is inclined to believe that this is what occurred in this case.

In the case of other than motor nerves, slight central irritation could not be supposed to give rise, ordinarily, to very noticeable manifestations, and it seems probable that such existed in this case, affecting the vasomotor nerves distributed to the herpetic area; and further, that the occurrence of the herpetic eruption involving the terminations of these nerves is best explained as being the result of a specific focal reaction at the points along the nerves presumed to have been the seat of "rheumatic" inflammation.

The Lancet.

November 11, 1916.

1. Exophthalmic Goitre. Hector Mackenzie.
2. On a Rose-Irrigator for Supplying a Therapeutic Fluid Continuously and at a Standard Temperature to the Whole Surface of a Wound. Almroth E. Wright, H. H. Tanner, and Ralph C. Matson.
3. The Bacteriology of the Feces in Diarrhea of Infants. W. R. Logan.
4. An Improved Operation for Intrinsic Malignant Disease of the Larynx. H. Lambert Lack.
5. The Origin and Prevention of Cerebrospinal Fever. Halliday Sutherland.

2. On a Rose-Irrigator for Supplying a Therapeutic Fluid Continuously and at a Standard Temperature to the Whole Surface of a Wound.—Wright, Tanner, and Matson describe this irrigator which apparently fulfils all the requirements demanded of it. As a rose to the body of the irrigator, they employed a rubber cap, and inserted into the perforations a set of tubes. To give stiffness to these rubber tubes and to carry them around corners, a copper wire is inserted into each. Tanner devised the wire arrangement. A drop counter is used to tell the existence of the flow of stream and to regulate the flow, and in the newer arrangement the copper wires are anchored to a rubber bung or piece of stout drainage tube or aluminium ring inserted into the barrel of the drop counter or into the irrigating rose. The irrigator can be made up into three different styles according to type and condition of wound. A thermos bottle into which the rose and tubes can be fitted is used for this purpose as by this means the irrigating fluid can be kept at an even temperature. For prevention or limitation of the escape of fluid in its passage from the irrigator to the wound, thick-walled, narrow-bored rubber tubing is used and the drop counter chamber is made smaller. The flow is regulated by the screw clamp, and the size of the drops by the size of the external diameter of the dropper. The standard size employed by the writers is one of 4 mm. external diameter, obtained by inserting the drawn out glass tube into a hole in the perforated zinc supplied by the hospitals, filing, and breaking off the point at the level of the aperture. In a medium sized wound the flow is adjusted at 90 to 100 drops per minute; larger wounds require greater flow. In order to irrigate the wound and at the same time to keep the bed dry the mattress is cut away from under in the case of a horizontal wound, and a broad strip of jaconet can be passed under the limb and the corners can be looped up and tied round the limb above and below the wound. A type of hammock is thus formed. With this strips of bandage are employed to drain the wound. In wounds in direct position the bandages would be employed as direct drains. In either case they pass out through a hole cut out in the trough of the jaconet hammock and go down into a basin under the bed. When the limb cannot be kept in the horizontal position, or where from the anatomical relations of the wound the jaconet hammock is inapplicable, we can bank back the fluid, and effectually prevent leakage into the bed by "irrigation flanges," built up of cotton-wool covered and fastened down to the skin by strips of bandage soaked in formalin gelatin.

3. The Bacteriology of the Feces in the Diarrhea of Infants.—Logan gives the results of his research in this work as follows: Fourteen cases of diarrhea were all on artificial diet at the time of onset. The flora of artificially fed infants differs from that of breast-fed infants chiefly in a decrease of the acid-tolerant group, an increase of the normal *B. coli* group, and in the appearance of members of the non-lactose-fermenting group along with some increase of cocci. The flora of infants suffering from diarrhea shows similar but more marked changes, and the more severe the diarrhea the more marked the changes. It is possible that the acid-tolerant group exerts a beneficent influence in restraining the growth in the intestine of the non-lactose-fermenting group. Bacilli of the non-lactose-fermenting group were obtained from 6 out of 21 (28.5 per cent.) infants and young children who were free from diarrhea. Bacilli of this group were isolated from 11 out of 14 cases of diarrhea (78.5 per cent). Bacilli of Morgan's No. 1 group were isolated from 9 per cent. of the normal children, and from 35 per cent. of the cases of diarrhea. True, though non-agglutinable, dysentery bacilli were isolated from none of the normal children, but were obtained from three cases of diarrhea with blood and mucus (dysentery), or 21 per cent. of total diarrhea cases. A certain number of cases of diarrhea of infants are therefore true bacillary dysenteries, even in Scotland and in winter time. It is doubtful whether the overgrowth of non-lactose-fermenting bacilli initiates the diarrhea, or whether it is a secondary and aggravating factor.

5. The Origin and Prevention of Cerebrospinal Fever.—Halliday Sutherland states that the *Diplococcus intracellularis meningitidis* of Weichselbaum conforms to Koch's law for pathogenic organisms. Constantly found in the tissues and body fluids of the victims of epidemic cerebrospinal meningitis, the meningococcus may be isolated in pure culture, is able to reproduce the disease in monkeys, can be recovered from the lesions in these animals, and is therefore the causal organism of cerebrospinal fever. At times when the disease is not prevalent meningococci have been found in the throats of 2 per cent. of healthy soldiers. Among healthy naval ratings, not known to have been exposed to infection, Sutherland found meningococci in the throats of two individuals out of a hundred examined, and the organism has been found recently in a larger proportion of the civil population not exposed to infection. The conditions which determine whether or not infection is spread are as follows: Any organism in the nasopharynx may be expelled from the mouth during the act of coughing in small droplets of secretion which float in the air for from half an hour to four hours, according to the density and humidity of the atmosphere. This would easily explain the method of infection provided the temperature of the air was above 22° C., but on the other hand, meningococci soon perish at lower temperatures. Now 22° C. corresponds to 71.6° F., and he found that meningococci die in 30 minutes when exposed to a temperature of 60° F., while lower temperatures are more rapidly fatal. It is therefore clear that air-borne meningococcal infection can only occur in a warm atmosphere, and is impossible in cold air. Epidemics of cerebrospinal fever usually begin in January or February, and disappear with the advent of May. But January and February are the two coldest months of the year. The paradox of a disease which appears during cold weather, but whose specific

cause can only be carried by warm air is explained by the fact that cold weather cuts off means of ventilation and the air indoors becomes warm and saturated. When the disease is spread in summer, the essential condition which determines the secondary invasion of the tissues would be absent. To control the spread of the infection, Sutherland says that all windows and doors must be open day and night. A window ventilator answers the purpose. Pure air is the simplest and surest means of prevention.

British Medical Journal.

November 11, 1916.

1. Remarks on "Pyrexia" or "Trench Fever." John Muir.
2. A Case of Acute Myeloblastic Leucemia. Rowland Hill.
3. Grafting with Frog Skin. H. W. M. Kendall.
4. The Use of Glycerin and Ichthyol in the Treatment of Septic Wounds. Thomas W. A Daman.

1. Remarks on "Pyrexia" or "Trench Fever."—John Muir has based his observations on a twelve months' experience with a field ambulance on the Franco-Belgian front. After stating the symptoms, which by now are well known, he advances the following treatment, which consists mainly of rest and attention to the bowels, which are usually very constipated. Phenacetine, sodium salicylate, and a few other drugs are used to relieve the shin pains. Pyrexia is cut short by the use of two powders, each consisting of morphine acetate gr. ⅛, caffeine citrate gr. 1, phenacetine gr. 8; one given immediately the patient gets to bed and the second two hours later. Attention may be focused on the following points: (1) The nature and mode of conveyance of the infective agent producing the numerous cases of "short fever" met with in our troops are still unknown, and merit further observation and research. (2) The term "trench fever" is distinctly misleading, and is not justified by analysis of the total number of cases which occur in the various units of a division and under varying conditions. Cases occur in considerable numbers in units situated outside the "trench area," and markedly increased incidence is met under suitable conditions whilst the troops are far removed from the trenches. (3) Such inclusive experience can only be gained in a field ambulance, as all cases are primarily brought there, and many (about 45 per cent.) are not transferred to any other medical unit. (4) The name "lice fever" is also objectionable, since it assumes as a fact a possible means of conveyance which at present is merely a hypothesis. (5) The infective agent is probably a widespread virus borne on the persons of men concerned (nasopharyngeal?) normally of low virulence. (6) Incidence of the disease depends upon the condition of the men, whose defense against the infection is specially lowered by exposure and fatigue.

3. Grafting with Frog Skin.—H. W. M. Kendall says that the idea of grafting granulating surfaces with frog skin was put into practice by him as far back as 1886-7 in India. He experimented with satisfactory results to the patients, gratification to himself, and the least possible inconvenience to the frogs. He has obtained the same results in France lately. He reports fourteen cases of successful results. The ideal wound to graft is flat, without much suppuration or excessive protuberant granulations. The rapidity with which the wound commences to heal after the graft has successfully adhered is in marked contrast to its sluggishness before the operation. The wound having been gently cleaned without antiseptics and as gently dried, the loose skin on the inner side of the frog's thigh is carefully pinched up in a pair of dressing forceps, snipped off with scissors, spread out and applied by its under surface to the wound. A strip of gutta-percha tissue smeared with some mild and soft non-irritating emollient is then placed over it, fixed in position at its ends by adhesive plaster, and a dry dressing applied over all. The whole is gently removed in three days, when the site of the graft will be noticed as a purplish spot branching outwards to the periphery of the wound. A similar dressing is again applied for two days to avoid unnecessary interference, after which the wound may be dressed daily, without the gutta-percha tissue, with some simple, non-irritating ointment, such as boracic, until healing is completed. The gap in the skin's continuity is by this process filled up and unsightly or inconvenient contraction avoided.

Berliner klinische Wochenschrift.

October 23, 1916.

Bacteriological Diagnosis of Typhoid Fever.—Schmitz, as a result of study of an epidemic in Jena in 1915, reaches the following conclusions: Examination of the stools gave unsatisfactory results; when this method alone was used during the first five weeks of the disease the diagnosis was made in but 11.75 per cent. Of the actual number of tests made only 8.68 per cent. were positive. Better results were obtained by the bacteriological blood test—in 30 per cent. the diagnosis was made. The widal was positive in about 75 per cent. When all the above methods were used in conjunction the diagnosis was made in 91 per cent. In this combined series the bacteriological test gave better results than when used alone. The negative results were probably attributable to unfavorable culture conditions. In regard to the stool test this gave 25 per cent positive results for the first week and then fell off sharply to one-half, finally dwindling to zero. Early tests of blood and feces should give much better general results.

Typhoid Fever and Pneumonia.—Döblin describes some cases. The first was in a robust man who had been vaccinated five times against typhoid. Three months after the last inoculation he was taken ill with diarrhea and subfebrile temperatures. During the course of these symptoms, which persisted for five weeks, he passed through an acute bronchitis, which ran its course in about ten days. In the sixth week the movements became putrid and bloody; thirst and emaciation appeared, and death resulted from asthenia. The autopsy showed typhoid, with lesions most marked in the colon, and perforation. The latter was not clinically apparent, save as scattered pains. In a second patient inoculated three times against typhoid the latter disease set in and pursued its course up to the end of the third week, when a lobar pneumonia set in. After eight days this ended by lysis, the lung cleared up and the typhoid completed its course. A third patient, also three times vaccinated, developed the same association. The pneumonia appeared in the third week and ended by crisis in seven days. In both these cases the pneumonia was a simple complication due to the typhoid bacillus. Even clinically ordinary lobar pneumonia could be excluded. Consolidation appeared and disappeared abruptly and was less intense; there was no true hepatization and bronchial sounds were not characteristic of true pneumonia. There was no dyspnea, cough was not distressing, the sputum not rusty, but decidedly bloody.

Potato Flour as an Addition to Infant Feeding.—Müller does not refer to potato starch, but to a flour made by milling potato flakes. Some time ago maize preparations were used to eke out in infant feeding, but after exhaustion of the supply wheat flour and then "war" flour (wheat and rye) were substituted. The great drawback was the inability of these flours to mix harmoniously with milk. Potato starch when mixed

with milk has a starchy consistency and taste. The author then made use of the milled potato flakes such as have been used as cattle fodder. The potato, after steaming, is laid upon hot rollers and thereby dried and then ground up. When used for fodder the potatoes are not peeled, but for infant nourishment peeling is done by machinery. The mineral matter is not leeched out and in consequence the new product is much better than potato starch for food. The flour is coarse, slightly brownish and of a pleasant taste. Nurslings take it well and it mixes well with milk, making good drinks and porridge. The author hopes to see this product the center of an industry after the war.

Münchener medizinische Wochenschrift.

October 10, 1916.

Successful Irradiation of Cancer of the Breast in One Sitting.—Friedrich and Krönig first relate some experiences with irradiation of the uterus and ovary and how they have been influenced toward the proper dosage for cancer of the breast. They now declare that the *x*-ray surpasses the knife in the treatment of the latter condition. The erythema dose of the skin has been established as 50 discharges of the electrometer system of the authors' iontoquantimeter. The ovarian dose necessary to bring about amenorrhea in myoma and hemorrhagic metropathies has been established at 10 discharges. The sensibility quotient between the ovarian and cutaneous dose has been fixed at 5. The carcinoma of the breast dose has been fixed at 40 discharges. The sensibility quotient between skin dose and mammary cancer dose is 1.25. Irradiation is contraindicated in the presence of metastases and cachexia. Thus far the authors have not determined the prophylactic dose in respect to recurrence. That *x*-rays can cause the disappearance of certain cancers in one sitting is a well-attested fact. There seems no reason *a priori* why this result cannot be obtained in an operable cancer of the breast. The surgeon has always opposed this course, leaving to the radiographer only the cachectic subject with inoperable growth. These very subjects may become worse under this treatment. The operable breast cancer is easily reached by the rays, much more readily than the cervix uteri. While the authors give us formal histories we get the impression that after a single exposure the breast cancer undergoes involution.

Difficulties in X-Raying the Gastroenterostomized Subject.—Freud claims that a correct *x*-ray diagnosis of potency of a gastroenterostomy is a mere matter of chance. The method now current is quite unsuited for the diagnosis of the presence or absence of a peptic ulcer of the jejunum, because we can neither determine the site of the fistula nor map out the loop of the anastomosis. We obtain no definite idea as to the relation of the latter to the deep point of the greater curvature. Studies of the chemistry and mobility of the stomach throw no light on the situation. We are in need of a method which is not only diagnostic but will also enable us to judge of the suitability of this intervention for the cure of ulcer. The duodenal sound is a valuable accessory in these cases. This instrument will inform us with certainty as to the potency of the anastomosis; will tell us the size of the latter, its site, its relation to the deepest point of the greater curvature, the position of the loop, presence or absence of adhesions, the presence of a sensitive area which might mean a recurrent ulcer. The procedure is as follows: The sound is first introduced to the mark 45 in the usual manner, and the patient then sits or stands while the sound is swallowed under illumination control. As soon as the fistula is entered, the sound is allowed to find its way deeply into the loop until it is arrested; whereupon vomiting movements appear on further swallowing. The olive is now drawn backwards into the stomach and a search made for other possible openings. By means of the sound bismuth contrast masses are conveyed into the anastomosis loop, and the form, capacity, mobility, etc., of the latter brought out. As soon as the contrast substance leaves the loop we should be on the lookout for a bismuth speck which would speak for an ulcer. In like manner we should examine for the presence of a niche above the ring of the fistula. Other important data, notably in reference to sensitive areas, may be obtained by manipulation of the olive.

Journal de Médecine de Bordeaux.

October, 1916.

Waller's Law and the Theory of Trophism. — Pitres after an exhaustive review of this subject announces some conclusions as follows: When any prolongation whatever of any neuron whatever is severed from the mother cell the severed portion undergoes the so-called Wallerian degeneration. This law applies to the peripheral protoneurons with two exceptions which are more apparent than real. First the central segment which in Waller's law remains intact may undergo certain changes (chromatolysis) which may be severe enough to cause the death of the neuron while all its prolongations degenerate. Second, in the midst of the Wallerian degeneration a few fibres habitually remain intact. These are naturally aberrant or recurrent and do not have the same origin as the degenerated fibres. When a motor nerve degenerates the muscles supplied thereby undergo a characteristic degenerative atrophy. The regeneration of a peripheral segment of a divided nerve is brought about by a budding of the central nerve stump (Waller). Regeneration of the fibres of a motor nerve may be followed by regeneration of the fibres of the corresponding muscles. Nervous fibres of the neuraxis, like those of the peripheral nerves, degenerate when separated from their mother cells. Motor fibres degenerate from above downwards; sensory fibres in the reverse direction. The nervous fibres of the neuraxis cannot regenerate after division. Aside from degenerative atrophy of the muscles which results from division of the nerves there is a certain amount of hypotrophy from disuse, so that simple emaciation is found side by side with granulofatty (Wallerian) degeneration of muscle.

Paratyphoid Fever and Bacilluria.—Carles and Marcland state that when the bacteria of an infectious disease appear in the urine there is reason to suspect the presence of a renal lesion. In the majority of cases of typhoid the kidneys remain intact. In bacilluria we find albuminuria and cylindruria. Again, the bacilluria is never limited to the causative germ; staphylococci, for example, often coexist with the latter. A sort of latent cystitis may follow the bacilluria. It is not yet settled whether a paratyphoid bacilluria can occur under the same circumstances, and the author has studied cases from this viewpoint. A patient with an early typhoid syndrome gave a positive blood test (hemoculture) of the paratyphoid A. Later a drop of urine was brought away by a catheter and gave the same positive result. There was also albuminuria. After defervescence there was extensive elimination of urine, which contained only B. coli, the kidneys being intact. A second patient showed mixed infection with Eberth's bacillus and the paratyphus B. As the urine contained blood a test for bacilluria was at first inconclusive, although positive for the para B. After the urine had become clear the latter was still present. The author is not the first to describe paratyphus bacilluria, but prior finds have been conflicting. A prac-

tical point involved is the duration of this form of urinary infection. Cultures cannot always be made from the urine in these cases and the germs may not always be virulent. Attempts to sterilize the urine may fail, and this seems to have been true of the author's second case.

Le Bulletin Médical.

October 28, 1916.

Wounds of the Abdomen.—Quenu considers 180 cases of abdominal wounds as reported in eight separate memoirs on the subject by as many different surgeons. These are analyzed and criticized from his own personal experience. One conclusion stands out clearly—no penetrative wound of the small or large intestine can ever be left for Nature to cure. Lesions of other viscera may benefit from surgical intervention; and in order to determine which viscera are wounded and in what manner, laparotomy is necessary. An exaggerated value is imputed to certain diagnostic elements, such as determination of the trajectory of the projectile, in which radiography is utilized, and this is true of the leading clinical symptoms. These all have value, but are not of critical importance in a rapid summary of indications for operation. In the 180 cases but three needless laparotomies were performed, all of the patients recovering. Is it necessary to operate on every abdominal wound? Evidently not. The upper segment of the abdomen, bounded below by a line which touches both costal arches, may be exempt, although there are numerous exceptions. This exemption is due to the fact that projectile wounds received here may belong rather to the thorax than the abdomen. As for the abdomen as a whole, not every wound indicates an operation. The question is a most delicate one, for if the patient appears to be near death a desperate attempt may be made to save him. On the other hand, if the patient is in extreme shock, an attempt to operate would very likely be fatal. A pulseless patient never benefits by operation. A total absence of pulse, however, must not be confounded with an extremely rapid pulse, which perhaps cannot be counted. Such patients may be snatched from death by operation. A truly pulseless patient must be treated first and every effort made to bring back the arterial tension; while with a patient who still has a pulse no time should be lost in ligating large blood vessels and removing possible causes of sepsis. The technique is comprised under two heads: exploration of the abdomen and treatment of intestinal wounds. The median incision is usually the best. In the exploration the trajectory made by the projectile comes into consideration, and exerts an influence upon the position of the patient. If the pelvic organs are wounded the patient must be in the inclined position. If the anterior wall of the stomach is perforated the back of the viscus must be examined by going through the mesocolon. But, as already stated, the path of the bullet is not to be overvalued as furnishing special indications for treatment. Intestinal wounds demand suture or resection according to the conditions present. In most cases drainage is indicated. In regard to prognosis something depends on the nature of the projectile. The mortality from shell fragments, which was 57 per cent., is much higher than that from fragments of hand grenades (42 per cent). Musket or machine gun bullets are considerably more deadly than shrapnel bullets. Preoperative conditions, which have reference to transportation, and the date of intervention are also powerful factors. Recently operation within three hours has shown a superiority over longer periods. Patients with very little traumatic shock and otherwise in good condition are practically certain to recover after very early intervention. The degree of shock, as Crile has shown, is largely a matter of arterial tension. The low tension of shock is invariably lowered by laparotomy. Vaquez has shown that after ordinary laparotomy, a tension of 140 may be lowered to 100. Long experience has taught the author and his colleagues that operation on a patient with a tension below 100 is inevitably followed by death inside of twelve hours. Below 100 the lower the tension the worse (if possible) the outlook; while the further above 100 the better in theory the outlook—although it should be 120 and upward before we can feel certain of recovery.

Le Bulletin Médical.

November 4, 1916.

The New French Decree Against the Sale of Poisons.—An outline of the provisions of the decree of September 19, 1916, is begun in the current number of the *Bulletin*. The old decree had been in existence since 1846. The successor refers to three separate categories of poisonous drugs. In the first category, represented by Table A, we find toxic substances in the ordinary sense of the term. The author enumerates only those which are used in medicine, and the list includes all the most violent poisons, such as aconitine and cyanides. In the second category, as shown in Table B, are to be found the various habit forming drugs, which are relatively few in number. Unusual restrictions and severe penalties are attendant upon the traffic in these substances. The third category comprises drugs which are known simply as dangerous and corresponds to Table III. The present installment in the *Bulletin* deals only with Table A. One notes with some surprise that codeine, laudanum, and the tincture of opium of the French Codex are retained in Table A, along with certain substances of low toxicity. Apparent contradictions in the tables are accounted for by the special provisions of the decree. All drugs in Table A may be supplied by pharmacists, physicians, and veterinarians, by the former, however, only on prescription from the two latter. Dentists and midwives may furnish their patients with substances from a special list, upon prescription also. Renewals may be dispensed unless the writer of the prescription expressly forbids it. There are special restrictions in connection with prescribing powerful poisons by the mouth and by hypodermic, consisting in limiting the twenty-four hour dose. If the figures are exceeded the pharmacist must not fill the prescription. Those calling for laudanum can be renewed only under special provisions. Certain limitations pre-exist in the Codex, which may therefore be used as a guide in certain renewals. Thus the maximum amount of arsenic to be ingested in twenty-four hours is stated therein. There is, however, a "joker" in the new decree which states that a new prescription is to take the place of a renewal, *i.e.*, the old prescription is given a new number. It is not considered necessary for the pharmacist to record the name of the purchaser, as the maker of the prescription, with date, etc., and special number are held to be sufficient. The article will be continued.

Fistula in Ano.—Göz has studied ninety-five cases of this affection in the Munich Surgical Clinic. In 43 per cent. tuberculosis was in evidence as a factor. Division of the sphincter caused incontinence only when several times repeated. The rule is therefore to divide but once. Single incision with the thermocautery will cure 67 per cent. of those treated, while repeated incisions give only 14 per cent of cure. The presence of tuberculosis aggravates the prognosis.—*Inaugural Dissertation, Tübingen*, 1916.

Insurance Medicine.

The Consideration of Rectal and Colonic Diseases in Life Insurance Examinations.—Alfred J. Zobel states that all important data concerning the vital organs are obtained by a medical life insurance examiner by direct examination and by precise methods; but, on the other hand, life insurance companies evidently do not attach much importance to the condition of the rectum and colon—not to mention the rest of the alimentary canal—for they seem willing to assume that these organs are free from disease solely from the favorable answers given by the applicant to routine printed questions asked by the examiner. That this is a fallacy, inasmuch as it paves the way to the acceptance of poor risks, and occasionally to the rejection of a good one, he demonstrates in his paper. Applicants almost invariably deny having or ever having had rectal or colonic diseases.

The writer says that the individual knows little about his anorectal region, and unless there is severe pain or itching, alarming bleeding, or annoying dysentery, he thinks it of little importance and unworthy of the attention of either himself or the examiner. The rectal surgeon often sees individuals who look and feel in the best of health (outside of "a little attack of pile"), yet who are found victims of well advanced malignant disease of the colon or rectum. Unless a rectal examination be made such a person could easily pass a life insurance examination. The examiner should look out for those little fistulous tracts which cause no pain and discharge but little secretion, as they are frequently the primary manifestations of tuberculosis, and may appear in those who are otherwise healthy. A severe stricture of the rectum may be present in a man outwardly perfectly healthy and insurable. If a history of hemorrhoids is secured, or if they are found on examination, it should not be forgotten that although their existence does not constitute a good cause for rejection, they often accompany liver, spinal cord, genitourinary, and uterine diseases.

If a rectal examination is made the condition of the genitourinary organs in the male can be investigated, while in the female accurate information can be obtained about the pelvic organs without subjecting them to a vaginal examination. At present only information as given by the woman applicant as to the condition of her pelvic organs is demanded by the insurance companies. In conclusion Zobel offers the suggestion that medical examiners should lay more stress upon the questions regarding the condition of the bowel and rectum. A history of discharge, chronic constipation or of diarrhea should be worthy of further investigation, and, if there is need, a rectal examination should be made. That medical examiner is most efficient who not only secures his company from poor risks but also saves it business which otherwise would be lost, and the employment, in all suspicious cases, of a rectal examination helps attain efficiency.—*Journal of the South Carolina Medical Association.*

Diseases of the Ductless Glands and Internal Secretions in Relation to Obesity.—In a paper read before the Assurance Medical Society in London, England, on January 5, 1916, Dr. F. Parkes Webber spoke of the diseases of the ductless glands and internal secretions in relation to obesity. The chief syndromes associated with excess of fat, he said, are Dercum's disease, diffuse symmetrical lipomatosis of the neck and other regions, and Fröhlich's pituitary syndrome of adiposity with insufficiencies of the sexual organs, with which may probably be allied most cases of "eunuchoid" obesity in men. A condition which might be legitimately described as "precocious obesity" has been occasionally observed in children in association with new growths of the type of malignant hypernephroma. A condition of lymphatism associated with excess of subcutaneous fat might perhaps likewise be included under this heading. W. Ebstein has divided ordinary obesity into three stages, viz., the enviable stage, the comic stage, and the pitiable stage. It is in the third stage, the pitiable or helpless stage, that the wretched person loses bodily strength and activity, cannot take exercise, and has no longer the will power to resist his complaint. It is in the first stage, that is the stage of plumpness or embonpoint, the stage admired by many, that strict moderation in eating and drinking ought to become a habit. Webber is quite sure that if the relatively early stages of obesity were more generally regarded in a serious light by life assurance companies, if slight extra ratings were more generally insisted on, and if that became universally known to the lay public, many more candidates for the righer grades of obesity would be inclined to alter their manner of living in time to avoid arriving at the helpless stage. Of course, it is not directly from their obesity that most fat persons die, but from the complications of obesity or the diseases associated with it.

Albuminuria and Life Insurance.—It seems scarcely credible that a symptom which is common to so many diverse conditions, both physiological and pathological, should so long have succeeded in masquerading as necessarily connoting renal disease. And yet it is within the experience of all of us that people have been, and, alas! are still being, refused for life assurance and otherwise condemned as damaged individuals merely because, from some of the above-mentioned causes, a little albumin has been found in their urine. It would be just as logical—it would, indeed, be more reasonable—if dyspnea were regarded as necessarily indicating pulmonary or cardiac disease. Dyspnea is in many cases very significant of such disease, but inasmuch as we have all of us become very breathless hundreds of times in the course of our lives, without any untoward effects, we have acquired some sense of perspective in the matter. It would be a good thing if the presence of albumin in the urine could be manifested by some sign equally gross and obtrusive. We should then come to realize how frequent an occurrence it is, and how seldom it really indicates anything more serious than a mere passing change of pressure in the blood vessels of the splanchnic area.—*Medical Press and Circular.*

Hernia in the Light of an Accident.—Loss of time due to an operation to relieve a hernia caused by a fall is held covered in the Iowa case of Berry v. United Commercial Travelers, L.R.A.1916B, 617, by a policy of accident insurance against loss of time on account of bodily injury effected through external, violent, and accidental means, although the policy provides that the payments authorized shall not cover loss resulting from or in consequence of hernia.

Book Reviews.

Diseases of Occupation and Vocational Hygiene. Edited by George M. Kober, M.D., LL.D., and William C. Hanson, M.D. Price, $8 net. Philadelphia: P. Blakiston's Son & Co., 1916.

Nothing is more significant of the present trend of preventive medicine than the appearance at this time of so ambitious a work on this subject. Composed, as it is, of the articles of some thirty contributors, each specially expert in his own subject, it offers the most complete production of its kind which has yet appeared. The interest in this topic has been growing rapidly in this country in the past few years, and its progress has been hastened by the passage of various workmen's compensation acts. The passage of health insurance laws, which may be looked for in the near future, will only strengthen the stimulus which now urges the employer to throw every possible safeguard about the life and health of his employees. A branch of medicine which is showing such intense activity demands a textbook which is prepared with great care and breadth of view and exceptional completeness. Such a book is found in the volume under discussion. Practically every possibility of disease of occupation is considered, and the means of prophylaxis pointed out. In addition there is a large section on governmental study and legislation and a short chapter on statistics which is deserving of special attention.

University of Iowa Monographs. Studies in Medicine. Prof. Henry Albert, Editor. Volume I, Number 1. Iowa City, Iowa: Published by the University, June, 1916.

This monograph is made up of ten reprints of articles which have appeared in widely read medical journals during 1915-16, with a single non-medical exception. The articles are almost all of high class; but as the reading physician or surgeon will have already read them, it is unnecessary to make a recapitulation. Taken as a whole, they speak well for the activities of the University.

A Practical Medical Dictionary of Words Used in Medicine with their Derivation and Pronunciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance and other Special Terms; Anatomical Tables of the Titles in General Use and those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the United States and British Pharmacopœias and Contained in the National Formulary; Chemical and Therapeutic Information as to Mineral Springs of America; and Comprehensive List of Synonyms. By Thomas Lathrop Stedman, A.M., M.D., Editor of "Twentieth Century Practice of Medicine," of the "Reference Handbook of the Medical Sciences," and of the Medical Record. Fourth Revised Edition. Illustrated. Price, $5 net. New York: William Wood & Company, 1916.

It will be superfluous to say much regarding a dictionary which has gone through four editions and which is consequently so well known to the profession as is Stedman's medical dictionary. Whatever sins of commission or omission have been perpetrated in former editions, they have not been committed or omitted in this edition. That is to say, that the author has benefited by intelligent criticism, and that the revision has been thorough. Medical terms and titles are coined with such rapidity that it is difficult for a dictionary to keep pace with them. For example, in this issue no fewer than 2,000 new words have been added, the majority of which have been born in the last two years. In this edition, too, all the terms of the Basle Anatomical Nomenclature are indicated even when they do not differ from the vernacular. Like the former editions this one is an excellent specimen of the publishers' care and of the printers' and binders' art.

La Fièvre Typhoïde et les Fièvres Paratyphoïdes (Symptomatologie, Étiologie, Prophylaxis). Par H. Vincent, Médecin-Inspecteur de l'Armée, et L. Muratet, Chef des Travaux à la Faculté de Médecine de Bordeaux. Prix 4 fr. Paris: Masson et Cie., 1916.

This book is one of the first numbers of a series of epitomes of war medicine and surgery which is being issued at the present time. The volumes are light and of convenient size and are designed for the use of medical officers on active service. They are admirably adapted to this purpose, if this volume is any criterion, and should find a wide acceptance. This book on typhoid and paratyphoid fevers contains in very condensed form practically all our present information on the subject. The first part has to do with the etiology, symptomatology, diagnosis, and treatment, while in the second part is an extensive discussion of the epidemiology and prophylaxis. There is no attempt to discuss the pathology of these diseases. The authors apparently have more faith in the value of the diazo reaction than is generally found in this country, and have had much success with the use of vaccines as a form of treatment. It is on the whole a very excellent presentation of the subject and valuable at this time, when medical men are beginning to realize that paratyphoid fever is much more common than has hitherto been supposed.

Localization by *X*-Rays and Stereoscopy. By Sir James Mackenzie Davidson, M.B., C.M., Aberd., Consulting Medical Officer, Roentgen Ray Department, Royal London Ophthalmic Hospital, and *x*-Ray Department, Charing Cross Hospital; Fellow, Physical Society; President, Radiology Section, Seventeenth International Congress of Medicine. Price, $3. New York: Paul B. Hoeber, 1916.

This book is a personal one, the results of 20 years' experience, including, of course, the finds of two years of warfare on a huge scale. It is based wholly on work with the older tubes. The Coolidge tube is briefly mentioned and the author is silent on the other gasless tubes. There are but 70 pages of text, with nearly as many illustrations, 35 being stereoscopic plates. Such a book can hardly be given an analytical review, but should be of great interest to all radiologists.

Les Séquelles Ostéoarticuliculaires des Plaies de Guerre. Par A. Broca. Price, 4 francs. Paris: Masson & Cie., Editeurs, 1916.

This volume is one of a large series of small monographs, the outgrowth of the present war. They are doubtless meant to serve the surgeon at the front and at the same time to form a document of the lessons of the war after the latter has expired. The author has recently published a beautiful work on amputations and excisions, noticed at the time in these columns, and the present manual deals with such subjects as vicious callus, traumatic osteomyelitis, ankyloses, and the question of pensions. From the nature of the 112 illustrations it appears that the work belongs largely under surgical pathology.

Principles of Diagnosis and Treatment in Heart Affections. By Sir James Mackenzie, M.D., F.R.S., F.R.C.P., LL.D., Ab. & Ed., F.R.C.P.I. (Hon.), Physician to the London Hospital (in charge of the Cardiac Department), Consulting Physician to the Victoria Hospital, Burnley. Price, $2.50. London: Henry Froude; Hodder and Stoughton; New York: Oxford University Press, American Branch, 1916.

Any book on the heart from the pen of Sir James Mackenzie is sure to be welcomed, for not only is what he says authoritative, but it is said in such a way as to hold the attention of the reader and combine for him pleasure with study. The present work was prepared for a post-graduate lecture course at the Cardiac Department of the London Hospital, but the war prevented its delivery. No change was made in the form of presentation, when publication was decided upon, except to divide the book into chapters; the style is therefore colloquial—which is an advantage rather than a drawback. The book is one for the general practitioner rather than the heart specialist or the laboratory experimentalist, and only cursory mention is made of such expensive and usually unnecessary apparatus as the electrocardiagraph. The reader who has been brought up to believe in the many and great dangers of disease of the heart will receive frequent shocks in coming across such statements as that the author has never seen the so-called "athlete's heart" which he characterizes as an absurd bogey, and that dilatation can never be produced in a healthy heart as a result of overstrain; he also warns against Nauheim "and all other forms of cure over which there is a trail of commercialism"; he speaks slightingly of the value of blood pressure estimations in diagnosis, prognosis, or as a guide to treatment and doubts whether we shall ever find them of any considerable help in our work; and his scepticism as to the utility of a few protein or purin free diet is patent. With all due respect to this acknowledged authority on cardiac diseases, we regard him as a safer guide in the diagnosis than in the treatment of these affections.

Society Reports.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-second Annual Meeting, Held at Indianapolis, Ind., October 10, 11, *and* 12, 1916.

THE PRESIDENT, DR. WILLARD J. STONE OF TOLEDO, OHIO, IN THE CHAIR.

(*Continued from page* 1054.)

Blood Chemical Analyses in Reference to Diagnosis and Treatment.—Dr. R. B. H. GRADWOHL of St. Louis said that chronic kidney degeneration was accompanied by the accumulation of all three constituents—uric acid, urea nitrogen and creatinin. The normal finding in respect to uric acid was 1 to 2, 5 milligrams per 100 c. c. of blood; of urea nitrogen, from 12 to 15 milligrams, and of creatinin of from 1 to 2.5 milligrams. An undue accumulation of all three constituents was a remarkably valuable method of estimation of true kidney function. Values for urea nitrogen in conditions of uremic nephritis had been known to reach as high as 300 milligrams, and of creatinin as much as 30 milligrams. These high values indicated grave uremia. His experience had shown the tremendous accumulation of these constituents in bad cases of nephritis, even where the urinary findings were scant so far as albumin and casts were concerned. He had been able in all his work to confirm the contention of Myers and Lough that the presence of over 5 milligrams of creatinin in 10 c. c. of blood indicated an absolutely fatal prognosis. The combination of nephritis with diabetes mellitus had possibly long been recognized, but too often was disregarded. The estimation of blood sugar in diabetes should be accompanied by an estimation of the other non-protein nitrogenous blood constituents to determine the condition of the kidney. If blood chemical analyses were made more often in grave diabetic states it would be shown that some of these so-called cases of diabetic coma were really in a state of extreme uremia due to this complicating nephritis. Many cases of diabetes mellitus had died of uremia and were called diabetic coma and treated as such. By personal experience he was able to confirm the data already obtained on the undue accumulation of these non-protein nitrogenous constituents of blood in gout, the nephritides and deranged renal conditions. He had used the blood sugar methods of Benedict and Lewis and could vouch for their inestimable benefits in the diagnosis and treatment of diabetes mellitus. He could also recommend the Van Slyke method of estimation of the combining power of blood plasma. Another field of usefulness of these tests which was now opening up was the preoperative survey of surgical cases, the estimation of operation risks, and the manner in which kidneys were functionating after operative interference. This should prove of great help to the operating surgeon.

The Clinical Value and Methods of Blood Analyses in Medical Diagnosis.—Dr. G. W. MCCASKEY of Fort Wayne first asked attention very briefly to the subject of acidosis as determined by dialysis, removal of carbonic acid from the dialysate by aeration and the determination of the hydrogen ion content by the indicator method according to the technic of Merriott. The determination of the hydrogen ion concentration of the fresh blood containing as it did variable amounts of CO_2, did not give us any definite information in regard to the actual existence of acidosis. The existence of acidosis could only be assumed when there was a diminution of the reserve alkali of the blood which was made up of the bicarbonates, alkaline protein compounds and alkali phosphates. Under normal conditions this reserve was very constant. The total hydrogen ion concentration might be constant with varying amounts of reserve alkali by fluctuation of the CO_2 content. A certain very slight degree of acidosis, almost infinitesimal in amount, was physiologically required for stimulation of the respiratory centers, and this was really the information given by determining the total hydrogen ion concentration of perfectly fresh blood. This had, at present, very little clinical value. If, however, we dialyzed the oxalated blood, or perhaps, better still, the serum and completely removed the CO_2 by aeration, the hydrogen ion concentration then became a very accurate measure of the alkali reserve and varying grades of acidosis might be accurately determined. It was no longer necessary to make a clinical guess as to the existence of an acidosis. A normal alkali reserve under average conditions of diet was found to vary but little and was expressed by the logarithm 8.5 with a variation of 8.4 up to 8.55. These various grades of acidosis in adults were found especially in diabetes and in some cases of nephritis, but of course they were much more common in children in which the tendency to acidosis was much more marked. It was largely a question of the quantity of acid products of metabolism and whether they were volatile like carbonic acid or non-volatile like oxybutyric, sulphuric, etc. The latter acids actually combined with the reserve alkali of the blood permanently fixing it, producing genuine and demonstrable acidosis with the symptoms of which we had long been familiar. The sugar content of the blood had a very definite clinical significance. Under physiologic conditions it was 0.1 per cent. or less. This was the threshold beyond which renal excretion occurred with normal kidneys. With a rise in this threshold considerably above 0.1 per cent., which occurred in some cases of diabetes and nephritis, the quantity of sugar in the blood might be greatly increased, producing tissue irritation and various functional perversions, but without glycosuria. Hence the importance of estimating the sugar content of the blood in all doubtful cases. In addition to the determinations of the alkali reserve and sugar of the blood, and perhaps, more important than either, the estimation of the creatinin, urea and uric acid content of the blood demanded our attention. Creatinin, the determination of which in the blood had just been outlined, was first given clinical significance by Folin as the most constant exponent of nitrogen tissue metabolism. Recently Lyers had studied its blood retention in nephritis. A considerable increase undoubtedly occurred in the severer grades of nephritis, but in the quantities usually present it was so easily excreted by the kidneys that its retention undoubtedly marked severe impairment of the kidney function. His own observation led him to conclude that the quantity normally present was nearly always less than one milligram per 100 c. c. of blood. Six mgm. had been his most common result. In seven fatal cases of nephritis and a considerable number of non-fatal cases he had never found the very high values reported by Myers. As a result of his own clinical studies he was forced to conclude that 1.5 to 2 mgms. of creatinin per 100 c. c. of blood indicated pathological retentions from increased renal block. The quantity of urea in the blood, as was well known, was influenced within certain pretty well defined limits, by the proteid intake. Widal's estimate was 20 mgms. per 100 c. c. in health. It undoubtedly varied both ways from this amount, but on ordinary diet, 30 to 35 milligrams might be regarded as the highest normal limit. Recent studies by Chase and Myers seemed to indicate that in variations of the uric acid content of the blood we had an earlier and more delicate index of impairment of renal function. Of the three principal end products of metabolism there was apparently more difficulty in excretion, and comparatively slight impairment in the functional capacity of the kidneys led to an increased quantity remaining in the blood. The estimation of the chlorides in the blood did not seem to hold out as much promise as in the case of the nitrogenous constituents and sugar. The chlorides apparently had a habit of playing hide and seek between the tissues and the blood, influenced by physiological and pathological conditions which were at present obscure.

DR. H. K. LANGDON of Indianapolis stated that body metabolism in general found expression in the urine in some manner, but this expression was frequently only an end reaction, and was subject to great variation, due not only to the complexity of kidney function, but also to many extrarenal factors. It was reasonable to suppose that the blood would give us a more intimate knowledge of the changes in metabolism brought about by certain internal diseases. The phenolsulphonephthalein test, as it was most generally interpreted, was a test for the entire eliminative power of the kidney as a whole, but the kidney was a very complex machine and the physiological functions of the component parts were affected in different degrees by different diseased conditions. It was not right, therefore, to place too much dependence on this one test, or any one test for kidney function, or upon one test for any obscure condition. This tendency was well illustrated by the attitude of many medical men towards the Wassermann test for syphilis. It seemed to be the general idea that a blood Wassermann was

sufficient, when the collected data up to the present time showed that the examination of the spinal fluid was of greater value than the blood Wassermann, not only in late but in early syphilis. Ambard's coefficient had a precise expression of the elimination of urea by the kidney for ordinary clinical purposes, was probably not as accurate or as practical as the estimation of blood urea. McClean had modified Ambard's calculation in an effort to simplify it and to make the quotient rise and fall with kidney efficiency. This method had its place in selected cases. In a series of cases he used Bertrand's method of blood sugar estimation, but titration against a standard solution of potassium permanganate did not give a well defined end point, and he found his results very unreliable. The method of Benedict and Lewis was much more accurate.

Dr. G. W. McCaskey of Fort Wayne stated that the advantage of the Marriott method was this: Recently he had a case in the hospital that he thought showed some intoxication acidosis. His assistant and he went to the hospital with a little collodion sac and a test tube in the vest pocket. They drew the blood and had a little saline diluting solution put in the collodion sac and dropped it into the solution. This must be done immediately in order to get the first reading when the CO_2 was present. While they were doing something else they took the blood out and threw the sac away. The reading was 7.6. They then went to the office with the test tube in their vest pocket, took a bulb with a capillary pipette and blew air through this for three minutes, and in that time it had lost a little carbonic acid while going to the office, a distance of several squares. But while pumping this air through for three minutes it changed from 7.6 to 8.6, the very highest limit. So that if anything the patient had a hyperalkalinity rather than an acidosis. This was an illustration of the rapidity and ease with which this could be used. In regard to the high limit of creatinin in fatal cases of nephritis, he had seen a patient die of typical nephritis with a phthalein estimate of only 2.5 milligrams creatinin per c. c. He had seen that happen. It was undoubtedly an exception.

Fractures of the Hip.—Dr. P. M. Hickey of Detroit said that in considering the practical benefit to be derived from roentgen studies, such as were presented in the paper, he would feel that its importance primarily lay in the establishment of an accurate diagnosis. The mechanics of fractures had not assumed its proper place. While the cardinal symptoms of fracture—first, disability, and second, localized area of tenderness—might serve to establish the presence or absence of a fracture, still the question of the treatment would of necessity be based largely on an accurate recognition of the type of fracture and the position of the broken parts. If the roentgenogram told us exactly the part of the bone which was broken, and our knowledge of antaomy told us which way the fragments were displaced by muscular pull, the art of the surgeon would be much helped in solving the problem of proper measures for the mechanical reposition and retention of the displaced fragments.

Diagnosis and Operative Treatment of Vesical Diverticula.—Dr. Filipp Kreissel of Chicago stated that diverticula of any appreciable size and situated close to the lower part of the ureter would eventually displace the same or by pressure give rise to dilatation of the renal pelvis, resulting in hydronephrosis, eventually atrophy of the parenchyma, and if infection should supervene pyelitis, pyelonephritis and kidney abscess. Rupture of the overdistended sac, extra or intraperitoneally, with serious or fatal consequences had also been recorded. Since it was of more importance to ascertain the presence of a diverticulum than to settle the question whether all or some were congenital or secondary, a consideration of the gravity of these lesions should make an early diagnosis imperative and early treatment desirable. By an early recognition of the anomaly most, if not all, of the enumerated complications might be prevented and the opportunity given to render a radical operation more simple before infection and inflammation had resulted in dense adhesions between the sac and important pelvic and abdominal structures. Furthermore, better functional results might be expected from an early operation, since the breaking down of dense or extensive adhesions was always followed by the formation of new, unyielding tissue which interfered with the free mobility of the bladder wall. In the early stage frequent and fractionary urination should at least arouse suspicion, but we would not be justified in diagnosing a diverticulum from this one point alone since pollakiuria was also a symptom of lesions of spinal or cerebral origin. With conservative and palliative operative procedures, such as drainage of the sac, enlarging the diverticular opening, curetting or cauterizing its wall, nothing could be accomplished. Better and more lasting results would follow radical surgery of the sac. The available records of the reported cases clearly proved this contention. In all the radical operations, about twenty altogether, including two of his own cases, there were three cases of death, one due to sepsis after a transperitoneal operation, and two which occurred some time after the operation and were due to secondary advanced lesions in the corresponding kidney. In the other cases the results were highly satisfactory, some being completely relieved from all symptoms, others retaining the tendency of voiding in several phases.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held November 2, 1916.

The President, Dr. Walter B. James, in the Chair.

This meeting was arranged with the cooperation of the Section on Genitourinary Diseases.

The Relation of Chronic Infections of the Genitourinary Tract to Obscure Internal Disorders.—Dr. Hugh Hampton Young of Baltimore presented this communication, in which he stated that this subject of focal infection was one of great importance, but he realized that it would be difficult to bring together accurate comprehensive data to show the important rôle played by the genitourinary tract. He briefly reviewed some of the more salient features of the literature on this subject and said the first question that came up was "What are the 'obscure internal disorders' which are related to focal infections?" Billings gave a rather terrifying list in recent publications which included acute rheumatism, arthritis deformans, gonorrheal arthritis, malignant endocarditis, myositis, myocarditis, septicemia, nephritis, various visceral degenerations, thyroiditis, pancreatitis, peptic, gastric, and duodenal ulcer, cholecystitis, various cardiovascular degenerations, arteriosclerosis, and chronic neuritis. Wright had added the following: Secondary anemia, urticaria, furunculosis, eczema, diabetes, purpura hemorrhagica, asthma, chronic catarrh, and nervous breakdown, and Maier cited cases of anorexia, tachycardia, and asthenia, as due to chronic infections. McCrae, giving cases seen in the writer's clinic, laid stress on the disproportionate general symptoms which accompanied lesions of the verumontanum, prostate, and seminal vesicles. In 1906 they (Young, Geraghty, and Stevens) called attention to various obscure referred pains which occurred as a result of chronic inflammatory infiltrations in and about the prostate, ejaculatory ducts, and seminal vesicles. Previous diagnoses of lumbago, renal and intestinal colic, neuralgia, neuritis, and sciatica had been made, but were dissipated by the cure of the prostatic disease. Dr. Young then took up seriatum the various genitourinary regions subject to infection, and pointed out the anatomical peculiarities which might render certain locations natural points for the localization and persistence of infectious processes. A glance at the anatomy and pathology of the kidney would seem to indicate at once that many opportunities for absorption from localized infectious processes were present. In the glomerulus was found a distended sac with constricted neck and uphill drainage, and likewise in the urinary tubule imperfect drainage in the narrow ascending tubule should infection occur. In parenchymatous and perinephritic infections the chances of absorption and resultant general sepsis were even greater. From the renal pelvis and calyces the drainage was ordinarily good and in simple pyelitis little absorption was seen, but inflammatory infiltrations, anatomical abnormalities, and calculus interfered with drainage in many cases and pelvic dilatation, hydronephrosis, destruction of renal cortex, and perirenal inflammation followed, producing typical conditions for systemic invasion with toxins and bacteria. One should therefore expect to find in our clinical material and in the literature an abundance of evidence of systemic disease from focal infections in the kidney and pelvis. But strange to say such was not the case. Rheumatism and arthritis were certainly very rare as a complication, their own clinical

records showing nine, and a hurried survey of 4000 autopsy records revealed no case with a combination of arthritis and chronic renal suppuration. Many instances, however, of chronic myocarditis and occasionally of endocarditis were found. A careful search of the literature revealed very little information on this subject. Billings said "pyelitis of whatever type, even when there is only moderate obstruction of the drainage of the kidney pelvis, may produce myositis, arthritis, neuritis, etc.," but he gave nothing more on the subject and cited no case histories. Other writers and also the more recent text-books on pathology, bacteriology, and surgery threw no light on the subject. All investigators were agreed that streptococci were very rarely found in chronic urinary infections (cystitis and pyelitis) and this might explain why arthritis, rheumatism, and endocarditis so rarely accompanied renal suppurations; apparently the latter were specifically due to streptococci and gonococci, both of which were found with great rarity in focal renal infections. In the acute suppurative nephritis of Brewer the foci of infection of which were generally due to the staphylococcus, endocarditis often existed, but both were acute local manifestations of a blood infection and did not properly belong to the subject under discussion. Changes similar to those in the upper end of the ureter which led to urinary obstruction, pyelitis, nephritis, etc., might exist almost anywhere along the course of the ureter with similar results. A review of the statistics of cultures from 800 cases of metastatic arthritis studied by Murphy and Kreuscher, and recently presented here, again furnished conclusive evidence that arthritis was a coccus disease. Their demonstration that the disease was periarticular confirmed other work in which the joint fluid had been usually found sterile. The terminal portion of the ureter was frequently obstructed by calculi, strictures, tumors, and congenital defects, and so one often found it transformed into a dilated flabby tube filled with stagnant infected urine, surely propitious for producing back-pressure effects and general toxemias. Here again the literature and clinical material afforded little help, no citations of definite systemic infections being given which could be attributed to pyoureters being found. It was not to be expected that much absorption would occur from ordinary cases of cystitis. Sometimes the mucous membrane of the bladder was so resistant that an infection might persist for months without causing inflammation. When obstruction was present however, drainage was interfered with, residual urine developed, the bladder became trabeculated, pouches and diverticula formed, and excellent opportunities for infection, deep-seated inflammation, ulceration, septic absorption, and general infection occurred. Here again the absence of streptococci was probably the reason one rarely encountered rheumatism or arthritic complications. But the bacilli of the colon group which preponderated here as the infective agent were far from harmless. The course followed by the *B. coli* infections of the bladder were seen regularly in enlarged prostate cases. After a few catheterizations the bacilli were generally found in the urine, and after a time, as a rule, a mild cystitis and urethritis resulted with varying systemic manifestations—fever, malaise, and occasionally chill and evidence of severe toxemia. After a short period — three to ten days — a tolerance for the chronic infection was established and the patient might go on catheterizing himself for the rest of his days with only occasional attacks of sepsis. If, however, regular catheterization was not afforded and considerable residual urine was persistently present, the pressure effects produced results of a serious nature upon the whole organism. Just as the bacilli got into the circulation from the intestinal tract when the latter was in a condition of stasis due to chronic constipation, so might the same organisms infect and poison the body in chronic urinary obstruction. A more potent effect was probably produced upon the kidneys and through them the heart, blood vessels, and other vital structures by infection combined with back pressure. The clinical picture was a common one: a pale anemic, asthenic patient, with lack of appetite, at times nausea and severe digestive disturbances, and with evidence of myocarditis, arteriosclerosis, hypertension, and chronic renal insufficiency. The catheter showed residual urine of poor quality, the phthalein test revealed marked impairment of the kidney function, and uremic and cardiac crises during the course of palliative treatment emphasized clearly the desperate condition of the patient. Such cases not infrequently showed little or no urinary symptoms, and went along untreated for months or years, the patient being treated for the above-mentioned conditions, while the back-pressure and colon-bacillus infection went merrily on. The proof of the urological etiology of these grave internal disorders was the way in which they disappeared when the back pressure of infected urine was relieved by systematic catheterization, drainage, or prostatectomy. Distinguished internists who had directed the treatment of certain severe cases, had been astounded to see patients who were apparently *in extremis* gradually become rational as uremia disappeared and vascular, myocardial, and endocardial conditions improved so astonishingly that ultimately a radical perineal prostatectomy was carried out almost without risk. The remarkable recuperative power of the kidneys was shown by the scores of cases in which the phthalein test and blood urea indicated that only a trace of functional capacity was left on entrance to the hospital, but which under catheter drainage so rapidly improved that often within a month a fairly normal function was obtained and operation successfully performed. Coming to the urethra it was found that the various glandular structures surrounding and draining into the urethra, all with narrow ducts, furnished a most fertile field for the development of chronic infections. This was the most complex glandular system in the body, and as one or all of these structures were infected in thousands of cases of gonorrhea one could appreciate the dangerous status of these patients not only to society but also to themselves. The medical profession was even yet rather ignorant or indifferent to the fact that the patient should never be declared cured of his gonorrhea simply because the discharge had ceased and shreds were no longer present in the urine. The examination of the secretion from the prostate and seminal vesicles was so easy and so decisive that it should never be neglected before discharging an acute or chronic gonorrheal case as cured. The remote lesions caused by the extension of a gonococcus infection were manifold. Almost every tissue and structure of the body had yielded its cases of gonococcus infection. Although fulminating in onset many of these very severe infections, even endocarditis and general septicemia, were sometimes not fatal, but the deforming effects were generally terrible in their results. One of the most interesting phases of chronic gonorrheal inflammation was the general disappearance of the gonococcus and its frequent supplacement by other bacteria, particularly the streptococcus. This had been particularly demonstrated in chronic seminal vesiculitis. It had been shown that the gonococcus disappeared with increasing rapidity as the years went by. In a bacteriological study of chronic prostatitis the writer and his associates (Geraghty and Stevens) found the streptococcus present in 16 per cent. of the cases, *Staphylococcus albus*, in 16 per cent.; no colon bacilli and no gonococci were found in any case, though 50 per cent. came within three years of the gonorrheal infection. There was apparently definite proof that the pyogenic cocci and not the gonococcus or colon bacillus was responsible for chronic infections of the prostate and seminal vesicles, and also for the arthritis and rheumatic conditions which so frequently accompanied them. Clinical cases in great numbers were on record to prove the varied lesions remote and serious in character which owed their existence to infection of the seminal vesicles and probably also to infections of the prostate and other adnexa. From the experiments of Thaon, Posner, Kohn, Comus, and Gley, Leguen, and Gaillardot there seemed to be little doubt that the prostate had an internal secretion. The active principle had not been isolated nor its exact physiological properties established, but evidence pointed to its being toxic when injected into animals and that it affected the blood pressure and to some extent the heart. Certain investigators had noticed an anticoagulative action, and this might be responsible for some of the rather troublesome hemorrhages that sometimes occurred from the prostate. Not infrequently the prostate was seriously inflamed in conjunction with the seminal vesicle, and it might be responsible alone for remote rheumatic and cardiac lesions. It should unquestionably be incised and drained along with the seminal vesicle in such cases. Likewise infection often occurred in hypertrophy of the prostate, invading, as a rule, the normal layer of prostatic tissue behind and external to the hypertrophied lobes. Several of the writer's cases associated with joint and heart disorders had rapidly improved after perineal prostatectomy in which this portion of the prostate was drained by the preliminary capsular incision. In some prostatectomies he had exposed and

drained the seminal vesicles and believed that this should be done more frequently as a vesiculitis was not seldom present.

The verumontanum, composed as it was of glandular and cavernous tissue and containing the utricle, ejaculatory ducts, and highly complex nerve supply, was one of the most common focal causes of remote disorders. Not only were there chronic inflammatory conditions accompanied by disproportionately severe sexual and urinary symptoms, but the most remarkable referred symptoms frequently occurred. In a study of 358 cases of chronic prostatitis the writer found that referred pains of varied character were present in a large percentage of the cases. The most common location was the back, 64 cases, then came the perineum 35, suprapubic region 22, hips 10, thighs 12, knee 4, leg 4, simulating sciatica 5, kidney region 8, and simulating renal colic 10. The widespread character was thus evident. In an excellent paper on the remote effects of lesions of the prostate and deep urethra, McCrae cited several cases in which symptoms had been referred to the heart, palpitation, rapidity of rate, attacks in which with precordial distress there was tachycardia, and attacks simulating angina pectoris. The seminal tract was likewise a frequent focus of infection both for tuberculosis and other suppurative processes. The demonstration that the entire seminal tract might be removed without injury of the prostate, urethra, bladder or testicle had brought another region into the radically curative field of surgery.

Dr. YOUNG completed his address by showing lantern slides of anatomical peculiarities that predisposed to focal infection and systemic absorption, and of the pathological changes which led to toxemia or sepsis, and described several surgical measures by which they might be eradicated.

Dr. THOMAS MCCRAE of Philadelphia stated that it might he said that pelvic inflammatory disease in the male was now coming into its own. They had heard a great deal of pelvic inflammatory disease in the female, but pelvic inflammatory disease in the other sex was probably just as important. From the standpoint of internal medicine there were several ways to approach this subject. First he would emphasize the importance of keeping it in mind. If a patient came with symptoms of disturbance of sexual functions or symptoms of genitourinary disease of course attention was directed to the genitourinary tract, but if there was nothing in the symptoms of the patient to suggest disease or disturbance of the genitourinary tract, it was not so easy to discover the etiological factor. It was only by keeping the genitourinary system in mind as a possible source that one would avoid the most serious errors. Disease of the prostate, verumontanum, and seminal vesicles might be responsible for a general nervous disturbance. As an instance of this the case of a young man about whom the speaker had been consulted by the head of large corporation might be cited. This young man did well for a time, and then began to slip back and to become inefficient. The head of the corporation stated that if the man did not do better he would have to discharge him. In consultation the man was very frank and realized that he had lost his grip on things. He said he could not work as formerly, he was beginning to be the victim of fear and anxiety and realized that in transacting his business he did not make a good impression. The man did not drink, and there were no localized hints at all as to his condition. In the examination it was found that he had a general prostatitis and inflammation of the verumontanum, which had given no symptoms of any account. He was treated merely for this local condition, and by the end of three months there was a tremendous change for the better. This man had gained his health and efficiency. According to the statement of the head of the corporation who brought him to me for consultation he was as efficient as ever. Often in cardiac conditions which were called functional one would find the cause in the genitourinary system. These might be designated as anxiety or fear neurosis. Dr. McCrae said he did not want to give the impression that all nervous diseases in the male were due to prostatic disease, but as to the influence of the prostate on the heart too much could not be said. If one believed there was an internal secretion it would be easy to understand and would go far to explain the psychic phenomena associated with disturbances of the prostate. Furthermore, the point should be emphasized that many of these cases gave no local symptoms, and much work had to be done to find the far distant cause. Again, it was easy to recognize a local cause if one took the trouble to make an examination

Dr. EDWARD L. KEYES said that any paper written by Dr. Young was so complete that it rarely admitted of discussion. He wished first to confess that he did not get the results that Dr. Young did by excising the tuberculous seminal vesicles. In some cases he had been fortunate, but as a rule he left the seminal vesicles alone. Dr. Young had stated that rheumatism was unusual in cases of infection of the kidney. One instance had come under his observation, however, in which rheumatism was the only systemic condition due to a renal stone. This patient was cured of his rheumatism by removal of the stone. Dr. Young did not make any reference to the acute pyelitis of infancy in which the symptoms were often so remote from the urinary tract. Two striking points in reference to the pyelitis of infancy were the fact that the symptoms of chronic infections were usually referred to the digestive tract, while acute infections in infancy were often hyperacute. Repeated chills in infancy could only mean malaria or acute inflammation of the kidney. Attention had been called to the great variety of conditions that might be traced to infections of the genitourinary tract. The speaker had seen several cases that were distinctly of the cerebral type, and it was only in the course of a routine examination that the urinary origin of the symptoms was discovered, and relief was procured by drainage.

Dr. WALTER A. BASTEDO said that the important point emphasized by the speaker was that in searching for the cause of obscure internal trouble one should not only look over the teeth, tonsils, and abdominal organs, but should also investigate the genitourinary organs. Dr. Young had referred repeatedly to Dr. Eugene Fuller's work in demonstrating infection of the seminal vesicles. It might be of interest to know that Dr. Larkin, at Dr. Fuller's request, had removed the prostate and seminal vesicles from about 35 consecutive male cases brought to autoposy, and that in a large number of these there was an infection, usually of the streptococcic variety. In regard to the prostatic cases with retention in which there was a low phthalein output, high filtrate nitrogen, and high blood pressure, so that there seemed definite kidney disease, but which, following proper drainage, lost their kidney picture, the speaker asked Dr. Young if he thought the kidney disturbance could be attributed to infection. Would it not rather be due to the damming up of the urine, for though the germs could still be found in the urine, the kidneys were relieved? There was another influence not always thought of, and that was the effect of venous back pressure on the kidney. In the laboratory if one clamped off the renal vein only a little bit the urine flowed slower or even ceased, and this indicated that a comparatively small venous back pressure might cause urinary stagnation in the kidney and ureter, and thus favor urinary infection. This would suggest that urinary infection might be due to disturbances of the circulation. In regard to the psychic state with the anxieties and phobias, a distinction must be made between the genital and the urinary disturbances. In the strictly bladder and ureter and kidney troubles we did not have these phobias, but in the affections of the genital tract they were very common; and as they occurred whether the condition was an infection or not, it would seem that these psychic disturbances were genital or sexual. In these cases whatever would remove the sex tension would tend to relieve the psychic symptoms, whether it was removal of the prostate, or draining the seminal vesicles, or straightening out the uterus, or functional relief. The speaker had had cases of supposed ulcer of the stomach or duodenum, and cases with cardiac irregularities, in whom the psychic sex disturbance was apparently the underlying fault. For example, in the cases supposed to be ulcer one could find no blood in the stools or stomach contents, and no positive string test, though a high hydrochloric acidity; and if one put these patients to bed on an ulcer cure, though they improved for a short period they would soon get very restless, and if they were then kept in bed would have a return of their symptoms. These cases occurred in persons out of wedlock, and after a few days treatment for hyperchlorhydria, one did well to get them into vigorous activity such as horseback riding, or golf, or send them into the woods for a hunt. It did not seem to the speaker that these were cases of genitourinary infection, but simply psychic disturbances related to the sexual organs whether there was an infection or not. In closing Dr. Bastedo said he did not think these

psychic patients should always be sent to the genitourinary specialist, but that often they might with advantage be sent to any physician who was also a philosopher.

Dr. J. BENTLEY SQUIER said that though this work was very interesting, much remained to be learned clinically and Dr. Young had shown that this was also his opinion. The genitourinary tract might be divided into the upper and the lower tract. Most of the infections of the upper tract had been found to be ascending infections. The lymphatics were so arranged that infection from any part of the abdomen might reach the kidney though this route. When medical men took up the study of neurasthenia they got into the habit of thinking that sex neurasthenia was at the bottom of all neurasthenia and as due to some lesion of the prostate, or seminal vesicles, or elsewhere in the genitourinary tract. But one might also include disturbances of the internal secretions, first of the adrenals and then of the hormones, which would result in lowering the threshold of the nervous system. If this source of irritation were relieved the patient would be cured. This was a very fascinating theory and might be taken for what it was worth. It should be remembered that focal infection might occur anywhere from the top of the head to the soles of the feet, or from the mouth to the anus. As a result one might have heart disease, or rheumatism, or many other conditions, and any procedure from the removal of the teeth to a curettage of the uterus might be undertaken for the purpose of curing the condition. So that one might say that where a patient had a condition that might be due to focal infection, the broader the physician was the more likely was he to be correct in discovering the primary source of the trouble and the more successful would he be in dealing with a focus of infection. If a man followed a specialty that might embrace a focus of infection in its field, he was prone to find such a focus there.

Dr. REGINALD H. SAYRE said he agreed with what Dr. Squier had said regarding the importance of finding where the particular focus of infection was that was making the trouble. It might be possible to cure a patient by pulling a tooth or draining a seminal vesicle, but if this result was to be attained it must be done early. A joint was not cured in this way after an arthritis was established. When that stage was reached the joint should be given rest and protection. Dr. Sayre stated that he had seen many cases in which the teeth had been pulled or the tonsils extirpated, or a vesiculectomy performed and the infected joint grew worse, because nothing had been done to protect it; it did not get better until it was treated locally. One should not forget the importance of rest and protection to an inflamed part as well as the removal of the focus of the disease.

Dr. EMANUEL LIBMAN said that while he appreciated that focal infections were of great importance in causing various forms of disease and that their rôle had been for a time underestimated, at the present time there was a tendency to blame conditions upon local foci that were not due to such a cause. This was particularly true with relationship to the question of chronic appendicitis causing various forms of infections. The chronic appendices generally showed more or less complete obliteration. The lesion consisted of a production of fibrous tissue and it did not appear clear how such a focus should be the origin of any infections. It was only rarely nowadays that appendicitis cases in which pus was present, were allowed to become chronic. The only general effect that one could imagine could come from a chronic appendicitis would be by whatever intoxication was caused by stasis in the ileum and by reflex action especially on the pylorus. It was important to be careful in one's use of the term "rheumatism." The term rheumatism should be used in the old clinical sense and in no other way. The disease which we called rheumatic fever was characterized by the tendency to recur, by the lack of suppuration in any joints, by the tendency to the development of pericarditis, chorea, and verrucous endocarditis with Aschoff bodies present in the heart muscle. The only primary focus that was considered as existing in rheumatism was a preliminary tonsillitis. Therefore, if any local focus was present aside from a tonsilitis, the case could not be properly grouped as rheumatic. Cases of joints infected with hemolytic or non-hemolytic streptococci should be called "streptococcus arhtritis" and not rheumatism. Up to the present time it had not been definitely proven that streptococci caused rheumatism. If these cases could all be proven to be due to streptococci, then the term rheumatism could be dropped and the name streptococcus arthritis used to replace it. It was better, however, for the present, to use the term rheumatism for this special group of cases as described above and try to find out what they were due to. The speaker believed that Dr. Rosenow's theory of mutation of the streptococcus and pneumococcus must be accepted. At the Mount Sinai Laboratory they had for many years believed in such mutation, as evidenced by the publication of the work by Drs. Buerger and Ryttenberg in 1907. The speaker took part in those studies at that time, and since then Dr. Aschner and he made studies from time to time, and would in the near future publish some further examples of mutation. It was much more common to see a pneumococcus take on streptococcus features in the body than the other way around. The speaker agreed with Dr. Bastedo in regard to his statements concerning the importance of sexual tension as an etiological factor. To show how far in error one might go in blaming conditions on a focal infection, the speaker was now trying to prevent a woman from having her tonsils and teeth removed for headaches which she herself had confided to him are due to such tension.

Dr. YOUNG, in closing the discussion, said he wanted Dr. Bastedo to realize that he did not want everybody sent to the genitourinary surgeon, but he wanted the general practitioner educated so that he would realize the importance of a rectal examination and that he might know that it was possible to get a portion of the seminal vesicle and make an examination under the microscope which would give him definite information. In regard to the back pressure and infection, there was no question but that back pressure led to a deterioration of the kidney; it lowered the functional capacity and increased the output of urea, etc., and thus made the secondary changes more rapid in the heart and arteries. The neurological and psychical disturbances were not necessarily due to the focal infection but to the results produced by the focal infection or possibly by a cicatrix. In a chronic vesiculitis there might be a cicatricial contracture and from it pressure that caused a neurosis. The neuroses coming from that small area were widely separated and of great importance.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

COLLEGE OF PHYSICIANS AND SURGEONS OF ONTARIO.

Final Examinations, May, 1916.

MEDICINE.

Answer five questions only.

1. Describe the clinical course of an average case of acute lobar pneumonia terminating favorably, giving the usual physical signs noted over affected lung at various stages of progress.

2. Discuss the causation, symptoms, differential diagnosis and treatment of catarrhal jaundice.

3. Describe the causation, symptoms, differential diagnosis and treatment of epidemic cerebro-spinal meningitis.

4. (*a*) Give the causation, diagnosis, course and treatment of tinea tonsurans (ringworm of the scalp). (*b*) Give the diagnostic features and detail treatment of scabies.

5. What are the most common types of growth in brain or brain membranes causing symptoms of cerebral tumor? Discuss the general symptoms of such growths, and give localizing features of a growth in any selected area of cerebrum.

6. A business man, 48 years old, of sedentary habits, with good appetite and using alcohol and tobacco moderately, consults you for frequent headaches and tendency to be forgetful. On examination you find a high tension pulse, systolic blood pressure of 190 mm., while urine shows a trace of albumin and a few hyaline casts. Describe further examinations you would think necessary, and discuss diagnosis, prognosis, and treatment.

SURGERY.

1. (*a*) Describe the symptoms of fracture of the spine at lower dorsal region. (*b*) Give treatment. (*c*) Give indication for operation. (*d*) Describe the operation.

2. (*a*) In what diseases of the kidneys do you consider its removal advisable? (*b*) Give differential diag-

nosis between any two of these diseases. (*c*) Describe the operation for removal.

3. (*a*) Give symptoms of ulcer of the stomach. (*b*) From what other diseases must it be differentiated? (*c*) Under what conditions is operation necessary? (*d*) Describe the operation.

4. (*a*) Describe the symptoms of a strangulated hernia (inguinal). (*b*) Give methods of treatment. (*c*) Describe the operation when the intestine is gangrenous.

5. (*a*) Describe the symptoms of a fracture of the middle of the femur. (*b*) Give treatment in detail in an adult.

OBSTETRICS AND GYNECOLOGY.

1. Cystitis: give causes, course and treatment.

2. Describe the operation for (*a*) a recent laceration of the perineum, (*b*) an old laceration, and (*c*) mention the most important features of each case.

3. What conditions are often mistaken for pregnancy? How would you establish a diagnosis?

4. Define accidental hæmorrhage and give its prognosis and treatment.

5. Give (*a*) the characters and duration of normal lochia, (*b*) causes of suppression, (*c*) causes of prolonged continuance.

ANSWERS.

MEDICINE.

1. *Acute lobar pneumonia* "begins with a severe and usually protracted chill, followed by a rapid rise of temperature, 103° to 104° F., a strong, full, but rapid pulse, soon showing evidence of embarrassed cardiac action. There are also present pain near the nipple, aggravated by pressure, breathing, or coughing; shortness of breath, the number of respirations increasing to 40, 50, or more a minute; disturbance of the ratio between pulse and respiration; and cough, at first short, ringing, and harsh, followed by a scanty, frothy, mucoid expectoration. The sputum soon becomes transparent, viscid, and tenacious, changing about the second day to the familiar rusty sputum. The quantity is increased and a yellow color is assumed as the disease advances. The prostration is pronounced. The face is flushed, especially over the malar bones. The lips are more or less blue and herpes may be observed. Epistaxis, headache, sleeplessness, and gastric disturbances are common. The tongue is coated, the appetite is impaired, and there is constipation. Delirium is sometimes present. The urine is small in amount, highly colored, deficient in chlorides, and often slightly albuminous. The blood shows evidences of leucocytosis. The fever usually reaches its maximum within twenty-four hours and continues high, with diurnal remissions, until the fifth, seventh, ninth, or eleventh day, when a crisis occurs, and within twenty-four hours all the symptoms are lessened, the fever absent, and convalescence is established. Occasionally, the termination is by lysis.

"*Physical signs over the affected lung:* Palpation during the first stage shows the vocal fremitus to be more distinct than normal. In the second stage, the vocal fremitus is markedly exaggerated, except in case of occlusion of the bronchi by secretion. In the first stage, the percussion note is slightly impaired at times, having a hollow or tympanitic quality. In the second stage there is dullness over the affected parts, with an increased sense of resistance. In the first stage there is a feeble vesicular murmur, associated with the true vesicular (crackling) râle, heard at the end of inspiration only. In the second stage there is harsh, high-pitched, bronchial respiration, at times resembling a to-and-fro metallic sound, except when the bronchi are filled with secretion. Bronchophony is present and at times pectoriloquy may be heard. In the third stage, the breathing changes from bronchial to bronchovesicular and the crepitant râle returns. As resolution proceeds, the breath sounds are associated with large and small moist and bubbling râles."—(Hughes' *Practice of Medicine.*)

2. CATARRHAL JAUNDICE. "*Causes.*—Extension of gastrointestinal inflammation is the most common cause. Atmospheric changes, passive congestion of the liver, and the infectious fevers are less frequent factors.

"*Symptoms.*—The affection begins with epigastric distress, coated tongue, impaired appetite, nausea, with perhaps vomiting, looseness of the bowels, and slight feverishness. In from three to five days the eyes become yellow, and jaundice gradually appears over the whole body; the feverishness disappears, the skin becomes harsh, dry, and itchy, the bowels constipated, the stools whitish or clay-colored, accompanied with much flatus and colicky pains; the urine heavy and dark, loaded with urates and containing biliary elements. When the jaundice is complete, the surface is cold, the heart's action slow, the mind torpid and greatly depressed, and there is pain or tenderness on pressure over the hepatic region. The symptoms subside within a few days after the jaundice appears, but the depression, discoloration, and condition of the bowels persist for one or two weeks."

"*Differential Diagnosis.*—When jaundice is induced by obstruction to the outflow of bile other than that produced by inflammation, such as arises from stricture of the common duct, tumors of the abdominal viscera, foreign bodies such as gall-stones and parasites, fecal accumulations, spasms of the bile ducts due to emotion, etc., the symptoms of these different affections will be found associated with the icteroid manifestations. *Non-obstructive or hematogenous jaundice* is unassociated with inflammatory changes in the bile ducts, and arises from disintegration of the blood or hemolysis. It differs from catarrhal jaundice in its history, the absence of clay-colored stools, and less staining of the urine.

"*Treatment.*—The patient should be placed at rest in bed and the diet restricted to milk and lime-water, broths, eggs, lean meats, etc., care being taken to eliminate all starchy, fatty, or saccharine substances. Calomel, gr. ¼, with sodium bicarbonate, gr. ij, should be then given every two hours until twelve doses are taken, followed by Hunyadi water. Sodium phosphate, ʒj, may also be given, well diluted, every four hours. The dry, itching skin may be relieved by diaphoresis, a hot bath containing potassium carbonate night and morning, or a weak carbolic acid solution. If insomnia is present potassium bromide, gr. xxx, may be administered. Diuretics are indicated if the urine continues scanty, preference being given to the alkaline waters, potassium bitartrate lemonade, and spirit of nitrous ether, ♏x to xx. In cases in which the constipation persists, aloes, podophyllum, colocynth, and other cholagogues should be employed. Irrigation of the colon once daily with cold water, gradually increasing the temperature, is often very effective."—(Hughes' *Practice of Medicine.*)

3. CEREBROSPINAL MENINGITIS. *Causation.*—The disease is caused by the *Diplococcus intracellularis meningitidis;* other microorganisms are also supposed to be capable of causing the disease. Predisposing causes are bad hygiene, overcrowding, foul air, poor food. The diplococcus is believed to gain entrance to the body through the nasal mucous membrane, and the infection leaves the body through the same channel. "Carriers" may transmit the disease through their nasal discharge. *Symptoms:* Sudden onset, with headache, vomiting, rigors, stiffness of neck and back producing opisthotonos, pulse full and rapid, temperature about 102° F., photophobia, delirium; Kernig's sign is present, and the diplococci may be found in the cerebrospinal fluid after lumbar puncture; the tâche cérébrale may be observed, and leucocytosis is present. The *diagnosis* is made from the symptoms, chiefly the presence of Kernig's sign and the diplococci in the cerebrospinal fluid. In *typhoid fever* the onset is gradual, the temperature is characteristic, the opisthotonos and Kernig's sign are absent, there are no diplococci in the cerebrospinal fluid, and Widal's reaction may be present. *Tuberculous meningitis* is not epidemic, is not of sudden onset, and a primary focus of tuberculosis may generally be detected elsewhere. *Treatment:* Isolation in an airy room, rest in bed, nourishing diet, ice bags to the nape of the neck, morphine for the pain, bromides for the restlessness, lumbar puncture to relieve the symptoms, and the injection of Flexner's serum. Stimulation may be necessary.

4. *Tinea tonsurans* (ringworm of the scalp) is a contagious affection due to the *trichophyton fungus* which invades the hair and hair follicles. It generally occurs in children, and is characterized by small circumscribed patches of baldness in which the hair is diseased and often broken off close to the scalp. Vesicles, pustules, and scales are observed. The patches spread and may be as large as a silver dollar. Itching is a constant symptom. The diagnosis is made certain by the presence of the fungus; a hair should be extracted, immersed in liquor potassæ, and then examined under the microscope. Vigorous and persistent local treatment is

required. The hair of the affected part should be cut close, and the head washed daily with soap and hot water, or an ointment of oleate of mercury, or of sulphur should be applied twice a day. Treatment must be continued as long as the fungus is present.

Scabies.—The diagnostic features are the presence of the itch mite (acarus scabiei) and its burrows. The eruption is multiform and generally on the flexor surfaces of the body, and the itching is intense and is worse at night. *Treatment* consists of a hot bath, followed by the application of sulphur ointment (one dram to the ounce of petrolatum) every night for a week; the bed linen and underclothes should be sterilized. After the interval of one week treatment must be undertaken again for a week.

5. The common types of cerebral growths are the tubercle, gumma, sarcoma, carcinoma, and cysts. The general symptoms are those of apoplexy: There may be prodromal symptoms such as vertigo, pain in the head, or impairment of memory; but as a rule the attack is sudden with vertigo and unconsciousness; there may be retention or incontinence of urine, the urine has a high specific gravity and may contain albumin; hemiplegia generally ensues; the tongue protrudes toward the affected side; aphasia (either motor or sensory) may be present; the face is flushed, breathing is stertorous; the body temperature is first subnormal and then elevated; the pulse is slow and full; in severe cases the pulse becomes weak, and the respirations become of the Cheyne-Stokes type; the reflexes are abolished.

If the tumor is in the prefrontal region, there may be no symptoms at all, or mental enfeeblement, disturbances of smell and vision, motor agraphia and aphasia.

6. A complete physical examination should be made, noting especially the condition of the heart, arterial walls, and abdominal organs; the diastolic blood pressure should also be obtained; the urine should be examined, noting the specific gravity, 24 hours quantity, presence of sugar and indican, and the amount of urea excreted; the patient should be questioned about the amount of rest, exercise, and recreation (including vacation) which he takes; the eyes should be examined by a competent oculist and any errors of refraction should be corrected; a Wassermann test should be made.

The *diagnosis* lies between nervous fatigue, eyestrain, simple hypertension, gastrointestinal autointoxication, arteriosclerosis, chronic interstitial nephritis, and syphilis. *Prognosis.* If the condition is dependent upon causes which may be removed, the prognosis is fairly good so long as there are not marked changes in the bloodvessels. With organic arterial changes there is danger that these symptoms may be precursors of cerebral hemorrhage or thrombosis, in which case the outlook for future health and usefulness is bad, and for life doubtful. *Treatment.* The *indications* are:—For *gastrointestinal autointoxication*, the diet must be regulated, the total amount limited, and the quantity of proteids restricted; laxatives, especially salines, should be given. For *nervous fatigue*, more sleep, or a vacation may be required. *Syphilis* requires cautious treatment with mercury, arsenic and potassium iodide. *Arteriosclerosis* requires a restricted diet (as just given for autointoxication), also potassium iodide (10 grains, three times a day) for a long period, nitroglycerin (gr. 1/100 to 1/50) may be tried, and if no bad effects are noticeable in heart, circulation or urine, it may be used as required; sodium nitrite may be used instead; the patient should avoid overeating, constipation, and exposure to chills, and he should limit his business activities (at least for a time); alcohol and tobacco should be limited to the smallest amount compatible with physical comfort, and beer and heavy wines should be avoided. Moderate exercise as walking, golf, etc., should prove beneficial. *Chronic interstial nephritis* requires the same treatment as just outlined for arteriosclerosis, but in addition it might be advisable to avoid red meats.

SURGERY.

1. In fracture of the spine in the lower dorsal region, there will be paralysis of the muscles of the lower limbs, with total anesthesia of legs and gluteal and perineal regions; there may be paralysis of the bladder or retention of urine with overflow, according as the vesical center is or is not involved; there will be incontinence of the feces. The extent of the paralysis and anesthesia depend on the lesion to the cord; if only one side of the cord is affected, only one limb will be paralyzed and anesthetic. The parts immediately above the lesion are hypersensitive, and there is a zone of pain around the body ("girdle pain"). Bedsores arise on very slight irritation, cystitis usually comes on from septic infection, the temperature and pulse are variable (according to the amount of toxic absorption). "The *treatment* naturally varies with the character of the case. The patient is carefully placed on a prepared bed, the greatest gentleness being used in handling and lifting him, for fear of increasing the damage to the cord. The bed must be firm though not hard; perhaps the best type to employ is a horsehair mattress placed over fracture boards; nothing more soft or yielding is permissible. Spring beds and wire-wove mattresses are most undesirable. A water-bed is required in the later stages, but should not be used at first, as it is scarcely firm enough. The shock resulting from the accident is treated in the usual way by warmth and, if need be, by stimulants; but it must be remembered that anesthetic regions of the body can be easily blistered or burnt by hot-water bottles, unless carefully guarded by flannels. When reaction has occurred, a more thorough examination of the patient can be made, and the subsequent course of action decided on. In many cases, as soon as the patient is laid flat on a bed, the displacement remedies itself, especially if the spine has been comminuted, and then the treatment must be *symptomatic*, as also after reduction or operation, where the paraplegia persists or is only slowly recovered from. He is kept in bed, absolutely flat, and with the head low; perhaps some form of mechanical support—*e. g.*, a plaster of Paris or leather jacket—may be considered advisable; but its application is always a matter of difficulty, and in the early stages it does but little good. Food is regularly administered, and at first must be light and readily assimilable. The chief care of the attendants must be directed to the skin, bladder, and bowels."—(Rose and Carless' *Manual of Surgery.*)

Indications for operation (laminectomy).—When the cord is not completely severed; in fractures of the arches alone when the cord is pressed upon; when the paraplegia comes on slowly, after an interval. When there is complete local destruction of the cord no operation should be done.

Laminectomy.—"The patient is placed either prone or lying on his left side with a pillow supporting the chest, and the spinous processes of the vertebræ to be dealt with are exposed by raising a rectangular flap of skin and fascia. When there are signs of fracture of the neural arches, the center of the flap should lie over the broken vertebræ. When there are no signs of fracture, the site of the incision is determined by the spinal symptoms. The muscles, along with the periosteum, are separated from the spines and laminæ, and the hemorrhage, which is often very free, is arrested by pressure and forceps. The interspinous ligaments are then divided with scissors, and the spines snipped off at their bases with bone pliers. The ligamenta subflava are next divided close to the bone and the laminæ sawn across and levered out, or cut away with rongeur forceps. The fatty tissue outside the dura is separated, and any veins that are torn are tied. The extra-dural space is now examined by pushing aside the dura with the enclosed cord, and any blood clots or fragments of bone which may be present are removed. If it is necessary to open the dura, it should be securely sutured again to prevent leakage of cerebrospinal fluid. The divided muscles are brought together with catgut sutures, but, as there is usually a good deal of oozing for some hours after the operation, a drainage tube should be inserted down to the gap in the bone, and left in position for forty-eight hours. Special care must be taken to avoid soiling of the dressings by discharges from the paralyzed bowel and bladder."—(Thomson and Miles' *Surgery.*)

2. *Removal of the kidney may be advisable* in extensive tuberculous disease of the kidneys, calculous pyonephrosis, hydronephrosis, malignant disease, and rupture of ureter or kidney if complications are present. In any case, before deciding to remove one kidney it must be positively ascertained that the patient has another kidney capable of performing its functions.

Tuberculosis of the kidney shows polyuria, acid urine which may contain pus or blood, the sediment may contain tubercle bacilli. If no tubercle bacilli are found microscopically, some of the sediment injected into a guinea pig will cause tuberculosis in that animal. Cystoscopic examination with catheterization of ureters will show which kidney is affected, and tuberculous ulcers in the bladder may also be detected close to the ureteral orifice.

Malignant disease of the kidney gives hematuria, pain in loin and thigh, and emaciation. A tumor may be palpable. Cystoscopic examination gives none of the features noted above, and there are no tubercle bacilli in the urine.

Nephrectomy.—"The abdominal operation is chiefly utilized when the organ is much enlarged, on account of the readier access obtained, especially to the pedicle. The peritoneum is likely to be opened, and may be exposed to septic contamination, when the pelvis and the upper part of the ureters are distended with decomposing pus, as is frequently the case; but this is easily prevented. Drainage is obtained for the cavity left after the removal of the organ by a counter opening made through the loin. One great advantage is that the other kidney can be first examined, if required, and its condition ascertained. As to the technique, there is frequently no necessity to open the peritoneal cavity, since the kidney is almost always enlarged, but an opening is often made, intentionally or accidentally. The colon and peritoneum are peeled off the organ and displaced inwards; it is then freed from its adhesion to surrounding tissues, the surgeon endeavoring to keep outside its true capsule, but inside the layer of condensed perinephric tissue. Special precautions must be adopted in dealing with the deep aspect of the tumor, particularly on the right side, where it is occasionally adherent to the inferior vena cava. The mass is now lifted from its bed, and its pedicle, consisting of the ureter and renal vessels, isolated. These latter are secured separately by ligature and divided, a clamp being applied to the distal ends. The ureter is dealt with in the same way, small pieces of gauze being packed around so as to receive any secretion which may escape; the exposed mucous membrane in the portion which is left is carefully touched over with pure carbolic acid. The kidney thus freed is removed, and the wound in the abdominal parietes closed in the usual way, provision for drainage having been previously made either through the loin or from the front. Considerable shock is often experienced from this operation and the death rate is somewhat high. Occasionally the perinephric adhesions are so firm and extensive that the only practicable plan of removing the organ is to enucleate it from within the capsule as far as the hilum; the capsule is then torn or cut through so as to expose the pelvis and renal vessels, which are secured."—(Rose and Carless' *Manual of Surgery.*)

3. Ulcer of the stomach. *Symptoms.*—Pain, which is intermittent in character, localized in the stomach, and coming on soon after a meal; vomiting, which also occurs soon after eating, and often relieves the pain; hematemesis is common; examination of the gastric contents shows an excess of free hydrochloric acid.

It is to be *differentiated from* cancer of the stomach, duodenal ulcer, gastralgia, gastritis, pylorospasm, hypersecretion, cholecystitis, cholelithiasis, and renal calculus.

Operation is indicated when the hemorrhage is copious and recurrent, when medicinal treatment has been given a fair trial and no cure has been made, when after apparent cure a relapse has occurred, when perforation occurs, when adhesions about the stomach interfere with the proper performance of its functions.

Posterior gastroenterostomy.—"The abdomen is opened by a vertical incision to the right of the middle line above the umbilicus. The stomach, transverse colon, and omentum are drawn out of the wound and turned upward, and an opening is made in the mesocolon near its root, so as to expose the posterior surface of the stomach; a portion of stomach at the lowest part of the greater curvature is selected for the anastomosis. The upper part of the jejunum is then found by passing the fingers along the under surface of the mesocolon immediately to the left of the spine, and the highest available portion of it brought into contact with the stomach in such a way that the loop of bowel selected runs from right to left (Mayo). An anastomosis is then made between the stomach and jejunum, an ellipse of mucous membrane being excised from each viscus. The edges of the opening in the mesocolon are then stitched over the line of junction, so as to bury it and prevent any hernial protrusion through the gap. After being cleansed, the viscera are replaced in the abdomen, and the wound in the parietes closed. When the patient has recovered from the anesthetic he is propped up in bed with pillows."—(Thomson and Miles' *Surgery.*)

4. *Symptoms of strangulated hernia: General.*—"Severe pain comes on suddenly after some effort, at first referred to the umbilicus, and subsequently to the site of the hernia. This is accompanied by some shock. The pulse is weak, and, though slow at first, becomes rapid; the skin is cold and clammy; vomiting occurs, and soon becomes frequent and fecal-smelling. Constipation is complete, though both feces and flatus may be passed at first from the lower bowel. The patient generally becomes exhausted from the vomiting and inability to take food. When gangrene occurs the temperature becomes subnormal, the pulse very rapid and weak, and the patient dies of toxemia from the general peritonitis which follows gangrene. *Local.*—A tumor forms at one of the hernial sites; or more often the patient has been the subject of a hernia, which he now finds to be irreducible, tense, tender, and without impulse on coughing. If allowed to persist the sac and coverings become gangrenous."

Treatment is taxis or operation. "Operative treatment should be undertaken at once when gentle taxis has failed. An incision is made over the sac, which is then opened. There is usually fluid in the sac, so there is no danger of wounding the gut. The fluid is washed away, then the cause of strangulation is made out, and a hernia knife guided up to it by a finger or broad hernia director. The constriction is nicked in one or two places and the gut is drawn down so that the site of strangulation may be examined. Omentum is ligatured and removed. If the patient is profoundly collapsed and will not bear a prolonged operation, an artificial anus is established by dividing the constriction outside the sac, so as not to open the peritoneal cavity. The loop of bowel is then opened to give free exit to the feces. Most of the cases which have to be treated in this way are so bad before treatment is commenced that a fatal termination must be expected. If the patient can possibly stand it, immediate resection gives the best chance, and with Murphy's button or a bobbin much time can be saved. A radical cure is advisable after the strangulation has been relieved, unless the patient's condition contraindicates it. Liquid food is given at the end of twenty-four hours, and the bowels need not be disturbed for five or six days, when castor oil may be given."—(*Aids to Surgery.*)

5. *Symptoms of fracture of the middle of the femur.*—History of injury; disability; pain on movement; preternatural mobility; crepitus; shortening of the limb, deformity (simple overriding of fragments, or angular deformity). The lower fragment is drawn upward and inward, and may be either in front of or behind the upper fragment; the ends of the fragments can be felt by the surgeon. The thigh and leg are slightly flexed and, generally, everted.

Treatment: "The limb is carefully washed and, if hairy, shaved. Two long strips of strapping, three inches wide, fixed below to a square piece of board ¼ to ½ inch thick (slightly wider than the ankle opposite the two malleoli), which is known as the stirrup, are heated and pressed against the lower third of the fractured limb. They are here secured by short, thin pieces of strapping 1 to 1½ inches in width, passed in a figure of 8 around the limb above the malleoli and ending just below the fracture; the knee may be left uncovered. It is necessary to see that the pull of the extension is exerted on the femur and not on the knee. Large pads of wool should be introduced between the malleoli and the sides of the strapping, to prevent the skin over these processes becoming chafed. A cord is fixed to the stirrup and passes over a pulley at the end of the bed, and is there secured to a tin can which is filled with shot up to the required weight. If now the foot of the bed is raised on blocks, extension and counterextension are obtained, the patient's body acting as a counter-extending weight. When the fracture has been manipulated into a good position under an anesthetic (it is always necessary to control the fracture with some splints before the anesthetic is given), the extension apparatus is applied, and Liston's splint is bandaged to the limb. A proper splint of this kind should extend from the axilla to below the foot, and it is secured to the patient in three places: (1) round the thorax, (2) round the limb at seat of fracture, and (3) to the leg and ankle. In securing the thorax it is necessary to take the first turn of the bandage round the splint from within outward, and then round the back of the patient's thorax, the direction of the bandage in this way preventing the natural tendency of the splint to rotate forward. Several turns should be taken round the thorax in order to retain it in position. The remaining bandages should be secured from without inward, in order to check the tendency of the foot and

leg to roll outward. In order to prevent the rotation of the limb a method devised by Cheyne and Burghard may be adopted. This consists in securing the limb at the level of the popliteal space to a short splint, 8 by 4 inches, by means of a plaster of Paris bandage. The presence of this splint effectually prevents any rotation, either inward or outward. Special care must be taken to see that the malleoli and the skin over the heel are not subjected to any great pressure. If the fracture is put up in this way it must be kept up for six to eight weeks, and the amount of weight applied to the limb must be varied according to the age of the patient and the tendency to deformity. Roughly half a pound a year will be found to answer most purposes, but if there is much spasm the amount can be increased up to 20 pounds. At the end of six weeks, during which period the limb should have been regularly massaged—this can usually be done without disturbing the extension—the patient should be got up, and some form of retentive apparatus applied. A Thomas's splint is a very valuable form of apparatus, since it enables the patient to get about, and allows of active movements being undertaken, while he himself can hobble about on crutches. If such treatment is not considered advisable, he should be kept in splints for eight weeks, and then allowed to lie in bed without any apparatus on at all, while the limb is regularly massaged, and he should be encouraged to get up for a short time on crutches, gradually exercising the limb, until at the end of about ten weeks he is walking on it as before."—(Pye's *Surgical Handicraft*). Some surgeons advise immediate operation, and cut down on to the fractured bone and, after reduction, fix the fragments by two or three Lane's plates.

OBSTETRICS AND GYNECOLOGY.

1. CYSTITIS.—*Causes:* Retention of urine, tumors, foreign bodies, calculus, ammoniacal urine, various pathogenic bacteria producing (for example) gonorrhea, tuberculosis of genitourinary tract, pus in the urine. *Symptoms:* Frequent urination, with tenesmus and a burning sensation in the urethra; later on pain in the bladder, hematuria, and the urine contains pus and epithelial cells. Chills, fever, rapid pulse, and headache may also be present. A feeling of weight or pain in the pelvis is noticed. *Treatment:* Rest in bed; the imbibition of plenty of milk and water, and the avoidance of all highly seasoned food; laxatives; diuretics; sitz-bath; irrigation of the bladder with an antiseptic solution; hot fomentation and vaginal douches are often helpful; sometimes intravesical medication is necessary.

2. (*a*) *Operation for recent laceration of the perineum.*—"The parts are cleansed and a pledget of sterile cotton or gauze pushed up the vagina to stop any flow from the uterus obscuring the wound. The sutures (preferably of aseptic silk) are passed with a moderately curved needle about 2 inches long as follows: Beginning at the posterior end of the laceration (that nearer the anus), the needle enters the skin near the edge of the wound and follows a circular course until its point appears at the very bottom of the laceration (a finger of the other hand in the rectum guarding against its penetrating that canal); it then enters the opposite side of the laceration at the bottom of the wound and comes out of the skin opposite its point of entrance, having followed a similar circular course to that pursued on the other side where it first went in. The ends are *loosely* tied or secured by catch-forceps, until the requisite number of sutures are passed in a similar manner (half an inch apart), when the wound is again cleansed, the vaginal plug removed, and the sutures tied tightly enough to coapt the parts without injurious constriction, the order of succession in tying being that in which the sutures were passed.

In "complete" lacerations—those of the third degree—through the sphincter ani to the rectum, the operation is more difficult. The rectal tear is first stitched with *catgut* sutures (a short, curved needle being used) and going through the rectal wall only. The sutures are tied on the inside, so that the knots are on the mucus membrane of the bowel. They begin from above and come down to the sphincter ani, the cut ends of which are drawn out with a tenaculum while the sutures penetrate them. These *catgut* sutures need not be removed; they will digest in the tissues and disappear of themselves. The posterior wall of the vagina is next sutured with fine silk, from above downward toward the hymen. Finally, skin sutures through the perineum itself, including muscles of the pelvic floor (as just described for lacerations of the first and second degrees) complete the operation. The silk sutures may be removed in about a week. Antiseptic dressings are applied as after an ordinary labor, extra care being taken to keep the wound aseptically clean by daily irrigation with the creolin solution."—(King's *Obstetrics.*)

(*b*) *Operation for old laceration of the perineum.*—"Lateral tears are best repaired by the Emmett operation. With the patient in the lithotomy position, guide sutures or tenacula are passed through the apex of the rectocele and through each labium majus at the lowest carnunculæ myrtiformes. By drawing on the lateral suture and pulling the central suture downward and to the opposite side, the lateral sulcus appears as a triangle with the apex up in the vagina. This triangle is denuded of mucous membrane by cutting off long strips by means of forceps and scissors, or by dissecting the mucous membrane off in one piece. The triangle on the opposite side is treated in the same manner, and the denudation completed by removing the mucous membrane between the bases of the triangles and below the central suture. Each lateral triangle is closed by interrupted sutures of chromicized catgut or silkworm gut, the latter being shotted. The needle, which should be curved, is entered near the margin of the wound on the outer side, passed deeply to catch the fibers of the levator ani, and brought out at the bottom of the sulcus, at a point nearer the operator; it is then reinserted at the bottom of the sulcus, and passed upward and backward in the rectocele, to emerge opposite the point of the original insertion. The opposite triangle is treated in the same manner, which leaves a small raw area externally to be closed. The upper or "crown stitch" passes through the skin of the perineum below the lateral guide suture, then through the rectocele below the central guide suture, and finally through the tissues below the opposite guide stitch. As many sutures as may be necessary are inserted below this. If silkworm gut is used, the stitches should be removed on the tenth day. The external genitals are irrigated with weak bichloride of mercury solution after each urination; catheterization should, if possible, be avoided. The bowels are moved on the second day. Internal douches are not needed unless there be infaction. The patient should be kept in bed two weeks, and heavy work and sexual intercourse forbidden for three months."—(Stewart's *Surgery.*)

(*c*) The chief difference between the two operations, is that in the *recent* condition denudation is unnecessary (except for the possible trimming off of any ragged edges of the wound).

3. The conditions which may be mistaken for pregnancy are, uterine fibroid, ascites, ovarian cyst (or other tumor), fat, pseudocyesis, and subinvolution of the uterus.

Pregnancy.—Positive signs of pregnancy: Hearing the fetal heart sound; (2) active movement of the fetus; (3) ballottement; (4) outlining the fetus in whole or part by palpation; and (5) the umbilical or funic souffle. *Doubtful signs of pregnancy:* (1) Progressive enlargement of the uterus; (2) Hegar's sign; (3) Braxton Hick's sign; (4) uterine murmur; (5) cessation of menstruation; (6) changes in the breasts; (7) discoloration of the vagina and cervix; (8) pigmentation and striæ; (9) morning sickness.

Further, in pregnancy the tumor is hard and does not fluctuate, it is situated in the median line, the cervix is soft, the rate of growth of the tumor and the general condition of the patient's health may help in arriving at a diagnosis.

Uterine fibroid.—Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, but sometimes extending over years.

Ascites.—Absence of the signs of pregnancy; the abdomen is distended, but the shape varies with the position of the patient; on lying down there is bulging at the sides, the tumor fluctuates, and percussion shows dullness in the flanks, with resonance in the median line, but the dullness varies with the position of the patient.

Ovarian cyst.—Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

Fat.—Absence of signs of pregnancy, also of fibroid, or ascites.

Pseudocyesis.—The uterus is not enlarged, and the administration of a general anesthetic causes the collapse of the "tumor."

Subinvolution of uterus.—The uterus does not increase in size, there is a leucorrhea, there is generally pain in the back or ovarian region, there is a history of irregular (and profuse) menstruation, and the signs of pregnancy are absent.

4. *Accidental hemorrhage* is the hemorrhage which occurs when a normally situated placenta separates (partially or completely) from its uterine attachment. The prognosis depends upon the recognition of the condition. If there is an external flow of blood, and the condition is recognized and treated promptly, the prognosis is guardedly favorable; if there is no external flow of blood, but the hemorrhage is concealed, the prognosis is very grave, for the diagnosis may not be made sufficiently early to allow of adequate treatment. In this form, the maternal mortality is at least 50 per cent., and the fetal death rate is 90 per cent. *Treatment:* "The chief indication is to evacuate the uterus as speedily as possible, so that the uterine muscle will contract and close the bleeding sinuses. If the bleeding is slight no immediate intervention may be required except to rupture the membranes. The patient should be kept under close observation, and in bed. Chloride of calcium, gr. xx every three hours, is useful by promoting coagulability of the blood. A very tight abdominal binder and an icebag upon the lower abdomen may help. Generally in either variety of hemorrhage the cervix should be dilated manually. After full dilatation the delivery is rapidly completed by forceps or version, or in dead or nonviable fetus by embryotomy. Firm compression of the uterus is maintained manually by a skilled assistant during delivery. Precautions should be taken against postpartum hemorrhage. When the cervix resists manual dilatation and immediate delivery is urgently demanded, vaginal cesarean section may be performed. The effects of blood loss are combated as in other hemorrhages."—(Polak's *Manual of Obstetrics.*)

5. In the first four or five days the discharge is bloody in character, and is called the *lochia rubra*; it consists of placental tissue, decidua, blood, epithelial cells, mucus, and microorganisms. For the next two or three days the discharge is serosanguinolent, and is called the *lochia serosa*; then for two or three weeks or until the endometrium is regenerated, the discharge becomes creamy, and contains fat, cholesterin, epithelial cells and leucocytes; during this period it is called *lochia alba.* The discharge has a peculiar fleshy smell, something like fresh blood. Ordinarily the lochia continues for from two and a half to five weeks. *Suppression of lochia* may be due to infection or to obstruction of the outflow. *Prolonged continuance of the lochia* may be due to subinvolution of the uterus, posterior displacements of the uterus, and retained secundines; the condition is more common in multiparæ than in primiparæ.

Diazo and Urochromogen Reaction.—Zucker and Ruge regard the urochromogen reaction as more simple in typhoid than the diazo reaction. Dilute 10 c.c. filtered urine with water until it is colorless. Divide in two test glasses and add to one 5 drops of potassium permanganate solution 1 to 1,000, shake well and allow it to stand for a minute. Then compare with the other glass by daylight. The original glass should then give a canary yellow color.—*Münchener medizinische Wochenschrift.*

Simulation of Albuminuria by the Injection of White of Egg into the Bladder.—Hollande, Lepeytre and Gaté state that simulators have mixed white of egg with their urine and have even injected it into the bladder in order to obtain exemption from military service. It is no simple matter to detect this fraud if the albumin is added in small quantities. A solution of equal parts of formol and crystallizable acetic acid should throw down egg albumin in the presence of pathological albumin; and 24 hours after the injection egg albumin will have disappeared from the urine, while in the meantime it steadily diminishes. The microscopic examination should be negative. But tests that are trustworthy *in vitro* may fail in the urine. Maurel's reagent, like that above mentioned, precipitates egg albumin, but also aceto-soluble albumin and albumose, these redissolving when the tube is shaken. The fact that the authors have attempted to obtain specific precipitine reactions and anaphylactic reactions suggests that they are not entirely satisfied with inorganic tests.—*Lyon Médical.*

Therapeutic Hints.

Solvent for the Preservation of Eye Drops.—Harman recommends solvent in which to preserve eye drops:

Distilled water	1 pint
Methyl salicylate	2 grains
Oil of gaultheria	2 minims
Tincture of iodine	2 minims

The mixture is thoroughly shaken, poured into a bottle, and allowed to stand for twenty-four hours, when it may be used. Since aqueous solutions are somewhat wasteful, this may be thickened with gum arabic until it is so sticky that it will hang as a round drop from a lachrymal probe. Atropine, homatropine, and cocaine have the same therapeutic action in this gummy as in aqueous solution, and its use will effect a considerable reduction in cost when expensive eye medicines have to be employed.—*Birmingham Medical Review.*

Kerosene Treatment in Laryngeal Conditions.—T. M. Clayton advises the employment of kerosene in cases of laryngeal diphtheria—together with antitoxin—spasmodic croup, and so-called membranous croup in young children. The dosage is thirty minims every four hours for three doses, then ten-mimim doses three or four hours daily until normal breathing has been established. The unpleasant taste of the kerosene may be disguised by sarsaparilla.—*British Medical Journal.*

Relief for Itching.—The following prescription, while an old one, can be relied upon to give decided relief in cases of itching from various causes:

℞ Menthol	gr. vi
Methyl salicylate	gr. xxx
Oxide of zinc	ʒiij
Lanoline	ʒij
Vaseline	ʒiij

This ointment may be applied over the affected area. —*Bulletin général de thérapeutique.*

A Bladder Sedative.—This prescription is offered as a remedy in the majority of forms of bladder irritability, except where there is strong alkaline decomposition:

℞ Potass. citrat.	grs. x-xx
Sodii bromidi	grs. x-xx
Tr. belladonnæ	♏ v-xv
Tr. hyoscyami	♏ xx-xl
Infus. buchu (recentis)	ad ʒi

Misce. Ft. mist.

Sig.: Two tablespoonfuls in water every four or six hours.

For Cleanliness and Curative Properties in Otitis Media.—Coble, as well as others, uses carbolic acid, 40 to 60 minims, to one quart of water, with which he irrigates the affected ear. When the perforation is very large or the discharge has a foul odor, the accompanying prescription gives good results:

℞ Boracic acid	grs. xx
Ethyl alcohol	ʒj

The canal must be thoroughly cleansed with boric acid solution, dried, then a diluted solution of the above medicine dropped into the canal and allowed to remain until all smarting disappears. To accomplish this the patient should be made to lie down on the well ear, or if both ears are affected flat on the back. A solution of one to three is of sufficient strength with which to begin the treatment, and the strength can be gradually increased until the original prescription can be employed.—*Indianapolis Medical Journal.*

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INOPERABLE PERIPHERAL GANGRENE.*

BY W. GILMAN THOMPSON, M.D.,

NEW YORK.

FROM time to time one meets with cases of peripheral gangrene, resulting from various diseases, which, for certain reasons, do not admit of operative treatment, nor, in fact, do they invariably demand it. These reasons may be the advanced age of the patient, a state of extreme debility, a precarious cardio-vascular condition, the hopelessness of the causative disease, or perhaps the refusal of the patient to undergo operation. In such instances the physician must do the best he can to mitigate the evil, and one meets sometimes with surprising results through natural healing or spontaneous amputation.

The writers of a generation past paid much more attention to peripheral or symptomatic gangrene than do more recent authors, from which it may fairly be concluded that its ocurrence was, on the whole, more common in that period.

Present-day writers of medical text books usually omit the topic entirely, or, in enumerating the complications of some important disease, state merely that "gangrene may occur," leaving its site, extent, and gravity wholly to the imagination. One of the most widely read of modern text books refers only casually to gangrene in diabetes as sometimes involving the lung, without mention of its not infrequent peripheral occurrence. Gangrene of the lung, it should be recalled, is less often due to obstructive processes than the consequence of bacterial infection, and hence differs radically from the type of peripheral gangrene which is the subject of the present discussion. The peripheral gangrene of diabetes is usually due to an arteriosclerosis, and is, therefore, most often met with in cases of long duration in patients in middle or advanced life, in whom the symptoms of diabetes have previously been comparatively mild.

Gangrene of the superficial regions of the body appears frequently to have been observed in the severe, acute contagions, and infections, many of which to-day are well known to run a much milder course, as a rule. In such instances it more often involved large areas of the skin, and sometimes the vulva or scrotum, rather than an entire foot or leg, as may be the case with senile or diabetic gangrene. In those cases, doubtless, the condition of the blood and enfeebled heart action were as important factors in its production as embolic processes, endarteritis, or thrombosis. Numerous examples of gangrene of this type have been recorded as accompanying malignant scarlatina and variola, mumps, typhus, diphtheria, and even varicella (varicella escharotica). A number of cases of gangrene of the vulva in measles, and of the penis and scrotum in cholera, have been recorded, and Reynolds early attributed the gangrene sometimes observed in erysipelas, in part at least, to pressure from the effused serum upon the local vessels and tissues. Among the more unusual causes of gangrene, Osler has described a case of multiple gangrenous areas of the skin of the hands and feet in aestivo-autumnal fever. He also cites a similar condition of superficial gangrene observed in typhoid fever after the use of ice bags, and I have met with another case in which quite extensive gangrene of the skin resulted from a too long continued use of the abdominal ice-water coil. Gangrene of the leg has been known to follow typhoid fever, and in one case, that of a boy, the lesion necessitated amputation of the foot. Gangrene is also recorded in leucemia.

Exceptionally, gangrene may result from the constriction produced by scar tissue. MacCallum has reported an interesting case of this sort. The patient was an old man who acquired infected axillary glands. The scar tissue which resulted so constricted the axillary artery as to give rise to a dry gangrene of the hand.

In another group of cases the origin of the gangrene is to be looked for in trophic nerve lesions, as in those sometimes accompanying cerebrospinal meningitis, transverse myelitis, Raynaud's disease, and severe herpes zoster. Cases of distinctly embolic origin are met with chiefly in the lower limbs. I have lately observed a fatal case of gangrene of the leg, which extended up the thigh, in a young man having ulcerative endocarditis; and a number of similar cases have been reported. They would doubtless be more common were it not that the emboli usually reach the brain or some important abdominal viscus before the popliteal vessels.

Quite different are the diabetic cases, in which the development of the gangrene is liable to be quite slow, and often preceded by several days of pain. Most of these cases occur in patients over 50 years of age, but exceptionally the patient may be under twenty. Although the toes, feet, and legs afford the commonest site of the destructive process, it may appear in the buttocks, back, external genitalia, or fingers, where it sometimes follows trauma.

During the past five years, in the Cornell Division of Bellevue Hospital, there have been observed 38 cases of peripheral gangrene due to medical, in distinction from traumatic or visceral, causes. Of these, 19, or one-half, were ascribed to arteriosclerosis, many of which were definitely of syphilitic origin. Eleven more cases complicated diabetes, four accompanied chronic valvular disease of the heart, but only one was assigned to myocarditis. There were two cases with chronic nephritis, and one each with erysipelas, tuberculosis, and hemi-

*A paper read before the Practitioners' Society, Nov. 3, 1916.

plegia. Several of these cases presented features of individual interest. One of those due to chronic endocarditis was probably of embolic origin, for the usual sequence of the gangrenous areas was reversed. Gangrenous areas appeared first in the calves, then over the dorsal surface of both feet, and finally the plantar surfaces and toes became involved. Another case of this type exhibited an aortic stenosis, with a seven months' history of gangrene of the great toe, resulting in spontaneous amputation. A third case was possibly embolic, owing to its very sudden onset and rapid course, although the patient gave no evidence of valvular heart disease, but only of myocarditis. He was in fair health at the age of 74, when, while sitting smoking by his fireside, he suddenly lost all power of motion in both legs. Dry gangrene of both feet rapidly supervened, and spread up the legs to the knees, and the man died one month after the onset of symptoms.

The symptom of intermittent claudication sometimes precedes for several days, or even weeks, the advent of gangrene. It was observed in several cases of the Bellevue series.

One of the diabetic patients was a woman 75 years of age. She had attacks of intermittent claudication in both legs, which finally were followed by complete loss of power. Becoming bedridden, deep gangrene appeared in the buttocks and on other parts of the body not subject to pressure.

With two exceptions, all of the diabetic cases occurred in patients above 48 years of age, two being 75 years old. In one case only was the onset attributable to local injury. Several of the patients on entering the hospital gave a history of previous amputation for gangrene of a toe or foot, but the operation had exerted no control over the spread of the lesion, and was, in this type of case, of doubtful utility. In one case the lesion extended rapidly to the thigh, and in six cases to the leg. In two diabetic cases only was the gangrene "dry." One of these patients was a man 75 years of age, the other was 48, and the latter case was exceptional, for, in addition to a progressive gangrene which finaly required amputation at the upper third of the tibia, following serial amputations of the toes of both feet, the process involved several fingers on each hand. The man had an obliterating endarteritis in addition to diabetes.

Another case of gangrene from endarteritis obliterans was that of a painter only 35 years of age. He did not have diabetes, but a syphilitic osteomyelitis, which resulted in gangrene of the entire right foot. In these cases of obliterating endarteritis (or the thromboangeitis of Bürger) the lumen of the artery is choked by vascular granular tissue, the intima is plicated, but not so thickened as in senile arteriosclerosis, and the condition is of toxic or infectious origin.

My attention was first drawn to the medical treatment of peripheral gangrene early in my medical experience by the case of a man 35 years of age who entered the New York Hospital with an obliterating endarteritis of syphilitic origin. He presented on admission a commencing gangrene of the toes of the right foot which soon extended throughout the entire foot. The visiting surgeons declined to amputate, and the foot was treated by the old fashioned method of applying opium poultices and various soothing lotions to relieve pain, with the effect that the process rapidly extended until at the end of a fortnight it reached the knee, where a well marked line of demarkation appeared. Meanwhile the sloughing of all the soft parts produced so unbearable a stench that the process of dressing the leg made the patient's retention in the ward a serious problem, at least for the other patients. I then applied the method of constant dry heat which I have used ever since in like emergencies. A Bunsen burner was placed on the floor and a stream of air heated to about 150° F. was directed upon the leg through a small caliber stove pipe. Under this constant dry heat the limb was soon mummified, practically all odor disappeared, pain was greatly lessened, and spontaneous amputation took place at the knee joint, the leg being finally suspended by a couple of lateral ligaments which were snipped off with a pair of scissors. The skin healed over the stump and the patient was enabled to leave the hospital, hopping about with a crutch.

A more recent case was that of a colored woman who entered Bellevue Hospital with sloughing gangrene of both feet, which on one side reached half way up the leg, the condition being a complication of advanced diabetes. The case was a hopeless one and the odor was so unbearable that the woman had to be placed in isolation. Dry heat, similarly applied, soon controlled the odor and greatly relieved the patient's pain.

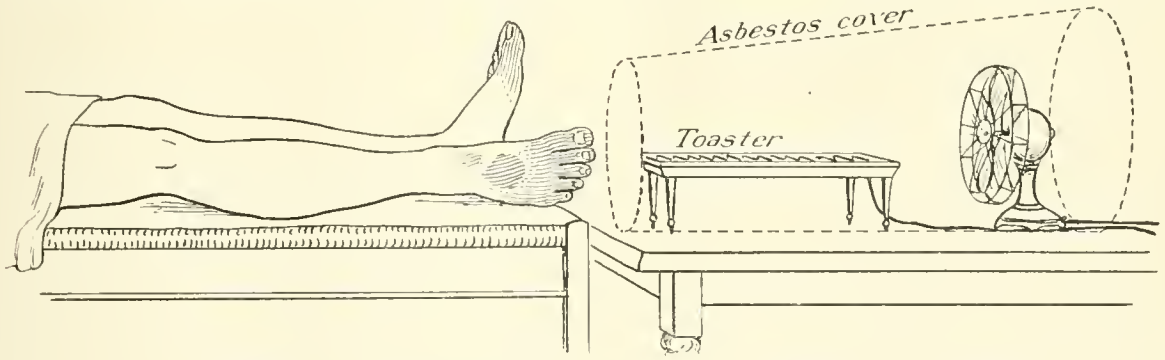
A third case was so unusual in several aspects that a more detailed reference to it is given. The patient was a woman, who previous to her death in her 88th year had an interesting cardiovascular history. With a small frame, poor thoracic expansion, and a uniformly rapid and small volume pulse, her physique suggested a condition of aortic atresia. Late in life, with a senile arteriosclerosis, a definite murmur of aortic stenosis appeared. She remained fairly active, however, until four years prior to her death, when she developed a very rapid and intermittent pulse, a low grade of fever of irregular type, extreme prostration and emaciation. Like many aged persons, she had completely neglected the care of the teeth and the mouth was in such a foul state that it seemed probable that her condition was due to septic infection from this source. A dentist was put in charge, and by almost daily treatments, combined with constant antiseptic care of the mouth on the part of her nurses, after more than two months of fever, the symptoms subsided, the pulse became regular under the use of stimulants and a fair measure of strength returned. Eighteen months later the patient had an attack of bronchopneumonia and for several days death seemed imminent. She, however, again recovered, when she was seized with intense pain in the right foot and leg. Fearing the development of gangrene, the nurses were cautioned to keep the limb warm and watch carefully for local cyanosis. Five days later purplish spots appeared over the ankle and dorsum of the foot, followed by blebs and excoriations, and by the end of the second month it was evident that the entire foot was doomed. The sloughs were treated with aristol, potassium permanganate, aluminum acetate, and a variety of other applications, but the odor became unbearable —so much so, in fact, that it permeated the entire house, and more than once caused the nurses to vomit after attempting to dress the foot. The patient's house being in the country, there was no gas with which to supply a draft of heated air, but there was abundant electric current. I obtained an electric toaster and an electric fan and enclosed them in an asbestos tube which led from the toaster to the foot. The fan furnished a constant current of air, which was superheated in passing over the toaster, and directed across the foot day and night. (See the illustration.) The relief of pain which ensued was remarkable and the patient's incessant moaning and restlessness ceased. By this means the superficial tissues were soon mummified, but every few days a deep slough would open up and the nauseous stench returned. I then resorted to 95 per cent. alcohol, and keeping the entire foot saturated with it, the odor was again controlled, as well as extension of the gangrene, for previous to these two methods of treatment edema, with purplish mottling of the skin, spread half way up the leg, so that it was feared at one time that the process would extend to the knee. Then followed a series of "amputations," first of the toes, then of the metatarsal bones and finally of the astragalus (which proved very refractory), all bones being removed with a pair of dressing scissors. The entire time from the onset of the gangrene until the complete removal of the foot was 14 months. Immediately thereafter a healing process began and, aided by liberal application of balsam of Peru, at the end of four months more the stump was as completely covered with normal skin

as if a primary operation had been performed, which the family had refused, and which the patient's cardiac condition and advanced age might otherwise have precluded. An interesting feature of the case was that owing to the patient's senile childishness and extraordinary care on the part of the nurses never to allow her to see her foot, she never discovered that she had lost it and could not understand why she was not permitted to get out of bed! After the stump was healed the patient gained considerably in strength, digestion improved, and her mental state was that of a happy, good natured child. In this condition she lived for seven months, and finally succumbed to a second attack of bronchopneumonia.

The case is of interest from the point of view of the slow development of the gangrene (through fourteen months), the complete recovery in a patient eighty-eight years of age, and the apparent control of the process by the methods employed.

When the gangrene threatens to involve an opposite limb, as it did in many of the cases above cited, every effort should be made to avert it. The heart force should be strengthened by digitalis, and if blood pressure be high, such as to cause the heart undue exertion, vaso dilators should be given. Massage should carefully and systematically be practiced, and the limb should be kept warm, and relieved as much as possible from the effect of gravitation, and particularly from pressure or trauma.

In cases of parietal thrombosis with only partial occlusion of the vessels, much may be accomplished apparently by these measures.



Home-made apparatus for treatment of gangrene by hot air. The air current, directed by the electric fan, is heated in passing over the electric toaster. A sheet of asbestos covers the apparatus.

Pain in gangrene involving only portions of the general surface of the body is usually absent or inconsiderable, amounting to nothing more than the inconvenience of a superficial ulcer. Quite otherwise is it with gangrene of the extremities, particularly of the feet. In such cases it may antedate any other evidence of the lesion by a week or ten days, and may be regarded as due to a neuritis until the changes in temperature and color of the surface or sensory disturbances appear. It may to some extent be relieved by applications of a hot lead-and-opium wash, a menthol-and-camphor liniment, or similar topical remedy. As the lesion progresses, however, the pain, in many cases, especially in senile gangrene, often becomes unbearable. It is constant and wearing, prevents sleep, and causes great restlessness, so that it must be relieved by morphine. After sloughing appears, however, the hot air treatment often gives remarkable relief. Following spontaneous amputation, and while healing of the stump is in progress, the symptom usually disappears.

I have learned to be chary of a too positive prognosis in certain cases of peripheral gangrene, particularly those occurring in connection with myocardial disease, and, in the aged, with arteriosclerosis. The difficulty is to determine how far back in the circulation the obstruction may exist. With partial popliteal obstruction, for example, the gangrene, beginning in the toes or dorsum of the foot, may extend very rapidly, or, if the obstruction be not too great, the gangrene may remain limited, and be impossible of differentiation from an obstruction localized much nearer the gangrene, with little tendency to cause extension of the process. Some years ago I saw a man of 70 years, in average general health, who presented a gangrene of the entire fifth toe and the contiguous surface of the fourth toe. The fifth toe became so superficially black and shriveled that I urged amputation. This he refused, and I was surprised to find at the end of a couple of months that the toes became entirely normal, and they so remained until the patient's death from pneumonia several years later. A middle-aged woman with myocarditis and attacks of fibrillation developed several large areas of superficial gangrene over the heel and dorsum of the foot. Sloughing ensued, and there was every reason to fear very extensive destruction of the foot, if not of the entire leg; but with local warmth and the energetic use of cardiac stimulants complete recovery from the lesion resulted, and there has been no return during more than two years past. Cases of peripheral gangrene from embolism derived from septic endocarditis are often extensive, and have a uniformly bad prognosis.

In several of the Bellevue diabetic series the development of gangrene preceded death from coma by only two or three weeks, but in one case, which involved the great toes and part of one foot, there was a history of 18 months' duration. Another patient, a man 57 years of age, gave a history of onset of gangrene of the foot, with temporary betterment which preceded by four years his death from coma.

Another exceptional case was that of a tailor 43 years of age who, ten years previously, had suffered amputation of the metatarsi of one foot for diabetic gangrene, after which he remained well and able to work for three years, when the opposite toes became involved, and he had several other minor amputations previous to admission to the hospital. Hence, in the diabetic, gangrene is not necessarily an immediate precursor of death.

In senile peripheral gangrene there is always danger of a pneumonia supervening, or possibly of a gangrenous focus developing in the lung, as in the case of a man 97 years of age who entered the hospital with a superficial gangrene extending over the anterior surface of the left leg and from the middle

of the foot to the knee. The toes were not involved, and the process did not have time to extend beyond the subcutaneous tissues before the patient died of pneumonia.

Much interest and importance attaches to the question whether to advise operation or not in the types of peripheral gangrene above described, and it is impossible to formulate definite rules. The matter, however, is often decided by the patient, who refuses amputation and prefers to take his chance with the spontaneous outcome of the lesion. It is customary, in this event, to resort to wet dressings with such solutions as those of aluminum acetate, weak alcohol (10 per cent.), potassium permanganate, iodoform, iodine, "red wash," etc., but in my experience much more satisfactory results are obtained by the dry treatment with superheated air, reinforced, when the odor becomes unbearable, by absolute alcohol rather than by the weaker solutions.

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THE MEDICAL CORPS OF THE ARMY AS A CAREER.

By LLEWELLYN P. WILLIAMSON, M.D.,

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Every medical student during his college years gives serious thought to his career after graduation. Most men hope to put in one or two years immediately following graduation as internes in a large hospital, for, in the present status of medicine, the practical training thus obtained is invaluable in the first few years of practice. To the average student, therefore, the college work and hospital training are taken as a matter of course and are simply preparation for what he is to do in the after years.

And what is he to do? Will he enter practice independently or will he associate himself with some established practitioner? Will he make his start in a large city or in a country town? Will he attempt to take up a specialty at once or will he start in general practice? Or, finally, will he go into one of the Government services?

Many circumstances will necessarily have an influence on the final answer to this question. Personal inclination, personal obligations, finances, available openings, or opportunities must be taken into account; and the advantages and disadvantages of the various careers open to a medical man must be weighed carefully and fitted to the conditions affecting the individual.

In all the affairs of life the question of finances must enter largely and the medical profession is no exception. To the graduate with ample means the matter of finance is not a vital question. After completing his hospital course he could, in normal times, pursue a course of postgraduate study in Europe and can do so very advantageously now in our own country. Later he can select a location best suited to his inclinations and await his time for practice to come to him.

The average graduate, however, must consider the financial side of the question. The cost of obtaining a medical education, and of establishing oneself in practice is great and while in many instances the eventual return on the original investment is large, in the majority of cases it is extremely moderate. The practice of medicine is an honorable profession and for the man who loves it an intensely interesting profession, but for the average man who makes it his life work it has never proved a very profitable profession.

In making plans for a start in practice the location naturally will receive much thought. The large city is, of course, first considered for it is there that the greatest prominence in the profession and the greatest monetary rewards are usually attained. These are, however, slow in coming and a period of from five to ten years of generous outlay and niggardly income is the usual experience of the young doctor locating in a large city.

For the man whose financial resources are small or who has expended a large part of them in getting his medical education, a large city is therefore practically prohibited unless he can form an alliance with an older practitioner who is in a position to start him in practice. Even such a position requires many years of hard work both in private practice and hospital work for which there is little remuneration except the valuable experience gained.

Usually the man of limited means is compelled to start his practice in the smaller cities or country towns. Here he begins to make a "living wage" more quickly, but the chance for anything more than a comfortable living is small. Professionally, too, the advantages occurring to him are never so great as in the large cities.

No matter in what locality the graduate starts he will be subject to keen competition both fair and unfair. In the year 1906 there were in the United States 122,167 registered physicians, a proportion of 1 to every 695 of the then population. In 1916 there are 146,613 physicians, a proportion to the present population of 1 to 691. Thus it can be seen that, while the time required and the cost to obtain a medical education has markedly increased, the proportion of doctors to the population has not diminished, and the average estimated income for all physicians in the United States is to-day $1,200 each per annum. In addition to the fair competition to be expected from this surplus of doctors, the fee splitter, the osteopath, the chiropractic, the optometrist, and the Christian Scienist are all developments of recent years and make marked inroads on the practice of the conscientious physician.

In addition to the worries of competition there are many demands on the physician's time and energies for charitable work, which frequently it is to his ultimate advantage not to refuse. And much time must also be devoted to making friendships both professional and otherwise from which, eventually, practice may be gained. Not until after the average physician has practised many years is he able to avail himself of vacations and the periods of study at medical centers which are so necessary now in the rapid growth of medical science.

Having considered the prospects for practice in civil life, what may the medical man expect if he decides on the army as a career? What are his prospects financially and professionally? And what will the army give him in the general scheme of life?

Financially, he can never get the great rewards which come to some successful physicians in civil life. On the contrary, however, from the time he is commissioned he is assured a comfortable living, his pay, and emoluments gradually increasing as the years go by. An attractive feature to the army service is that the pay of a medical officer and the allowances by which his pay is supplemented go on as long as he conscientiously performs his duties.

and there is no loss of income because of illness or an occasional vacation.

If, through illness, an officer is compelled to relinquish his work, he is put on the retired list and, while his income is decreased somewhat, it will still be sufficient to afford him a living. At the age of 64 all officers are placed on the retired list with three-fourths of the pay they were receiving at the time they reached retiring age. This pay will provide an ample competence as long as the officer lives. The question of "putting aside something for a rainy day" does not enter so intimately into the medical officer's calculations therefore as it does in the life of the civil practitioner.

What are his prospects professionally? In the old days the position of the army doctor was similar to that of the village physician. He was, in effect, a family doctor. In those days the army was stationed in frontier posts and each post was a village in itself with the ranch people and farmers outside forming an available clientele for additional income for the army doctor. He had to care for all the various illnesses occurring among the male and female inhabitants of the post and also was usually called to attend to similar ailments among the population of the surrounding country.

At the present time conditions in the army and consequently conditions in the army medical service are very different. The old frontier post is gone and now the army is beginning to be organized in divisions and brigades and stationed in large posts. The result is that the practice of medicine in the army has taken on the aspects of the practice of medicine in cities. At every post there is a large hospital perfectly equipped with all the medical, surgical, and laboratory appliances now necessary for the modern practice of medicine. Because of the number of troops stationed at each post and the families of the officers and men also living there, the source from which medical material comes is large and varied. At every post hospital cases of all kinds may be constantly found and medicine and surgery in all its branches finds ample scope in which to employ its talents. In addition to the post hospitals there are large general hospitals at Washington, San Francisco, Hot Springs, Ark., Fort Bayard, N. M., Manila, Hawaii, and Panama.

The service at these hospitals is organized just as is the service at large civil hospitals. Medical officers according to their special qualifications, are detailed as internists, surgeons, laboratory workers, neurologists, oculists, aurists, and for other special services. The material upon which they may demonstrate their ability is ample. As noted above the government equips these hospitals with all the latest devices in medicine and surgery, and a complete library embracing all the latest medical books and journals is maintained at each post. Every opportunity and every facility is given the medical officer for research work and development and especially is this so in laboratory work. There has recently been organized in the Medical Corps a Research Division, composed of men possessing special ability and training in laboratory work, who will be given every opportunity for original work.

The opportunities for professional work and the standard of that work existing among members of the medical corps to-day is shown by what that corps has accomplished in recent years. It is well known how yellow fever was made to disappear from Havana and how the building of the Panama Canal was made possible by General Gorgas, an army surgeon. It is not perhaps so well known that typhoid, long the scourge of armies, has been entirely banished from our army by the work of Major Russell of the medical corps. Before the taking over by the United States of Porto Rico in 1898 smallpox and hookworm were the scourges of that island. Both have been completely abolished by the work of army medical officers. A similar tale may be told of the Philippines where smallpox and beriberi, the curses of those islands, no longer exist. These are but a few instances of the work possible for army medical officers. As a body they have big work provided for them and they always do it well.

An especially important branch of the medical officers' work is hygiene, sanitation, and preventive medicine, and in this work it is believed that the medical officers of the American army excel those of all other armies. In a recent letter from an army officer abroad, the following statement was made: "I have seen the field sanitation of most of the armies in Europe and I also had the pleasure of visiting the maneuver division of the American Army at San Antonio, Tex., in 1911. From what I saw there and from what I see here I am of the opinion that the American army beats the world in field sanitation."

In order that medical officers may keep abreast of what is being done in civil life they are encouraged in every way to associate with the leading practitioners in the vicinity of their stations and are *ipso facto* members of the American Medical Association. In addition to this they are usually given honorary membership in local societies wherever they may be stationed.

To give selected medical officers opportunity to see the work of the leading civilian physicians and surgeons, they are frequently detailed as attending surgeons in the large cities where they will have all the clinical advantages offered by the large civil hospitals.

So much for the purely medical side of the army doctor's life. In addition to this he must be a medical *officer*. That is he must be specially trained in the application of modern medical and surgical science to the needs of the military establishment. To this end he must be well-versed in military customs and the administration of the various sanitary units which go to make up the organized medical service of the modern army. The reason for the maintenance of this organized service in all armies is the preservation of the available fighting strength by the prevention of disease; and the cure and prompt return to duty of as many wounded as possible. To attain this end the medical officer has different and even greater responsibilities than his civilian brother.

What is the social side of the medical officer's life? What comforts may he expect and what hardships may he have to undergo?

In the first place he is a commissioned officer with the rights, privileges, and responsibilities that all other officers assume. He is in command of the enlisted force of the medical department and his life, character, and deportment must be such as to inspire confidence, respect, and affection from the men under his command and from his brother officers. In time of peace he must remember that he may at any time be called upon to undergo the physical hardships of a campaign and for that reason he must at all times, by means of exercise and the proper rules of living, keep himself in good

physical condition. This fact is recognized in armies and ample opportunity is afforded for exercise of various kinds such as tennis, golf, walking, riding, etc.

While on duty at a post he is furnished a comfortable house commensurate with his rank and his needs, and an allowance is made for heat and light. The commissary store of the Quartermaster Department furnishes necessary food supplies for the enlisted men and these may be purchased by officers at government rates by which a considerable saving may be effected in "the high cost of living." When on duty in cities where no army quarters are available, he is given commutation for quarters in accordance to his rank and is permitted to rent where he pleases. The general social life of an army post is that which one finds in any community of educated, well-bred people. One may enter into it as much or as little as he pleases, as military life does not mean the restriction of personal liberty.

The above is a brief outline of what the medical officer may expect in time of peace.

What may he expect if war occurs? In war the medical officer's place may be with the troops on the firing line, in the mobile medical organizations directly behind the firing line, or in the base and general hospitals well to the rear. In accepting a position in the medical corps he obligates himself to go wherever his services are needed. This may mean that he will have to spend weeks or months in camp and days on the march; that he may have to stand in the trenches beside the machine gun or that he may have to stand at an operating table in an improvised hospital day and night until exhausted; that he may have to sleep under a tent and live on the simple fare of the soldier. In other words that he may have to face war in all its stern realities. If he is not prepared to do this he should not enter the medical corps.

The following in detail are the requirements and the rewards of the medical officer:

Applicants must be between the ages of 22 and 32 years, must be graduates of recognized medical colleges and have had at least one year's hospital training. After passing a preliminary physical and mental examination they are commissioned in the medical section of the Reserve Officers Corps and ordered to Washington for a term of instruction at the Army Medical School. The course at this school is an excellent one and embraces the professional, medical, and military duties of the medical officer with a special laboratory course covering the essentials of field sanitation and hygiene. While attending this course they receive the pay of a first lieutenant, $166.66 per month and an allowance for house rent, heat, and light amounting to approximately $45 per month more. This will provide all the living expenses ordinarily necessary for a sojourn in Washington.

Upon completion of the school course, candidates are given a final examination and, if successful, are commissioned in the Medical Corps with the rank of first lieutenant. After five years' service, upon passing another examination, they are promoted to the grade of captain. Further promotion to the grades of major, lieutenant-colonel, and colonel are made by seniority. With the great increase in the regular army during the next four years, as now provided by law, promotion above the grade of captain promises to be fairly rapid.

The pay for the respective grades is: Lieutenant, $2,000 per annum; captain, $2,400; major, $3,000; lieutenant-colonel, $3,500; colonel, $4,000. ($150 per year is allowed a captain or lieutenant if he owns one horse, and $200 if he owns two horses. Forage is furnished for the horses.)

This is the flat pay, and the lower grades are increased 10 per cent for each five years of service up to twenty years. Thus a captain promoted after five years' service would receive in place of $2,400, 10 per cent. increase or $2,640 (if he owned two horses his pay would be $2,840); and a major after fifteen years service would receive $3,900. The ultimate pay in the higher grades is: Major, $4,000; lieutenant-colonel, $4,500; colonel, $5,000.

In addition to the flat and longevity pay each officer is allowed a house or when at a station where no public quarters are available, "commutation for quarters." This commutation amounts to $36 per month for lieutenants; $48 for captains, $60 for majors, $72 for lieutenant-colonels, and $84 for colonels. Where heat and light are not furnished in kind, an additional money allowance is made to cover the cost of same.

When their services can be spared, all officers are allowed one month's leave every year on full pay. Or the leave may be allowed to accumulate and they may be granted four months' leave at one time. Under exceptional circumstances officers may be granted a longer leave on half pay.

Having considered all the facts relative to the medical officer's life in detail, we are now prepared to answer the questions the graduate asked himself when he contemplated taking the army medical service as a career.

What may he expect financially? He will receive a moderate amount of pay but this pay is a certainty and he will receive it regularly sick or well as long as he lives. It will be sufficient to enable him to live comfortably and is in reality much more than a similar amount would be in civil life for the reason that he has no house rent and no office rent to pay nor does he have to buy the instruments, dressings, surgical material, and apparatus, as well as the books and periodicals which make so great a drain on the resources of the civilian doctor. Nor does he have to lay by a certain amount "for a rainy day." His retired pay attends to that. Considering all these facts the pay of the medical officer compares favorably with the average income from private practice.

What may he expect professionally? If he so elects he will nearly always have plenty of time and material for practising and advancing himself in his chosen profession; and time and opportunity for original study in any line he may choose.

What may he expect in his social life? He will always be able to live comfortably and will be associated with educated people both in his own profession and among the officers of the line and their families generally. He will be saved the annoyance and petty worries incident to competition and the seeking of practice in civil life. And he will have time to travel if he so desires without feeling that he is neglecting his practice.

Such then is the usual life of the army medical officers. As a whole the army is proud of them and the profession at large has given frequent instances of the regard and esteem in which they are held by their civilian brothers. Taking it all in all, it is believed that the Medical Corps of the Army offers a most attractive career to the earnest young doctor who is interested in his profession and does not yearn for large financial returns.

RETROSPECTIONS, MEDICAL AND OTHERWISE.

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In glancing over the earlier issues of the MEDICAL RECORD I find that it was in the year 1866, just half a century ago, that I wrote my first article in relation to "Electricity in Medicine," and in the flood of following years, nearly two generations have come and gone. As I find myself, after all these years, very much out of the race of active workers, yet sound in mind and body, with abundant leisure for the things I find most agreeable to do, it occurs to me that a few observations, personal and otherwise, and especially along the lines of my life work, might be fittingly given.

Since those days of crude appliances and crude and limited workmanship, electrotherapeutics has developed into a magnificent field of actualities, and still wider possibilities. Why the profession at large yet fails adequately to appreciate its value I will not attempt to say. One drawback, however, as I think all must agree, is that there has been by far too much special pleading, with all the hurtful influence on the professional mind that such enthusiasm implies.

Truly, it is the day of young men. The old clergyman is not very much wanted, neither is the old doctor, and so it comforts me to recall the reply of the ancient warrior to the boasting young brave that "the seventies have all the twenties and forties in them." The years during and immediately following the civil war did not hold much of scientific or original advancement in affairs medical. The surgery in the field was hasty and crude and preventive medicine practically unknown. It was before the birth of antisepsis and for lack of it men then died like sheep. There were not wanting, however, some keenly observant students, and among others, Weir Mitchel did useful and original work in the study of gunshot wounds.

The conflict over, a million young men were seeking a career, and many chose the profession of medicine. Two lecture seasons with no preliminary examination was the prescribed course, and in eighteen months young soldiers found themselves transformed into young medicos. My own medical training was little better, since I had graduated during the war and my experience as a surgeon through two severe campaigns, while extensive and varied enough, was of but little practical value. I recall with pleasure, however, that the most immediately useful asset in the field that my brief course at Bellevue gave me, was the private instruction in bandaging by the now venerable Dr. Stephen Smith, whose long life has been a pattern of efficient work. And very much I stood in need of further instruction, as the following incident illustrates:

On returning to civil life I put out my sign in Harlem, then a growing village, and while awaiting patients attended a third course of lectures at the College of Physicians and Surgeons, then located at Twenty-third Street and Fourth Avenue. I had never witnessed a case of parturition. When, therefore, my friend, the late Dr. E. Darwin Hudson, himself, later an expert, asked me if I would assist in taking charge of a case in one of the poorer purlieus of the city, I readily consented. Hudson was in the graduating class and to its members the professor, the late Dr. T. G. Thomas, occasionally assigned cases of this kind. Hudson, too, had never seen a case and in some trepidation he turned to me for aid. I was a graduate of some years; I had been an army surgeon. Surely here was a young man with large experience and one upon whom to lean in an emergency. It did not occur to him, and I did not refer to the fact that with an army in the field there was scant need for the services of an obstetrician. We found the suffering woman on the top floor of an old tenement, and entirely unattended. The only furniture of the room was a rickety bed, one end of which broke down during the accouchement, a wash bowl half filled with dirty water, and an old chair. I made the usual preliminary examination which afforded me no information, but I looked wise, and so far as I could see or feel pronounced everything ship shape. The hours passed drearily and wearily away and seeing no signs of an immediate ending, we withdrew for awhile to the old Earle's Hotel in Grand Street for rest and refreshment. Returning in the course of an hour and making another examination, I became puzzled and ill at ease. Feeling the great responsibility, Hudson went off in all haste to the residence of Dr. Thomas to report and for instructions. In due time he came back with word from the professor that everything was probably all right and suggested "patient waiting." In the early hours of the morning, a new soul was ushered into this waiting world. We washed and with the few rags found dressed the babe and went our way. What of the life and career of that boy? If still living he would be fifty years of age. Born in abject poverty, even in filth and disgrace, like another Oliver Twist, what chance had he? A victim of inexorable fate if he lived, let us hope that kind nature soon took him to herself.

During my brief but not altogether uninteresting experience as a general practitioner, I was called one day to see a woman evidently suffering from an inflammation of the brain or its meninges. All her life she had been a deeply religious woman and of exemplary character, and yet in her ravings she indulged in language both profane and obscene, rarely equaled by the most depraved natures. To me it is still a mystery how such a perversion found lodgment and outward expression in one whose nature was gentle and whose training and associations had been unexceptionable. During the evening a friend came in to see her. His name was William Miller, Dr. Miller by courtesy. I had already heard of him as a so-called electrician and knew that he received considerable patronage from some of the best men in the profession, among others Dr. Willard Parker. I found him a simple hearted old man of about 65 or 70, who had a great opinion of the value of electricity in the treatment of disease, and in the case at hand, with modesty and hesitation he expressed the opinion that a good strong application of electricity might do good. I was amused by many of his absurdities of statement, but was impressed by his evident honesty and by his large, yet crude and ill-digested experience, and naturally desired to know more of his methods in a field at that date so little cultivated by the profession. Fifty years ago it was a gala time for quacks of every description. Quacks for the ear, eye, and nose, as well as electrical quacks abounded, but this old man was good and honest and, as much as any one I ever knew, gave a quid pro quo for the little fee he received.

I accepted his invitation to come to his office at 914 Broadway to study his cases and see him work. I saw evidences of the good results that followed his stereoptyped and simple method of application, for his sole apparatus consisted of an ordinary induction coil constructed by himself, which, however, yielded a current of remarkable quality. He was intelligent, but unlearned. He knew nothing of electrophysiology and kindred departments, little of disease, pathology, or practical therapeutics. So far as conerns scientific electrotherapeutics, he existed as an example of profound ignorance, associated with perfect honesty of intention. He never enunciated an idea, neither had he any conception of the principles on which he worked or through which he wrought cures. He was, however, so thoroughly the master of the methods he invariably used that the truth of the saying that it is not so much the method that does good as the way it is employed, never seemed so clear as when comparing his effective manipulations with awkward slipshod methods. In many of his cases, unquestionably, the excellent results that followed were greatly aided by his powerful and skilful manipulating processes, which for all practical purposes was an expert and thorough massage.

About this time I renewed a former acquaintance with Dr. George M. Beard and he was greatly interested in my account of this old man with his novel methods and quaint ways, and together we both visited him again and again. Here, indeed, was something new and worth investigating.

During all my medical training I do not recall that electricity was ever mentioned in connection with therapeutics or even surgery. All other physical agents, water, air, exercise, heat, and cold received due attention, but Nature's most subtle, all pervasive, and most powerful principle remained absolutely neglected in this country excepting by dishonest empirics and a few eminently worthy but ignorant irregulars, like our good friend "Dr. Miller." Abroad, as we learned later, a number of able men of science had given the subject careful study, but as yet their investigations had made little impression here. It seems that already Beard with his usual curiosity in regard to every strange and misunderstood or ill understood thing, had in the past been somewhat interested in the subject.

While still a student at Yale, he had in his own person, experienced some benefit from the use of the crude induction coil. He was therefore quite ready to cooperate with me in my proposed investigations. After two years of working and waiting, I was beginning to get a foothold in Harlem and it required some little resolution to burn my bridges, as it were, and enter a new untried and unpopular field. Even that great and liberal minded man, Austin Flint, advised me not to meddle with it, but to leave it in the hands of the quacks where it belonged, while my equally good friend, Dr. Willard Parker, gave me similar advice. And then again, as young men will do, I had just become engaged and needed more than ever to get firmly established. To be sure, the income for the year had been somewhat under $1,000, yet it seemed to me fairly satisfactory and a precursor of future gains. And still again, it was somewhat unconventional and perhaps a little risky to become in any way associated with one who, however honest, was in the eyes of the profession little better than a quack.

After due reflection and consultation with Beard I removed my sign in Harlem as a general practitioner and rented a room in the same building with the office of Miller. In this way I had the advantage of studying his cases and at the same time getting some of the overflow. The profits were not very large, for Miller received the munificent fee of one dollar, and I could not well charge more. When it is remembered, however, that his daily patients numbered between twenty and thirty, it is seen that he enjoyed a comfortable yearly income. An amusing incident occurred in connection with this subject of fees. In the beginning of his irregular practice he charged but fifty cents a visit. Miller was a school teacher originally, and being of a mechanical turn of mind, became interested in the subject of induction coils. He began to treat people of his acquaintance for some of their ailments. By degrees his practice grew, so that he made a business of it, and finally acquired a wide clientèle. I suggested that he raise his fee to two dollars and pointed out the fact that one of his old patients about to come to him again just then was well to do, and a good one to begin on. With some hesitancy the old gentleman consented. She, upon whom the experiment was to be tried, came at the appointed time, received her treatment and handed the doctor the usual fee. With some embarrassment he said that he had raised his fee to two dollars. The richly attired patient surveyed him curiously for a moment and thrusting the bill into his hand said, "Go 'long, take your money." The doctor took it and that was the last attempt to raise his fee. Most of my practice, however, was unremunerative, excepting as it added little by little to the sum of my, or I should say our, experience.

Beard, to be sure, did not have his sign up, but he was as deeply interested as was I, and might be called a silent partner. He was at this time connected with the Demilt Dispensary, and it was his function to send as many of the charity patients as possible to 914 Broadway for electrical treatment, and experimentation. And to this day it excites a smile as I again see Dr. Beard with his grave face yet keen sense of humor, ushering into the little office half a dozen more or less of the unwashed. In one way we earned all the experience that came to us, since it was no pleasant job to go over the bodies of these unfortunates, especially in very warm weather. It was a crude experience, but we saw all manner of cases and of course kept a detailed account of each.

Dr. Miller was getting old and seriously thought of abandoning his work, and suggested that we give him notes for a certain sum, for the good will of the business. I suggested that he stay away from the office some day, and let me manage the patients that came. Alas for human expectations! On reaching the office that morning, I found half a dozen patients in waiting. The situation was explained, but without exception, one by one, they all departed leaving me alone, and of the more than twenty callers that day, not more than one or perhaps two cared or dared to trust themselves in my hands. That settled in my mind the question of the feasibility of buying a practice.

By this time, our experience had become such that we decided to give it to the world and selected the MEDICAL RECORD through which we hoped our views might be disseminated. The result was a series of five articles, running through a period of two or three months, under the title of "The Medical Use of Electricity." We had great hopes, for

we felt very sure that nothing quite like these papers had ever before appeared, but the results exceeded our expectations. The London *Lancet* republished each article as it appeared, and in Germany also they were reproduced. When finally William Wood & Co. issued the combined articles in book form, its reception was in the main highly complimentary. There were, however, a few discordant notes. Among these, the *Edinburgh Medical Review* was both humorous and unappreciative.

In making applications of the faradic current to sensitive parts, we explained the method of applying it through one's own person. No artificial electrode could equal the hand in flexibility and power of adaptation to inequalities of surface and in treating delicate women and children and in applications to the head, forehead, eyes, face, and sensitive motor points, the use of the hand was invaluable. In making use of this method we had observed that the muscles of our own arms had perceptibly increased in size and strength. In commenting on this statement, the *Review* went on to say, "Notwithstanding this alarming condition of affairs (the enlargement of the biceps) in consideration of the fact that the Atlantic ocean rolls between them and us we shall not hesitate to express our opinion."

About this time we wrote another joint article and sent it to Albany for the coming session of the State Medical Society. On the committee was Dr. S. of Brooklyn. Reading the title of the paper he quickly exclaimed, "What, are these men regular?" and if it had not been for minds more hospitable, it probably would have been rejected. Soon after, we conceived the idea of presenting the subject in Brooklyn. I mentioned the matter to that great and liberal minded man, Prof. Austin Flint, Sr., professor of the practice of medicine at Bellevue. "Certainly," he said, "I think you should do so; it is a subject of which the profession knows little or nothing, and I will give you a letter to my friend, Dr. S." Armed with this letter in which I was called "his young friend," I found Dr. S. in his office and handed it to him. He received me coldly and, having read it, gave it back, with the remark that he had little to do with that sort of thing, and said I had better call on Dr. R., as it was more in his line. To Dr. R. I went, and was well received. He expressed great willingness to give me an opportunity and said he would present the matter to the society and would communicate further with me. When he did broach the subject it was immediately met by opposition and the chief opponent was Dr. S. His objections were that the question of electricity in medicine was one in which they could have no interest, since it was little less than quackery; that the young man's chief aim was to drum up practice, and finally they needed no information from him.

Years after I did read a paper before this society by invitation. By this time the esteemed and in many ways excellent Dr. S. had long been in heaven and so missed the opportunity of hearing it. Patients now began to come to us in greater number, referred mainly by members of the profession who had read our contributions, had faith in our integrity, and saw the reasonableness of our contention.

About this time Dr. Beard received an independent commission from Scribner the publisher, to rewrite a great volume on Domestic Medicine entitled the "Home Physician." He entered upon the task with his customary enthusiasm and dogged industry and in an incredibly short space of time it was completed. Some would have placed at least a part of the fairly generous sum received in the bank for a rainy day, but this was against the principles of Beard, from which he never deviated to the day of his death. For him money was a thing not to be hoarded, but to be spent, and he therefore immediately announced his intention to go abroad. For certain very good reasons I objected but he persisted, saying, with much truth, that in visiting men of science abroad and especially those interested in the work in which we were engaged, he would garner much material that would be of service in the writing of the more comprehensive treatise that we were contemplating and later on accomplished. He was gone three months. When he bade me good-bye, I was treating a patient. When he returned and unexpectedly entered the office, that identical patient was seated on the stool, undergoing treatment. With uplifted hands and feigned astonishment, Beard exclaimed, "For the Lord's sake, have you been treating that man all this time?"

Beard brought back some valuable information, but of the $800 he took with him he had but fifty cents left, and none coming to him. The complications that ensued and how he managed to surmount them is another story.

Dr. Beard was a truly unique and attractive personality, but his name is now little more than a memory, and to allow my pen to linger for a while upon his gifts and graces would be an agreeable task. He coined the term Neurasthenia, and his classic monograph on the congeries of symptoms to which he gave a local habitation and a name was the basis of all subsequent literature on that subject. To his keen and discriminating examination, hypnotism yielded some of its mysteries, and he exposed the fallacies and unreliability of the average human testimony as few have done. His contributions to the subject of seasickness were original and of positive value, and he who reads his forgotten treatise on "American Nervousness" will find in it much truth stamped with his own individuality. His monographs on the "Legal Responsibility of Old Age" and the "Relation of Old Age to Work" still interest me, as do others of his many contributions outside the realm of actual medicine. He died at the age of 42, and as was said of the poet Burns, so almost may it be said of him. "The plan of a mighty edifice had been sketched, some columns, porticos, firm masses of building stand completed; the rest more or less clearly indicated with many a far-stretching tendency, which only studious and friendly eyes can now trace towards the purposed termination. For the work is broken off in the middle, almost in the beginning, and rises among us, beautiful and sad, at once unfinished and a ruin."

It may be all a fancy, but the great physicians of those days seem to loom up larger than those of this generation. There were the consultants, Alonzo Clark and Austin Flint, brainy and big physically, and who in relation to their fellows seemed in a way to stand apart. Among the surgeons were Parker, Sands, Van Buren, and Wood, and the gynecologists, Sims, Emmet, and Thomas, constituted a trio of surpassing excellence and originality.

The distinctive impression made by these men and a few others in this city and throughout the country may be accounted for in part by paucity of numbers. In the field of literature it is the same,

and the rule applies also to our estimate of great commanders in all wars previous to the unspeakable one now waging. So wonderfully has medical and surgical proficiency progressed that now the "woods are full" of men whose knowledge and skill are equal to every emergency.

But let us not forget the original minds that, preceding us, made possible the triumphs of the present. How in gynecology, as a single example, did the discoveries of a Sims revolutionize it! His statue stands in Bryant Park, unnoticed by the hurrying crowd, but the women of the world have cause to bless his name forever.

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EXTRAUTERINE PREGNANCY.

By E. MAC D. STANTON, M.D., F.A.C.S.,

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Compared with most of the other intraabdominal diseases treated by the surgeon, the problems presented by extrauterine pregnancy are relatively simple. For this reason we find that the first surgeon to deal with this disease—Lawson Taite—was able to master its essentials and place its surgical treatment on a foundation which has not been essentially altered since his time.

Because the problems of diagnosis and treatment are relatively simple, this disease should be to-day probably the best diagnosed and best treated of the intraabdominal surgical conditions. That this is not always the case, however, is indicated by the fact that my records show that just one-half of the patients referred to me with extrauterine pregnancy had been previously treated for from a week to several months under a mistaken diagnosis, and seventeen per cent. of them had been previously curetted for supposed abortions. In all but one of the orginally incorrectly diagnosed cases the essential points were present in the history which should have led to at least a presumptive diagnosis when the patient first consulted her physician. In the one exception an attempted criminal abortion so beclouded the history as to make a diagnosis before the tragic stage quite unlikely.

That the disease is not so rare as to give the general practitioner an excuse for failing to bear it in mind is shown by the fact that nearly two per cent. of my laparotomies have been performed for this condition. With such a record as to diagnosis in a community like Schenectady, filled by a group of practitioners whose diagnostic skill I know to be fully equal to, if not above, the average, I am led to believe that certain of the main points concerning the diagnosis and treatment of this disease will once more bear reiterating.

Etiology.—Up to the present time no really satisfactory hypothesis has been advanced to account for the fixation and development of the ovum in the extrauterine position. It seems futile to offer theories for these abnormal cases when we know almost nothing of the forces which carry the fertilized ovum to the uterus and fix it in its normal habitat.

Most writers have emphasized the fact that a large percentage of ectopic cases give a history of a preceding period of sterility often accompanied by symptoms referable to a pelvic inflammatory disease. This same fact was noted in a considerable proportion of my own cases, but it is by no means an absolute rule, and its importance should not be overestimated. Williams[1] states that in seventy-nine cases studied by him the average period elapsing between an intrauterine pregnancy and the subsequent extrauterine pregnancy was three years and nine months, or but little more than the average to be expected between normal pregnancies.

Diagnosis.—In considering the diagnosis of extrauterine pregnancy it is well to follow the plan of grouping the symptoms into those of the "tragic" and "non-tragic" stages.

The classical case of extrauterine pregnancy in the "tragic" stage of the disease should be diagnosed almost at sight—a woman, an abdominal pain, and sudden pallor or collapse, are the three factors necessary for an almost positive diagnosis. The other data, such as suspected pregnancy, irregular flowing, the absence of a history pointing to a perforative ulcer, etc., may be obtained while preparing to carry out the steps necessary to bring the patient to the operating room in the best possible condition. A bimanual examination is not necessary, and, as a rule, one should not be made until the patient has reached the operating room.

It must be borne in mind, however, that the tragic stage is seldom the one first encountered even by the consulting surgeon, and the general practitioner really sees very few cases for the first time in this stage of the disease. Harris[2] has reported a series of one hundred and thirty cases in which more than ninety per cent. of the patients first presented themselves for examination before the tragic stage. My experience is in accord with that of Harris, in that all but two of my patients consulted a physician for trouble due to the extrauterine pregnancy at a period previous to the onset of the tragic symptoms.

The Non-tragic Stage.—In the non-tragic stage the diagnosis is not forced upon one as it is in the tragic cases, and yet in nearly every instance the data necessary for an almost positive diagnosis may be elicited from the history alone. Additional data may often be obtained from the physical examination, but if the objective findings are not of a very positive character, either for or against the diagnosis, they are liable to prove misleading, and should be rated as of secondary importance to the data obtained from the history.

The two symptoms of paramount importance in the early diagnosis of ectopic pregnancy are pain and irregularity of menstruation. Harris says: "When any woman, after puberty and before the menopause, who has menstruated regularly and painlessly, goes 4, 5, 6, 8, 10, 15, or 18 days over the time at which menstruation is due, sees blood from the vagina differing in quality, color, quantity or continuance from her usual menstrual flow, and has pains, generally severe, on one side of the pelvis or the other, or possibly in the hypogastric region, ectopic gestation may be presumed."

In my series, without exception, it was pain which first caused the patient to seek medical advice. In each case, either the first or some of the following pains were typical or highly suggestive as to character if not as to location. Usually, but not always, they were quite severe. There may have been dull pains and laborlike pains, and pains such as the patient has during her menstrual periods, but some time in each of my cases at least one or several pains were experienced which were sharp and quick in character, and quite unlike those ordinarily encountered in other pelvic conditions. "Sudden," "stabbing," "knifelike" are terms often used by the patients in describing these pains.

As a rule, the pain is located in the pelvis, but,

curiously enough, it may be referred by the patient to the back, rectum, epigastrium, or kidney region, so that it may require close questioning to locate the trouble in the pelvis. As a rule, nausea rarely accompanies pain of pelvic origin, but in my histories I find frequent mention of nausea, or even vomiting, in relation to the sudden pains of extrauterine pregnancy. Fainting is usually a symptom of the tragic stage, yet more or less faintness is frequently mentioned in my histories, even without marked evidence of internal hemorrhage.

Irregular Flowing.—The expression, "a typical menstruation of ectopic gestation," although a misnomer, is a useful one in so far as it directs attention to the appearance of blood, in time or character of flow out of rhythm with the normal menstrual cycle of the individual. In two of my histories the record as to menstruation is incomplete. In each of the other cases there is a definite record of irregularity. In some a period had been missed but bleeding varying from a slight show to rather severe hemorrhage came on just before or soon after the onset of pains. In several cases both the pains and show began soon after an apparently normal period.

It has been shown that the continued uterine hemorrhage so frequently encountered in these cases usually commences with the death of the fetus and continues while placental tissue remains in contact with the tube, the physiological factors responsible for its continuance being essentially the same as in an ordinary incomplete abortion. Even in those rare cases when the life of the fetus continues, more or less uterine bleeding at irregular intervals is the rule.

The really important point to be always borne in mind is that pelvic pain plus an unusual uterine bleeding spells ectopic pregnancy, in a very considerable proportion of cases. Whenever this combination of symptoms is present it becomes the imperative duty of the practitioner to rule out the possibility of extrauterine pregnancy before proceeding to entertain any other possible diagnosis.

Additional diagnostic data may be obtained from many sources. In the pretragic stage there is seldom any elevation of temperature commensurate with the amount of acute trouble evidently present in the pelvis. On the other hand, I have myself several times erred or come near erring because I did find a temperature of from 100° to 101° or even higher, and we should always remember that intraperitoneal hemorrhage is usually followed by a fever of the surgical type.

Treatment.—In no other field of abdominal surgery were the advantages of operative treatment so promptly recognized. The excision of the appendage bearing the gestation sac is usually a very simple procedure, and except for the acute anemia and shock encountered in the tragic stage these patients are usually excellent operative risks. A good deal has been written about the advisability of delaying operation in cases of profound collapse. I am a firm believer in delay if the patient is in such collapse as to be obviously unable to stand any operation, but I do believe the fact should be very strongly emphasized that extrauterine pregnancy patients in the "tragic" stage of the disease stand anesthesia and operation better than any other cases presenting like blood pressure and pulse findings. The man reduced to an apparently similar state of collapse or shock by a traumatism such as a crushed leg is in no way comparable as an operative risk to the woman suffering from a ruptured ectopic, and the same may be said of the shock and collapse accompanying perforations and intra-abdominal infections.

Nine of my patients were operated upon during the acute tragic stage in the presence of acute anemia and a rapid pulse. One I kept in a partial Trendelenburg position for about two hours before operation because she was quite pulseless when admitted to the hospital. Every one of my tragic cases actually improved from the time they began to take the ether until they left the operating table. The operations were complete in from seven to ten minutes. No time was spent in removing clots other than those which presented in the wound and pelvis during the manipulations necessary to excise the gestation sac. All of these tragic stage patients made uneventful recoveries. I know of no other pathological condition capable of producing the degree of "shock" present in these nine patients, for which I could operate in the presence of the shock without expecting a mortality of from 30 to 60 per cent.

When operating in the non-tragic stage, procedures other than the simple excision of the affected appendage may be safely undertaken. First as regards the removal of blood and clots, I believe that the peritoneal cavity should be left reasonably clean, but this does not mean that the intestines should be much handled and endothelial surfaces injured by sponging in over-careful attempts to rid the peritoneal cavity of blood. If the loops of intestines are not displaced and are left to normal relationship one to another the remaining blood will do no harm other than to cause a few gas pains during the first days after operation.

There has been considerable discussion concerning the danger of a second ectopic in the opposite side if both tubes are not excised. Statistics on this question vary so much as to make them of little value from a percentage viewpoint. They do show, however, that if the opposite tube is not removed the woman who has had one ectopic pregnancy stands a fairly good chance of having subsequent normal pregnancies and a rather remote chance of a second ectopic pregnancy. In my own work I have not felt it justifiable to remove the opposite tube because of the danger of a second ectopic, yet for one reason or another (usually because of obvious disease of the other tube) I have excised both tubes in eleven out of twenty-three operative cases.

Hysterectomy.—Recently, at least one surgeon of prominence has advocated removing the uterus in these cases. Such a procedure may yield interesting pathological data but otherwise the arguments in favor of hysterectomy are in kind like advocating excision of the toes for fear they might some day be frozen.

Drainage.—Unless there is oozing from granulating surfaces at the placental site it is seldom advisable to drain these cases even though considerable blood be left behind. In my series drainage was used only twice, each time because I feared oozing from a raw granulating surface.

Late Cases with Living Fetuses.—The above remarks concerning the simplicity of the operation have concerned the ordinary case interrupted in the vast majority of instances before the third month of the pregnancy. Occasionally an extrauterine pregnancy may proceed with a living fetus to a much later stage of pregnancy, or even to term.

In these cases, if the fetus be still alive, the problem of dealing with the broadly attached placenta without encountering terrific hemorrhage is very difficult. Unless one can be certain of being able to control the blood supply to the placenta in these cases it is best to remove the fetus and leave the placenta until it has had time to become separated from the maternal circulation. The older surgeons encountered a fair number of these cases but better diagnosis and prompt operations have made them so rare to-day as to have little influence on the subject as a whole.

Transfusion.—In patients suffering from the effects of acute hemorrhage, blood transfusion, using a properly selected donor, gives practically perfect results. Many cases of ruptured ectopic pregnancy offer ideal indications for transfusion. However, because of the possible dangers of anaphylaxis and the fact that insufficient time is usually available for the various laboratory tests of compatability, transfusion should be resorted to only when it is evidently so necessary as to make the risks incidental to the transfusion itself of but minor relative importance.

In my own work I have never had to transfuse an ectopic patient but in a number of cases of hemorrhage from other causes we have during the past year used the indirect 0.2 per cent. citrate method of Lewisohn.[3]

The technique of this method is so simple that it can be carried out by anyone capable of giving an intravenous transfusion of physiological salt solution and in our experience it has given perfect results. If the citrate solution and other apparatus necessary for giving one of these transfusions is not kept constantly on hand in the hospital, immediate arrangements should be made to prepare an outfit and provide a donor to be used if necessary at the time when the ambulance is called for an ectopic patient encountered in the tragic stage of the disease.

Prognosis.—There are no reliable statistics purporting to show the mortality in ectopic pregnancy cases before the days of surgical intervention. In those days the diagnosed cases mostly ended fatally or were first diagnosed at autopsy. The fact, however, that the disease was then looked upon chiefly as a rare pathological curiosity occasionally encountered by those doing coroner's autopsies would lead one to believe that a large proportion of those cases now operated upon as ectopics eventually recovered. Our present knowledge concerning the frequency of termination by tubal abortion would also tend to support this view.

To-day the advisability of operation is universally recognized and with average surgical skill the prognosis depends almost entirely upon the condition of the patient when she reaches the operating room. Surgeons are agreed that except in the worst of the tragic cases the mortality after operation is almost nil, and the after results are most satisfactory. In my twenty-three operated cases there was no mortality and there were no postoperative complications worthy of note. The one case dying under my care is reported as follows:

Female, age 30, referred by Dr. Murray. This patient had been ill three weeks with what I diagnosed as pelvic peritonitis. The temperature had ranged from 99° to 101°, and the predominating symptoms when I saw her were those of peritoneal irritation involving the small intestines. She was sent to the hospital with the intention of operating the following day, but by morning her condition was seen to be improving so markedly that the operation was deferred. Finally it was decided to operate the fifth day following her admission, but at 3 A.M. on the morning she was to be operated upon the patient woke out of sleep, raised up in bed, fell back gasping for breath, and died at 3:20 A.M.

Autopsy showed an extrauterine pregnancy with the tube adherent above the pelvic brim, the hemorrhagic mass being surrounded by loops of small intestines. Death in this case was due to an error in diagnosis which was, however, partially justifiable owing to the abnormal position of the tube. The clinical picture which had held my attention was always referable to the involvement of the small intestines in what I took to be an inflammatory process. Nevertheless, when the history of this case is reviewed with the idea of extrauterine pregnancy in mind the essential points for the correct diagnosis are found to have been recorded by myself at my first examination; namely, abdominal pain promptly followed by irregular flowing which was still present when I first examined the patient.

Cases Incorrectly Diagnosed as Extrauterine Pregnancies.—I have operated upon one patient under a positive diagnosis of ectopic pregnancy who turned out to have had a sudden rupture of a cocoanut-sized ovarian cyst. Two other patients I operated upon because of early pregnancy, severe pains, and what I took to be a mass at one side of the uterus. In both I found intrautreine pregnancies with the early uterine enlargement confined chiefly to one side of the uterus. Irregular flowing was not mentioned in the history of either case.

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Illuminating Company Building.

HELIOPHOBIA.

A MENACE TO THE COMMUNITY.

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The obligation of the physician to set an example to the community is greater to-day than heretofore, because his personal transgressions against the laws of hygiene are apt to become common property in these days of general admission to medical societies and libraries. The physician who shuts out precious sunlight for hours from a reading room because for five minutes a ray has danced across his page, sets a pernicious example to the ever-present majority of the ignorant. *Praesente medico nihil nocet* is a sentence perhaps not intelligible to all readers, but the principle still survives in a community which is fast losing all reverence for the medical profession.

God said: Let there be light. The devil whispered to men, and blinds were invented. (According to the Century Dictionary, a blind is anything which obstructs sight, intercepts the view, or keeps out light; the associated meanings of the adjective are very suggestive: Not possessing or proceeding from intelligence; destitute of intellectual, moral, or spiritual sight.) It would be comical, were it not so serious a matter, that "blinds" is the term selected for the contrivances which begrudge the light to the other occupants of a room, in "favor" of the one or two who may be incommoded (not actually harmed) by the visiting sunlight. It is the old confusion between cause and effect. For the reassurance of those who honestly fear harm to their own eyes, and therefore feel justified in de-

priving others of their share of the sun, be it said that one of the most efficient treatments of trachoma is—sunlight. In the experience of Grönholm, a single exposure of the affected eyes to sun-radiation according to Finsen's method, during ten minutes, was sometimes sufficient for a cure. Very favorable results were obtained by Hunsel, in eighty cases of trachoma, by combining copper-sulphate treatment with daily exposure of the eyes to sunlight.

According to the Bulletin of the American Association for the Conservation of Vision, at least half of the educated class in the United States are afflicted with serious defects of vision, and the conspicuous reason for the present condition is the practically universal ignorance regarding the eyes, their care, and the way in which they should be used. It is of tremendous national importance, says Douglas C. McMurtrie, that the American people shall be endowed with good eyesight.

The greatest good to the greatest number involves full utilization of our none-too-abundant light from heaven. For those whose subjective sensations lead them to the unjustifiable exclusion of the sun's good light from places destined for the accommodation of others who believe in the preservation of sight through light, the individual adoption of smoked glasses (Schutzbrillen of the Germans) is recommended as the simplest and fairest solution of the glare-problem. The word "glare" is one recently adopted by the engineering profession from general usage, meaning discomfort or depression of the visual function, associated with strong light sensation. In his discussion of physiological points bearing on glare, Cobb points out the fact that detailed knowledge on this subject is scarce, and also that under practical conditions, the actual reduction of visual acuity by this feature of glare is not so great as to cause in itself serious embarrassment of vision.

The optic nerve is made to be stimulated by light. Normal eyes are rendered extremely sensitive to light through prolonged sojourn in the dark; the more so, the more carefully the light is kept away from the eye. In order to protect for minutes a pair of abnormally sensitive eyes, the heliophobe will cheerfully proceed to darken for hours an entire room, and incidentally to cultivate millions of bacteria. Safely encased in the impenetrable armor of egotism, he thoughtlessly jeopardizes the sight and health of his fellows, lowering blinds right and left for his personal gratification, without ever remembering on his departure to readmit the light of day. Once pulled down, a window blind remains down by common consent and indifference, in the great freemasonry of laziness. Libraries are not the only offenders, however, and public institutions such as post offices are open to criticism, if shuttered from the sunlight. The Fifty-first Street station in this city scrupulously excludes the sun from its southern windows, and gratuitously serves the public with a choice allotment of germs from all sources. Elevated railroad companies, while chary of giving full value in form of a seat for the nickel, generously provide shutters and blinds, which the conductor considers it a sacred duty to pull down on the sunny side of the train, ostensibly to protect the eyes of the reading public—(too bad anti-vibrators are not furnished at the same time!)—but really to provide a culture-medium for the vegetable and animal parasites which lurk and multiply in the shadows. Public health would be the gainer, were the exclusion of sunlight (a most efficient germicide) from public conveyances declared a misdemeanor.

The commercial spirit of the age manifests itself very plainly in the disregard and waste of sunlight. Although the sun still shines for all, unless prevented by skyscrapers or blind-pullers, the formation of a sun trust in years to come may serve as an eye-opener. Many patrons of window blinds have never heard of the heliotherapy of tuberculosis, nor do they realize that the scientific exploitation of sunlight may yet be developed into a close competitor of radium and the *x*-ray. Millions are expended for radium-treatment of cancerous skin-growths before the purposeful application of direct sunlight has been given even half a trial. Rain water warmed by the sun was credited with cardinal virtues for the tubbing of delicate babes in the old-fashioned nursery. The up-to-date boudoir is beginning to be interested in "radiumized" water, for Milady's, or perhaps for Fido's bath. *Mundus vult decipi, ergo decipiatur.* Revel in radium, if you will, but *do not rob* your neighbor of the sun!

What is the basis of this irrational attitude towards sunlight, and of the fear of its effect upon the eye? Answers of habitual blindpullers vary from the naïve, "It hurts my eyes," to a more sophisticated reference to the "injurious" ultra violet rays. Let us see. According to available measurements, the rays which reach us from the sun correspond to wave lengths of about 50,000 to about 100 μμ. Wave lengths of about 810 μμ to about 380 μμ belong to the visible spectrum. Invisible rays of more than 810 μμ are designated as ultra red rays, while rays of less than 380 μμ are usually described as ultra violet rays. It has been shown that rays of shorter wave length than 38 nn. are practically entirely absorbed in the cornea, so that these rays cannot possibly exert an injurious effect upon the lens and retina, but at most only upon the superficial portions of the eye, the cornea and conjunctiva. These short wave lengths are essentially responsible for the phenomenon of snow blindness, the changes of which are usually restricted to the conjunctiva. Concerning the injurious action of short wave rays on the endothelium of the cornea and on the crystalline lens, the interposition of an ordinary glass plate, such as window-glass, between the source of light and the eye suffices to prevent an injurious action on the endothelium. (Hess.) The contents of sunlight—even less so than those of artificial light—in ultra violet rays are not sufficient to cause eye-trouble. Persons who work daily in a strong artificial light, as in electric concerns, for example, suffer very rarely from ocular disturbances, except through negligence or accident. Under ordinary conditions of daily life, the ultra violet rays do not enter into consideration at all, in the protection of the eye against an alleged excess of light. At a low sea level, ordinary daylight contains very small amounts of ultra violet rays, which are absorbed to a considerable degree by the deeper air-layers. Moreover, as emphasized by Fuchs, the ultra violet rays are not perceived by the retina, and therefore cannot produce unpleasant sensations of any kind. The dazzling sensation caused by a glare of light is derived only from the visible rays of the spectrum, the same rays which are injurious to the eye in diseased conditions of the retina and chorioid. In all such cases, ordinary smoked glasses will protect

the wearer against all fancied or real danger, without interfering with the right and health of others.

In the presence of hyperirritability of the retina, even a small amount of bright daylight may elicit unpleasant sensations, and this is frequently the case in neurasthenic and hysterical individuals. Fuchs compares this intolerance of light with the equally common hypersusceptibility to noise, in nervous patients. People of this description are apt to complain not only of more or less brilliant daylight, but also of unpleasant sensations produced by bright or shining objects, for example, by the white paper, when reading or writing. In illustration, Fuchs mentions the case of an overworked and highly neurasthenic business man, who finally came to shield his eyes with his hand when signing his name, in order to avoid being dazzled by the white paper. In all probability, he had also contracted the delightful habit of lowering all blinds within his reach. Shrinking from bright daylight or sunshine is a very common sign of neurasthenia. The victims of drug habits, especially morphine, often insist upon the most rigid exclusion of sunlight from their shadow-realm.

The light of day has never been shown to have an injurious influence upon the eye, in health or even in disease, and it is an antiquated notion to hold strong sunlight responsible for certain forms of eye trouble. Such views were current in the eighties, and should long have been outgrown even by the laity. On the ground of biological considerations, as pointed out by Hess, it is difficult to conceive that a living structure, phylogenetically developed under the permanent action of daylight, should have simultaneously acquired the peculiar property of sustaining damage through this same daylight. In a lecture held at the international Medical Congress, London, 1913, Hess conclusively refuted the view that photophobia is transmitted by the nerves of the cornea and iris, for he showed that tight compression of the eyes, even in total darkness, after all light has been excluded, often relieves the disturbances in diseased conditions of the cornea and iris. As tight compression of the eyelids has the same effect also in the presence of light, the widespread misconception has arisen that the reason for this compression is photophobia. This misconception flourished on the adaptation of the eye to the darkness, through the partial closing of the lids, with the result that it becomes more sensitive to light. This fear of light is secondary, however, being caused by the palpebral closure, and is not related to the corneal affection as such. This arbitrary closing of the eyelids, and the resulting photophobia, is entirely analogous to the wilful drawing down of window blinds.

Darkness or a dim light plays a peculiar part in the psychology of the sufferers from heliophobia. The significance of darkness in nervous psychopathology was investigated by Abraham, who finds that this light-fear manifests itself in form of intolerance for daylight, more particularly sunlight. Psychoneurotics of this type are easily "dazzled," feeling their sight confused by brilliance of light. Some complain of more or less severe pain in the eyes on brief exposure to moderate daylight or artificial light, and resort to all sorts of measures for protection against it. Besides showing an exaggerated sensitiveness toward illumination, these persons react to light stimuli with a true phobia of the neurotic fear type. The subconscious content of the fear complex is threatened blindness. All psychoneurotics of this group suffer from heliophobia. A heliophobic patient under Abraham's observation hung threefold curtains before his bedroom windows, so that not a ray of light could enter in the morning. Psychoanalysis finally showed that the patient identified with the sun the watchful eye of his father, whose control he was anxious to escape. It would lead too far to enter into a consideration of the sun as a phallus-symbol. Let us plead, in the last words of Goethe, for "more light," and with a modern poet, Rhys Carpenter,

"Because we dare behold the sun,
With eyes unshaken, unafraid!"

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TONSILLECTOMY UNDER NOVOCAINE.

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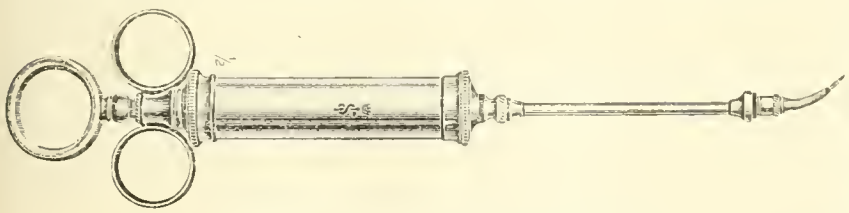
THIS article is written in order to relate a little experience regarding tonsillectomy as I found it in my own case. We often hear that there is no better way to learn than by veritable experience and so it is. We can apprehend and appreciate to a certain degree the subjective and objective symptoms of others, but when those symptoms are personal we can more thoroughly orientate ourselves to the real condition of things.

Having had several attacks of follicular tonsillitis in previous years and having lately seen so many pernicious maladies arising from pathological tonsils I resolved that it was very pertinent to have mine removed since they had several times proven themselves subject to infection. One attack of tonsillitis or the slightest focus of infection should be conclusive evidence in favor of their extirpation. The tonsils have been shown capable of being the host of many and varied forms of organisms from the non-pathogenic to those of the most virulent types. One cannot scrutinize too closely for some focus of infection. Frequently in removing an apparently healthy tonsil, products of inflammation will exude while manipulating the tonsil during the operation. The prominence or non-prominence of the tonsil offers no index as to the amount of hypertrophy or diseased condition. Some of the largest tonsils with marked pathological lesions are the so-called buried ones and may present a normal healthy surface as viewed intact.

When indicated, tonsillectomy should be done during childhood. At this period of life the tissues that will be cut and traumatized during the operation heal readily and the inconvenience to the patient lasts only a day or so; whereas in the case of an adult the tissues are highly fibrous, necessitating more trauma during the operation, the healing process is slow and the patient is quite conscious of a real sore throat for longer than a week. I am sure that most operators are aware of the fact that as age advances the period of convalescence from tonsillectomy increases.

Novocaine in tonsil work is advocated only in the case of adults and then the operator should use some discretion and satisfy his own mind that the patient is not of a highly nervous type and one that will give him a considerable amount of trouble during the operation. The patient should be given his choice between a local and general anesthetic and told the advantages and disadvantages of each. Some patients have a horror of being put to sleep and will welcome the suggestion of a local anesthetic. A patient's mental condition on a subject of this nature should not be ignored and where there is an alternative the mental equilibrium of the patient should not be perturbed.

The following are some of the advantages of tonsillectomy under novocaine: (1) If it be a clinical patient it is not necessary for him to remain in a hospital; he can go home alone and the probability of a hemorrhage is not nearly so great as in the case of a general anesthetic. The expense of an operating room, the necessity of an anesthetist and an assistant are eliminated. (2) The hemorrhage during the operation is insignificant and the postoperative hemorrhage is always slight. (3) The patient is in the upright position, which is the ideal position for the operator. (4) From personal experience I can give the assurance that the patient does not experience any pain. This may not be true in every case when the operator has failed to anesthetize the tissues properly. (5) The patient can hold the mouth open and it is not necessary to use a mouth gag or tongue depressor nor does one have to traumatize the tissues by sponging, for if there is any bleeding the patient can expectorate it.



Street's syringe for injecting the tonsils

Technique.—It is not the purpose of this paper to describe the technique of tonsillectomy, since that can be found in any standard text on the subject. It is only desired to describe the method of administering the anesthetic and the after treatment. The tissues surrounding the field of operation should have a thorough application of a 4 per cent. solution of cocaine and in a few minutes an application of a 10 per cent. solution of cocaine over the same area. The initial 4 per cent. cocaine is tolerated much better by the patient than if a stronger solution be used. The cocaine is used to allay the reflexes of the fauces and the pharynx. If this is not done the manipulation of the instruments during the operation, touching highly irritable tissues, will produce very annoying reflexes causing the patient to gag and retch even against his strongest voluntary efforts to resist. Then, too, when the tissues are partly cocainized, making the puncture to inject the novocaine will cause but little if any pain.

For the injection of novocaine, Street's syringe is conveniently used. The suitable size of the instrument with the needle curved at an angle of about 45 deg. to the long axis of the syringe add much to the advantageous use of it. In addition the guard around the needle extending to within a certain distance of the point will prevent the needle from making too deep a puncture. With everything prepared a 2 per cent. solution of novocaine with a few drops of adrenalin added is injected into each tonsil. The first injection is made in the most prominent part of the tonsil. While injecting the solution the tonsil is seen to swell and in a few moments become somewhat blanched. Novocaine being such an efficient anesthetic, and because of the great vascularity of the tonsil tissues the drug being so rapidly absorbed and disseminated throughout the area, probably the initial injection would be sufficient for the operation; but to be sure the anterior and posterior pillars and the edges of the tonsil should be injected. With this procedure one can always feel satisfied that the tissues are thoroughly anesthetized and can assure the patient that the operation will not be painful. Novocaine is being used frequently in our clinics for tonsillectomy with unique results.

Cocaine should never be injected into the tonsils, for it is very toxic, the tissues in that area rapidly absorb it, and several fatalities have been caused by its use.

Postoperative Treatment.—The following applies to tonsillectomy performed under a general anesthetic as well as local, especially in adults. In the case of a local anesthetic the patient will feel quite normal after the operation until the effects of the anesthetic have abated, which is from one to three hours. After this the throat will be extremely sore. The patient should not remain up any undue length of time. There is a decided hyperactivity of all the salivary glands. In addition to this phenomenon there is some bleeding, and with this accumulation of foreign material in the mouth there will invariably follow frequent attempts at deglutition. Even if the saliva and blood are expectorated deglutition will follow unless prevented by strong voluntary efforts. From the standpoint of hemorrhage deglutition is a most serious factor. With each deglutitory action, the levator palati, the tensor palati, and the palatopharyngei (posterior half arches) muscles in contracting to close the posterior nares will pull upon the tissues that have been cut during the operation, break up nature's barrier, and bleeding will start anew. The patient should be advised not to swallow any more than is absolutely necessary for the first twelve or eighteen hours following the operation. This advice is very difficult to follow. To aid the patient in this he should have ⅛ to ¼ grain morphine hypodermically. It is not the custom to follow tonsillectomy with morphine, but there is nothing to be gained by withholding it and it is of paramount importance for the patient to have it if for no other purpose than indirectly to prevent hemorrhage. It will make the patient more

comfortable, decrease the attempts at swallowing, and in this way guard against hemorrhage. Only one dose should be given and then only after the effects of the novocaine have subsided. When given, the patient should be told that he is getting something to prevent hemorrhage, which statement will be true and he will rarely know any better. Adults seldom have adenoids, but when present they should not be removed during the tonsil operation if it is done under a local anesthetic, for the bleeding from the adenoids will inconvenience the patient more than that from the tonsillectomy. Then the mucous membrane on the posterior tips of the turbinates may be abraded or enlarged posterior tips may even be cut off if the LaForce adenotome is used and the bleeding will persist for several hours. The adenoids can just as easily be removed at some other time.

After the danger from hemorrhage has passed, the patient should be advised to swallow the saliva that collects in the mouth and not to expectorate it. The procedure is quite difficult to the patient, but it must be done to keep the tissues of the back of the mouth and pharynx moist. At this period the tissues have a tendency to become dry and if they are not kept moist by swallowing the saliva they will remain dry and painful. The patient should know about these things and it will add much to his comfort. A weak saline solution used as a gargle will stimulate the secretions, aid in keeping the tissues moist, and be very soothing to the patient.

THE TUBERCULIN DISPENSARY.

By RICHARD COLE NEWTON, M.D.,

MONTCLAIR, N. J.

LATE CAPTAIN AND ASSISTANT SURGEON, U. S. ARMY; LATE PRESIDENT N. J. STATE BOARD OF HEALTH; CONSULTING PHYSICIAN TO NEW MOUNTAINSIDE HOSPITAL.

THE principal reason that we are making so little headway toward the stamping out of human tuberculosis is that there are so many unlocated incipient cases. Before we shall make real progress in this direction, the popular conception of the extent and true history of the disease must be entirely changed. The tuberculin diagnostic test must be generally adopted and some method must be devised by which practically all children and all adults whose systems are below par, without an obvious cause, must be subjected to the test; and those found to be infected must be treated, and that too, if possible, before positive symptoms can be demonstrated in the lungs or in any part of the body. When a positive diagnosis of tuberculosis can be made by physical examination of the chest, the case is no longer incipient, and the golden moment for beginning treatment has passed.

It may be a long time before wholesale tests with tuberculin will be made upon human beings as they are now made upon cattle. We have not yet reached that stage of civilization when human life shall receive as much consideration as property. Cattle must be tested for various diseases, including tuberculosis, and are carefully protected from infection by legal enactment. If they become infected and are therefore a menace to other cattle they must be instantly slaughtered if necessary to prevent the spread of contagion.

With man, conditions, of course, are different, and it is by no means entirely due to indifference that it is so difficult to bring incipient cases of human tuberculosis promptly under treatment. There are several reasons for this, the principal one being the widespread ignorance of the true nature of tuberculin, and the consequent fear that harm may result from its use. Nor can we justly assert that there are no grounds for this fear, if one may judge the present by the past.

Ever since Koch proclaimed tuberculin as a remedy for tuberculosis its use has been more or less a series of experiments which have been largely unavoidable owing to the peculiar nature of the remedy, and the natural history of the disease, neither of which have, as yet, been fully explained, although, fortunately, recent researches in biochemistry, immunity, and susceptibility have thrown so much light upon these intricate subjects that clinicians are moving forward in the treatment of tuberculosis with supreme confidence in the ultimate outcome of the warfare against this insidious enemy.

It has been absolutely demonstrated that tuberculin, in moderate doses, has no effect on non-tuberculous human beings, any more than it has upon healthy cattle. Furthermore, it is not a poison, and when properly used does no harm to tuberculous subjects in any stage of the disease. It is, in reality, a measure of their susceptibility, and in properly graduated doses calls forth the protective agents of the body in increasing numbers until the patient becomes completely immune to the tuberculin, which contains the most active agent of the tubercle bacilli. (The bacilli, however, from which the tuberculin has been extracted, have all been killed by heat and the product has been filtered through porcelain before being put upon the market. It has also been accurately standardized.) The tuberculin calls forth an artificial immunity in the body, which strengthens and reinforces the natural immunity which is possessed in some measure by every one, and in this way affords an escape from the infection of tuberculosis.

When these fundamental facts shall be generally understood the further information must be disseminated that practically every one is tuberculous at some time in his life, that tuberculosis is by no means highly contagious, since practically no one has ever contracted tuberculosis in any of the well-conducted tuberculosis sanatoria, where proper precautions are always observed regarding the care of the sputum and the excretions of the patients.

There is, therefore, no reason why tuberculous patients should be treated like the lepers of whom we read in Scripture. These unfortunates were probably not a menace to their neighbors, since leprosy is probably not contagious, and they deserved far more considerate treatment than they received. The fear of being shunned by one's neighbors and of being isolated from one's family and friends keeps many sickly persons from submitting to an examination to learn whether or not they may be tuberculous. So people buy the nostrums they see so flauntingly advertised as "sure cures" for consumption, and hope against hope that they will throw off their colds "when the warm weather comes," and when they are finally brought under treatment the golden opportunity is gone to check the disease before it has made such substantial progress that it can be detected by the physical signs in the lungs.

We require all immigrants to be vaccinated before admission to this country. We send back across the ocean cases of trachoma, feeblemindedness, or marked bodily sickness, yet we allow many cases

of incipient phthisis, which cannot be detected with certainty unless all immigrants are properly tested with tuberculin, to settle among us. A matter of such importance should receive instant attention from those in authority.

Probably the establishment of properly equipped tuberculin dispensaries similar to those established abroad, especially in England, and, I presume, in Germany, will be the first practical step that we can take toward making sure that large numbers of people shall be tested for tuberculosis. Whether legal enactments will be necessary before people generally will submit themselves and their children to the tubercuin test it is too early to state.

Efforts have already been made to introduce routine tuberculin tests for tuberculosis into the schools, and this should be done without delay. The economic saving to the individual as well as to the State, if tuberculosis can be arrested in its earliest stage, is simply incalculable. The tuberculin dispensaries abroad report that they cure one hundred per cent. of the incipient cases they treat. Sutherland, an English writer, declares that eighty per cent. of all cases of tuberculosis can be treated without interfering with their occupations. In 1913 there were forty tuberculin dispensaries in England. Probably there are more now, and probably soon there will be a large number in America where rich and poor may go, if they choose, and learn all about their condition, so far as their liability to die of the great white plague is concerned; where young doctors may be taught the intricate and painstaking methods that the expert clinician must employ to immunize his patient against tuberculosis. In a properly equipped tuberculin dispensary, cultures can be made and *x*-ray pictures taken, and every appliance to aid the diagnosis and complete the cure of tuberculosis shall be in constant use and manipulated by the skillful hands of experts. These dispensaries shall be centers of teaching as well as of treatment. They must employ a certain number of competent nurses and health inspectors to do follow-up work to instruct those under treatment that they must observe the rules of hygiene, must avoid bad air and bad company, alcohol, injurious food, and so forth, if they wish to get the full benefit of the treatment and to more surely escape from their deadly infection.

While such work will be expensive, it will, in the end, prove to be the greatest measure of economy which any town, city, or country can practise. It would take a skilled statistician and economist to figure out the probable gain in material wealth alone, not to mention the actual saving of human life and the prevention of untold suffering, misery, and destitution. And, inasmuch as by a well-known law of sanitation, if one disease is expelled from a community the death rate from other diseases will be materially lessened, our general death and morbidity rate will be greatly diminished by a general use of tuberculin.

Doctor Bonime of New York has developed a method of administering tuberculin which it is firmly believed surpasses in accuracy and safety any other yet brought forward. It has the great advantage of fully enlisting the patient's interest and attention, and the results have surpassed anything before seen in America. If the patient shall come under treatment sufficiently early, and will follow instructions with reasonable fidelity, a cure can safely be promised him without interference with his occupation or ordinary mode of life.

If some of our noble-minded philanthropists would institute a string of tuberculin dispensaries in the United States like the well-known Rockefeller hook-worm dispensaries of the South, only somewhat more elaborate (since they must be more permanent, and fitted to handle a more complicated disease), the economic and sanitary advantage would be incalculable. They would need to be under some central control, and should employ only truly scientific and competent men, who should, like the employees of any corporation, be retained only so long as their work was satisfactory.

To assume that some such plan will be put into operation in a comparatively short time does not seem in the least unreasonable. To the writer's mind, it is impossible to conceive of any means by which money could be so economically and profitably invested.

42 Church Street.

OPERATIONS ON THE UTERUS AND THE VAGINA, WITHOUT AN ANESTHETIC.

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THERE are certain areas in the genital tract in women poorly supplied with sensory nerves. The extent and location of these areas vary somewhat in different individuals, and in some women such areas are nonexistent. We have taken advantage of this relative anesthesia in certain portions of the genital tract, and are able in many cases to do reparative and corrective work on the uterus and the vagina without an anesthetic. After the operation has been completed the patient is able to return to her home without assistance, and only infrequently is she confined to her bed subsequently. These areas of relative anesthesia are: the mucous membrane lining the fundal and the cervical portions of the uterus, that covering the cervical portion of the uterus, and that lining the anterior and posterior walls of the vagina. The lateral walls of the vagina are much more sensitive. The areas of relative anesthesia in the anterior and the posterior walls of the vagina extend from about one-quarter of an inch from the junction of the cervix to the vagina above to one-eighth of an inch from the mucocutaneous junction at the outlet of the vagina. The degree of relative anesthesia of the interior of the fundal and the cervical portions of the uterus may be determined by the introduction within the cavity of the uterus of a uterine sound. The degree and the extent of anesthesia of the anterior and the posterior walls of the vagina may be determined by grasping the mucous membrane at different points with a mouse-toothed forceps. The age of the patient has a direct bearing upon the relative degree of anesthesia, the older the patient the less sensitive the lining of the genital tract. The surgeon should ascertain by the application of these tests that the field of operation is not sensitive before operating without an anesthetic.

The following conditions may frequently be relieved by operation without the aid of a general or a local anesthetic: Endometritis of the fundal or the cervical portion; lacerations of the cervical portion of the uterus, requiring either a repair or an amputation of the cervix; procidentia of the uterus due either to an hypertrophy of the cervix or to an increase in the caliber of the vagina; acute

flexions of the body of the uterus upon its cervix; cystocele; rectocele.

The patient is never informed as to the exact time the operation is to take place, or that the work is to be done without an anesthetic. After having determined that the field of operation is not sensitive, the patient is directed to call at the office at some appointed time, and after having loosened her clothes about her waist, she is placed upon the table in the dorsal position. The external genitals are then washed with soap and warm water, and the hair shaven over the mons veneris and the labia majora. She is then given a douche of physiological salt solution or of some mild antiseptic solution. The patient is then dismissed. At the time of her next visit the procedure varies, depending upon what portion of the genital tract requires operation, but in all cases no actual cutting or suturing is attempted until after the patient has made several visits to the office, and has become accustomed to being placed upon the table in the dorsal position, and has become accustomed to the manipulation of instruments about the lower genital tract.

In cases giving symptoms that we ascribe to an endometritis, the caliber of the cervical canal is enlarged by incising its walls with a knife, and the interior of the uterus is thoroughly painted with a 50 per cent. solution of tincture of iodine in alcohol. The application of the iodine to the endometrium is repeated from three to four times upon alternate days. The patient generally has some uterine cramps lasting from one to two hours after each application. In two cases of endometritis, at the request of the family physician, the uterus was curetted, using a sharp curette, with but little pain at the time of the curettement and with no untoward symptoms subsequently. We have treated eleven women by this method—nine with repeated applications of tincture of iodine to the endometrium, and two with curettement, followed by an application of tincture of iodine to the endometrium. The results have been fairly satisfactory, no better and no worse than the results obtained when the work was done with the patient under a general anesthetic.

The repair or the amputation of the cervix without an anesthetic is not difficult provided the uterus is movable and the vaginal canal is not contracted so that the cervix may be brought down to the entroitus. The late Dr. Alexander Skene in his work on "Gynecology," edition of 1890, refers to two cases of the repair of lacerations of the cervix, the operations having been performed in his office, with no subsequent ill results. Dr. H. J. Boldt has described a method of repairing the recently torn cervix in a paper entitled "Intermediate Trachelorrhaphy; Its Use as a Prophylactic Against the Pernicious Effects Sometimes Caused by Lacerations of the Cervix" (*Journal of the A. M. A.*, October 30, 1915). We have repaired 16 old lacerations of the cervix and amputated one cervix that was stellately torn. We have repaired 6 freshly torn cervices and amputated one cervix that had been previously torn at a former labor and had received further damage at the time of the patient's last confinement, seven weeks before the operation; there being but little of the cervical tissues remaining, the cervix was amputated without discomfort to the patient and with a good result. Of 16 repairs of old lacerations of the cervix, 12 resulted satisfactorily after the first attempt at repair. Of the 5 that were reoperated upon, 4 were satisfactory and one case resulted poorly. Of the 6 freshly torn cervices, the repair of 4 was satisfactory, one fair, and one poor; the latter, upon reoperation, gave a good result. In 2 cases we had postoperative bleeding, in one case a ligature slipped while the patient was still in the office, and in another case, five days after the operation, there was a brisk bleeding from the point of repair, probably from premature absorption of the catgut used. In both of these cases, much to our surprise, the repair turned out fairly well. These 2 cases emphasized to us the necessity of extreme carefulness in obtaining perfect hemostasis in operations upon the pelvic organs in women, where the patients are not subsequently confined to their beds.

The anterior vaginal wall has been repaired without an anesthetic in 4 cases. In one case the repair was satisfactory. Two women consented to be reoperated upon, and after the second operation the result was satisfactory.

The posterior vaginal wall was repaired in 6 cases. The result was satisfactory in 5 cases. The one failure was reoperated upon twice, and after the third operation the result was fair.

Stem pessaries were introduced into the cavity of the uterus in 6 cases of infantile uterus with acute flexions of the body of the uterus upon its cervix. The caliber of the cervical canal was enlarged, and the angle of flexion was obliterated by incision with a scalpel, and without discomfort to the patient. The introduction of the stem was then quite simple and accomplished without pain.

The cases reported in this paper number but 51, operated upon during the past 14 months. Our experience, therefore, is quite limited, but we have been impressed with the following facts:

The large number of women who will submit to these operations upon the lower genital tract without an anesthetic, and the willingness with which they consent to a second operation, after a few weeks' interval, in those cases where the result of the first operation has not been satisfactory. For this reason the end results in these operations done without an anesthetic compare favorably with the operations performed with the aid of anesthesia, when, if the result of the operation is not satisfactory, it is very difficult to obtain the consent of the patient to be reoperated upon.

Economically, this method of operating without an anesthetic has a decided value. Women with torn cervices frequently have not the means to leave their families and remain within the confines of a hospital for some days, and so allow the condition to persist until they have become chronic invalids, or until cells of a malignant character have become engrafted upon the seat of the old tear in the cervix, and in either case these women are not able to do their duty to their families and to society.

The operator should have had an extended experience in gynecological surgery with the patient under an anesthetic before attempting to operate without the aid of anesthesia.

From a review of our cases and the results obtained, we feel encouraged to continue in suitable cases these operations without an anesthetic upon the genital tract of women.

195 Greene Avenue.

The "Four Masters" in French Psychiatry.—According to Dupré the most illustrious psychiatrists in France form a continuous succession, including the relationship of master and pupil. These men are Pinel, Esquirol, Baillarger, and Magnan (just deceased).

THE BACTERIAL ETIOLOGY OF POISON-OAK DERMATITIS (RHUS POISONING).

By LOWELL C. FROST, M.D.,

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THERE are few diseases at once more painfully annoying to the patient and more "unsatisfactory" to the physician than the dermatitis caused by contact with or proximity to the poisonous plants of the Rhus family. Like "rheumatism" and "eczema," this is an ailment for which there is a host of remedies claimed to be specific. This means unquestionably that in all these diseases our knowledge of the etiology has been inadequate as a basis for our therapeutics. It is the purpose of this paper to suggest a new line of approach to the problem in hand. It will be of advantage before presenting a new theory to review very briefly the essential points of the one which at present is vaguely, but generally, held.

It is remarkable and unfortunate that an affliction so widely spread throughout the country, and so exploited by the manufacturers of worthless "cures," should be so slighted in our standard textbooks. McCrea's five-volume edition of Osler's "System of Medicine" does not mention the subject in the text or the index, and some other supposedly authoritative works dismiss it with a few words of inherited tradition. Sollmann, in his "Pharmacology," makes an attempt to treat it scientifically. His view of the etiology may be taken as representing at its best the general opinion. According to this, all species of Rhus secrete in the lacteals of the leaves a fixed oil of extreme toxicity, and this is conveyed to the fine hairs on the leaf surface (Schwalbe, 1902). This fixed oil was isolated by Pfaff as toxicodendrol. This, after contact with the skin, remains latent from one to nine days, usually four or five days (Sollmann), and then sets up by purely chemical irritation a dermatitis which goes through all the characteristic stages to vesiculation and pustulation.

I wish to cite several cases of dermatitis caused by *Rhus toxicodendron*, poison-oak, and to report on the results of laboratory experiments with certain bacteria found on the leaves of this plant. On these cases and experiments I have based my reasons for believing that this dermatitis is *not* primarily the result of cutaneous irritation by a chemical poison; and that it *is* primarily a systemic infectious disease of the exanthematous type, caused by invasion by a definite bacterial organism. That the oily, active principle of the plant is irritating to the skin I do not doubt, but I believe that its toxic power is greatly exaggerated, and that the dermatitis should be ascribed almost wholly to other agents. These cases, selected from a large number which I have observed and collected during the past two years, are chosen as illustrating most clearly the points which I wish to emphasize. They are, however, strictly typical cases, selected as such, and not primarily for the purpose of bolstering up any hypothesis. My experience has been limited to the Western variety of the Rhus family, *Rhus diversiloba*, commnoly called poison-oak. From all I can learn of the Eastern varieties, *Rhus toxicodendron*, poison-ivy, and *Rhus venenata*, poison sumach, their effects have an etiology closely related to that of the variety here considered.

CASE I.—S. B. N., a healthy young American in the plumber's trade, had not been out of the city for three months, when he was called to San Francisco on business. He took a day-train, and had reached the summit of one of the mountain passes when he found that owing to a fire in the tunnel, the passengers were compelled to walk around the mountain, about a quarter of a mile, and re-entrain on the other side. The newly-made path was broad and well beaten and contained no shrubs nor roots. He noticed, however, that there was a luxuriant growth of poison-oak along almost the whole length of the path, the nearest of it being about fifteen feet from him, as he walked along. He did not come into contact with it, nor did anyone else in the party, with whom he might afterward have had contact. The wind was strong, and blew from the direction of the poison-oak toward him. He was perspiring freely at the time. After taking the train, which he did immediately on reaching it, he proceeded to San Francisco and remained in that city for two weeks without going into the country. There was thus no possibility of any other exposure to the infection than that afforded by the proximity described above, and contact, direct or indirect, is absolutely excluded. He had dismissed the incident from his mind when five days later a few typical vesicles appeared on the skin of the thigh just above the popliteal space. These were accompanied by itching and burning, with some local redness and swelling. Having suffered from one attack of poison-oak as a child, Mr. N. recognized these symptoms and called a physician; he also realized the futility and danger of scratching, and forebore carefully. Despite this and the conscientious use of grindelia and sugar of lead lotions, the characteristic exanthem rapidly spread, and in twenty-four hours had covered the posterior aspect of the thigh, the deltoid area of both arms, and the right side of the neck and face—which, it may be remarked, was the side farthest from the poison-oak and not struck by the wind at the time of exposure. The disease followed the usual course, the lotions having no influence except for a slight subjective cooling effect.

CASE II.—R. E. S., a Mexican-American ranch laborer, aged 62. S. lived in the Ojai Valley, Southern California, where there is an abundant growth of poison-oak, and owing to the fact that he seemed to possess complete immunity to its poison, he had for years often been hired to "grub out" the plant from the neighborhood of homes whose owners were susceptible. This work he always did with bare hands. On several occasions he ate the leaves of the plant to win wagers, but did not make a regular practice of this. He had never had any symptom of poisoning from this source, and had always been of rugged health. In the spring of 1915 he suffered a severe attack of pneumonia which left him much broken in health, and with a chronic bronchitis—possibly tuberculous. When he had recovered sufficiently to be again active, in June, he was hired to grub out some poison-oak bushes for a neighbor. As usual, he did this bare-handed. On the third day after this he developed an area of the characteristic exanthem on the neck, and in the course of two days it appeared on the backs of the hands, arms, and between the shoulder blades. The attack was only of moderate severity, the self-administered treatment consisting of local applications of carron oil, which seemed to be very effective in controlling the itching and burning.

CASE III.—O. A. H., a healthy young American twenty-eight years old, became a member of the U. S. Forestry Service in 1914. He had never suffered from poison-oak nor from poison ivy. Having only recently come to California from the East he was quite unfamiliar with the Western variety of the Rhus—poison-oak. While on his first trip of inspection in July, 1914, he pulled up and carried in his hand for several minutes a spray of the handsome crimson and green foliage. His more experienced companion on seeing it acquainted him with its true nature, and as soon as possible—about an hour later—had him wash and scrub with a strongly alkaline laundry soap, in accordance with the official recommendation for such cases as given by the Bureau of Forestry. The parts so treated remained free from any signs of poisoning, but three days later the typical exanthem appeared on the outer aspect of the calves of both legs, with the usual symptoms. He had been extremely careful not to touch any portion of his body with his hands after contact with the plant, and had thoroughly disinfected his boots and puttees with the strong soap solution; he had changed his clothes as soon as possible after his exposure, and had taken every precaution against any indirect contagion. In the matter of treatment he used only the soap solution, going

over the entire body with it twice daily, being careful to apply it to the affected area last, and to use a fresh cloth each time. The exanthem did not appear on any other area. The treatment seemed to relieve the discomfort very effectively, but did not shorten the course of the disease as manifested by the local signs.

Cases IV and V.—Albert S. and his mother, Mrs. J. H. S., aged respectively twelve and thirty-four years, both of good physique and active habit, were walking through the woods one day in September, 1914, when the boy ran to the roadside and picked a branch of pretty leaves. Mrs. S., knowing the plant to be poison-oak, snatched it from him with her own bare hands. When told what it is was, the boy impetuously ran back to the bush, picked several of the leaves, chewed, and swallowed them, explaining that his "scout-master" had told him that "this was the way the Indians used to cure themselves when they had touched poison-oak." On their return home a physician was called, who advised a cathartic and the washing of the boy's hands with baking soda. Mrs. S. had forgotten or did not mention her own exposure. On the second day Mrs. S. developed the typical exanthem which covered her face and both hands. It ran the usual course. On the eighth day the boy, who had been kept strictly at home meanwhile, showed a patch of the same eruption on his left upper arm, and the next morning another patch appeared on the right hand. There was some itching and burning, with the usual redness and swelling, but these areas did not increase in size, and subsided in less than four days, treated only with the baking soda lotion. His lips and mouth at no time showed any irritation, and he had no internal symptoms.

Case VI.—Mary H., American, aged 13. This young girl displayed a hypersensitivity to Rhus toxicodendron which resulted in what was almost a chronic infection. Her earliest attack was in 1908 at the age of six years, following the free handling of the plant; details of this attack are not available. It was said to have been very severe, however, and to have covered almost all of her body. After her recovery from this it was found that whenever she became overheated an eruption of the same type appeared on isolated and different areas, accompanied by the same signs locally and the same symptoms. Since that time she has had to date (1916) over twenty attacks, most often following an exposure from mere proximity to the plant by wind-blown infection, three times from an accidental contact, and five or six times when there was no known cause. The diagnosis has been made by competent medical authority in each case. The attacks have been decreasing in severity for the past three years, but scars on her neck and forehead which resemble those of a severe chicken-pox exanthem are said to have been made by former eruptions of the poison-oak. Although less severe, the attacks now last longer. Her parents tell me that the eruption appears from two to six days after exposure, in those instances in which there was definite knowledge of this. They have found that a saturated solution of washing soda (sodium carbonate) does more to relieve the distress than any other remedy, although they have tried all the standard "cures." Nothing seems to shorten or abort the attack, according to their report.

Case VII.—A. B., a Mexican youth of 17 years, of somewhat deficient mentality, while walking in the country found a shrub of poison-oak, picked some of it, chewed the leaves, and brought home a bouquet of the remainder. No signs until the seventh day, when he had a slight chill. The temperature was unrecorded. The next day his face became greatly swollen, with characteristic vesicles and general symptoms. His hands, arms, and genitals were also in the same condition. During the first week he suffered several attacks of nausea and vomiting, accompanied by indefinite, but persistent gastric pain. Recovery was uneventful, and was complete in eighteen days, apparently unhastened by the liberal use of many and various advertised "sure cures." No kidney irritation was observed at any time.

The following are the points to note in the review of these cases:

1. The incubation period. The average time in the cases cited was four and a half days. Minimum, one day; maximum, eight days. Sollmann* says "The active principle is the same for all species. It has a considerable latent period, from one to nine days, usually four or five days. *This does not seem to be influenced by the dose.*" (Italics mine.) I submit that it is hard to conceive of a chemical dermic irritant whose effects remain absolutely latent for four, five, or nine days; and it is almost impossible to conceive of such an irritant whose "latent period" is "uninfluenced by the dose." The bacterial hypothesis which I am proposing in this paper is confirmed by these same observations.

2. Complete natural immunity is shown by certain individuals. Cf. Case II. Sollmann says (*op. cit.*): *"Only certain individuals seem to be susceptible,* while others may handle or masticate all portions of the plant with absolute impunity." Fox states:* "While some may handle this vine with impunity, others are not only poisoned by its slightest touch, but even by its proximity." Can we conceive of a chemical irritant which respects individual immunities? Sollmann continues: "The reason for this is very obscure, but it may be remembered that certain animals are immune to cantharides." In this connection it is sufficient to note that the immunity referred to is relative, not absolute, and that only certain *animal* species are even relatively immune to cantharides. No human being has any immunity to any chemical irritant of such a high grade of toxicity. On the other hand, the bacterial hypothesis has in its confirmation the analogies of many other bacterial infections.

3. This immunity may be lost through a lowering of the physical resistance, or a hypersensitivity may be established. Cf. Cases II and VI. The reasoning in the last paragraph applies here with equal force.

4. Exposure may be strictly limited to proximity to the plant, as in Case I. In this regard, Sollmann says: "In susceptible individuals, an extremely small amount of the poisonous principle (1/1000 mg.) is sufficient to cause a violent dermatitis. In this way the poisoning may be spread by contagion, *i.e.* sufficient may be passed from the clothing or hands of one person to another to cause poisoning. *This is, perhaps, the only instance of contagion by a chemic poison.*" (Italics mine.) Again: "The toxic principle . . . is . . . a fixed oil (*toxicodendrol.*) The authenticated cases of poisoning at a distance, which would seem to speak for its volatility, can probably be explained by the oil being carried by dust, pollen, etc." I will leave the reader to balance the chemic-poison hypothesis with the bacterial, keeping in mind the details of Case I. Either the fixed oil—carried by pollen or dust—or bacteria must necessarily have been the windblown agent. I have examined the region near to the locality where the exposure took place, and find that there were no pollen-bearing plants in flower at that time. And just how would flying dust particles pick up a charge of the poisonous fixed oil?

5. The first appearance of the exanthem is often on an area untouched directly by the plant, and protected from subsequent indirect contagion or windblown virus. Cf. Case III. This would in itself seem to necessitate the hypothesis of a general infection with local manifestations, and this hypothesis is, I believe, supported by every other recorded observation in such cases.

The following notes on *Rhus* poisoning, by Hirschler in the Reference Handbook of the Medical Sciences, 3d Ed., Vol. VI, p. 510, are of interest as noting the occurrence of signs and symptoms indi-

*Sollmann: Pharmacology. Ed. of 1906, page 709 *et seq.*

*Fox, George Henry: "Diseases of the Skin," Article "Dermatitis."

cative of a general infection, and as recognizing the existence of cases of infection without contact with the plant, and of the existence of individual immunities and susceptibilities: "There are individuals, too, who from childhood have never been subject to plant poisoning, but with change of climate or methods of living are suddenly rendered susceptible. Some general symptoms may arise during the progress of the eruption. Nervous symptoms from the suffering are common, and rather rarely there is a chill followed by a fever of 101° to 102° F., with rapid pulse and prostration. Many persons who have had at one time or another an attack of severity have found that in passing through the woods, or anywhere in proximity to the plant, they may have a recurrence of the attack, even though the plant has not been touched. The writer has personally verified this, but finds that as the years pass, and there has been no new contact with the ivy, the peculiar susceptibility to the air-laden poison [*sic*] becomes almost nil."

Duncan, in an article in the *New York Medical Journal*, Nov. 14, 1916, ingeniously erects from the combined principles of anaphylaxis and homeopathy a new theory of treatment which he calls *autotherapy*, and illustrates his thesis by the autotherapeutic treatment of ivy poisoning. This consists of the traditional eating of the leaves when in dangerous contact with the plant. He states that he has long employed this method of treatment, the implication being that it has been succcessful. He also states that "in Fairmount Park, Philadelphia, a few years ago, and in Bronx Park, it was the custom to instruct park hands, when hiring them, to chew a few leaves of the poison-ivy plant when clearing away the vines, as a preventive." From the viewpoint of bacterial etiology, this treatment would be the equivalent of the administering of tuberculin per os, since the bacteria would be destroyed in the gastric juice and their endotoxins liberated and absorbed, to stimulate the formation of specific antibodies in the tissues.

Owing to the lack of special equipment, the results of my approach toward the problem from the laboratory side are incomplete. They are, however, very suggestive.

Bacterial cultures made in August, 1915, from the fresh green leaves and from the older red ones of the *Rhus toxieodendron* show several types of cocci and bacilli. Only one type of bacteria was apparently constant on all the leaves examined. This type was found to be most abundant on the under side of the leaves collected from several sources, and was a short, thick bacillus, rather variable in its dimensions, but usually found to be about two microns in width and three to four microns long. It was of strictly aerobic growth, and produced spores, one highly refractive spore appearing in each bacillus in old colonies which had been subjected to drying in the air for several days. The same spore-bearing form was predominant on the reddish overmature leaves. The growth was not good on agar, gelatin, or bouillon, but was abundant on potato at room temperature. These bacilli stained well with methylene blue and with gentian violet, the spore-bearing forms showing up well with Neisser's double stain or with very weak carbol-fuchsin.

The culturing of these bacilli lessened whatever virulence they possessed originally, for inoculation by inunction of the pure culture into the skin produced, after 48 hours, only a slight redness, without itching or burning, and followed by no further symptoms.

With the facilities at my command I was unable to determine whether or not the bacilli form any soluble toxin, or whether an antitoxin could be produced by suitable means. Nor could I carry out the experiments obviously needed to determine the possibility of producing an active immunity through the use of a bacterin made from these organisms. No animal experiments were undertaken.

These are lines along which I believe brilliant and very practical results may be attained by properly qualified and equipped laboratory technicians.

6422 Hollywood Boulevard.

Medicolegal Notes.

Expert Opinion as to Cause of Injury—Physical Examination of Injured Porson.—In an action for injury to a girl of about 17, while a passenger on the defendant's street car, in a head-on collision, it appeared that after the accident her menstruation became irregular and obstructed. Complaint was made by the defendant that physicians were allowed to testify that in their opinion the plaintiff's injuries, as testified to, could, and probably did, produce the obstructed menstruation, and that this was an invasion of the jury's province. The court held that, while it was true that the ultimate facts respecting the extent of the alleged injuries and damages, and what caused them, were for the jury, it was also true that, in case the injuries which are suffered by an individual, as in this case, where the extent thereof cannot be observed in the ordinary way, and it is shown that certain invisible organs of the body are affected, a physician who testifies as an expert may give his opinion concerning the effect that a certain injury on the body may produce upon such organs. Certainly the jurors, merely laymen, and wholly inexperienced in such matters, could only guess at what effect certain injuries to the body might have on certain sexual organs of an injured female. While it may be true that a physician may not absolutely know, or be able to say with positiveness (since it is largely a matter of diagnosis), just what may have caused the ailment, yet, as an expert, he may give his opinion. It is for the jury to say what, if any, effect they will give to such evidence.

The defendant's counsel at the trial asked the court to make an order that the plaintiff be required to submit to a physical examination to be made by certain physicians selected by the defendant, and in the presence of the plaintiff's physician and of her father. The court declined to make the order on the ground that it was powerless to do so, in view of its former ruling in Larsen v. Salt Lake City, 34 (Utah), 318. This is a point on which the decisions are in conflict.—Sharp v. Ogden Rapid Transit Co., Utah Supreme Court, 160 Pac. 438.

Medical Evidence as to Effect of Eating Tainted Meat.—Action was brought against a retailer of meat for damages for sickness alleged to have been caused by eating unwholesome dried beef sold by the defendant. It was alleged that the plaintiff ate of the meat soon after purchasing it, and that it caused him to become ill, to be thrown into fits and spasms; that his digestive system had become so impaired as to render his life a burden to himself and his family; that he had lost control of his excretory organs, and that his health had become permanently impaired. It was urged by the defendant that the trial court erred in admitting the testimony of two physicians, who expressed the opinion that the plaintiff's sickness was caused by eating the meat, because their opinion was based partly upon the history of the case as detailed to them by the plaintiff. It was asserted that this should have been excluded as hearsay. But neither of the physicians repeated what the plaintiff had said. It was obvious that no intelligent examination could have been made, nor any intelligent opinion expressed, without taking into consideration both the subjective and the objective symptoms. The evidence was held not objectionable as being hearsay.—Fleisher v. Carstens Packing Co., Washington Supreme Court, 160 Pac. 14.

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THE ETIOLOGY OF SCARLET FEVER.

NOTHING definite is known of the cause of scarlet fever, though a vast amount of work has been done on that disease and much of the bacteriology of its complications is reasonably settled. The part played by the streptococcus, though of the greatest importance, especially so far as the complications are concerned, has generally been considered to be that of a secondary invader. Mallory and Medlar (*Jour. of Med. Research,* 1916, xxxv., 209) searched for a possible organism in sections made from the pharynx of patients dying early in severe attacks, making use of stored material from autopsies performed some years ago. They describe the almost constant finding of a slender Gram-positive bacillus in the mucous membrane at the edges of the ulcers or erosions, which they believe to be the primary lesion of the disease. These organisms were found almost constantly early in the disease and were absent in sections made from autopsies where scarlet fever was not present. They were able to study no very acute cases because of the mildness of the disease in Boston during the past year, but made cultures from those cases which did come under their observation. Cultures of an organism resembling, in morphology and staining properties, the one seen in tissue sections were obtained in five instances from cases early in the disease.

The writers have named this organism *B. scarlatinæ* and think that it is reasonable to infer that it is the cause of scarlet fever. In uncomplicated fulminating cases this causative agent is present in large numbers in the lesions in the respiratory tract, but dies out quickly in the milder cases. Their arguments in favor of the idea that this organism is the cause of scarlet fever are that it was found abundantly and extensively distributed in five cases. Moreover, it was found only in children who had had scarlet fever. Control examinations of tissues from over five hundred cases, mostly from the contagious department, failed to show it. It has not been encountered as a pathogenic secondary invader in other fatal diseases.

The organism studied by Mallory and Medlar seems to be a diphtheroid, or a member of that group, and in this fact lies much of the objection that will be made to the acceptance of it as *B. scarlatinæ*. The diphtheroid group have been blamed at one time or another as the causative agent of a number of unrelated conditions, such as Hodgkin's disease and typhus fever, and often with much more evidence than is presented by these authors. But the diphtheroids are a ubiquitous family and seem always to intrude where they may cause the most difficulty to us, with our gross methods of differentiation. These authors, of course, do not pretend that they have discovered the cause of scarlet fever, and present this theory only as what seems to be a logical inference from the work which they report. Nevertheless, it would seem wise to remember that in the diphtheroid bacilli we have a group of organisms which have caused much confusion in the past and are evidently to continue their annoying habit in the future.

AMBIDEXTERITY.

THE European War has brought the subject of ambidexterity into prominence. A very large number of men have been and are being maimed by the loss of the right hand or arm. The movement for rendering men incapacitated as the results of wounds able to follow their former or other trades and callings was initiated in France, and great success has attended such training. In Great Britain also disabled soldiers are being trained with care and intelligence to follow trades or work most suitable to them. A loss of the right arm prevents a man in nearly every instance from pursuing his previous employment; indeed, for a time, at least, until he can be trained to use the left hand or is fitted with some prosthetic apparatus from doing any manual work. From almost time immemorial man has been a right-handed animal. The first man was, probably, "bidexter" or "ambidexter," as it can scarcely be imagined that he emerged into life with an inherited instinctive right-handedness. There have always been, during all ages of which any history or tradition has been handed down, ambidextrous individuals and sometimes a race has possessed, possibly by training, two handed dexterity; thus the inhabitants of the Balearic Isles who gained great fame in the far off times in which they lived by their ambidextrous manner of slinging. Also we find mention in the Old Testament of the 700 Benjamite slingers, who were able to demonstrate in the most practical way how useful it was in a battle, and especially in a battle in which man and not machinery counted most, to be able to hurl the missiles from the sling with one or the other arm equally well. There were doubtless more left handed or ambidextrous persons in the old times than now, Plato, Aristotle, and other of the ancient writers frequently referring to ambidexterity; although the Japanese of the present day are reputed to be, in a large measure, a left-handed people. But among Europeans and Americans an ambidextrous man or woman is a rara avis.

Without dwelling upon the apparently overwhelming advantages of two handedness, it may be interesting to notice one objection which is frequently urged against ambidexterity. This relates to the mental or physiological effects. Some medical men have voiced the fear that the extra labor thus imposed upon the brain would endanger the intel-

lectual and mental standard of the individual. The supporters of ambidexterity, however, contend that ambidextral instruction does not entail extra work on the brain, but rather distributes the work to be done over a double area of brain matter. Instead, therefore, of one side or hemisphere of the brain having all the work to do and the other lobe becoming atrophied through disuse, both sides are alternately or simultaneously and symmetrically engaged, exercised, and developed, and ultimately in adult life each half takes its own proper share of the daily task; thus each lobe is proportionately benefited by this division of labor. So far as many of the victims of the war are concerned, it would certainly seem that ambidexterity would have been a blessing. A man who can use both hands in his work is much less helpless when he is disabled than one who can use only his right hand. When a man has been bereft of his right arm and has to earn his living, the question is raised in the vocational homes whether to fit him with an artificial hand and teach him to use this or to train him in the use of his left hand. A great deal of success has been attained already in the training of disabled soldiers in the use of the left hand, and unless the objections brought against this can be sustained by more conclusive evidence than any that has yet been brought forward, it would seem to be decidedly preferable in the majority of cases to train the left hand than to make the cripple dependent upon an artificial hand.

As was said above, the movement for the training of soldiers crippled by loss of the right hand or arm were initiated in France. In the *Revue Scientifique* it is stated that Mlle. Josefa Joteyko of the Collège de France, who has studied thoroughly neuromuscular physiology, has planned a scientific method for the education of the left hand in cripples where the right hand has been maimed or lost. The theory is that since the body is bilaterally symmetrical, the left hand should be trained to carry out the movements of the right hand in an inverse direction, or what might be termed "mirror movements." It was found, however, that an amount of work performed by the left hand, that usually done by the right hand, produced a greater strain on the heart. Therefore, all cripples using the left hand for right-hand work should undergo a periodic examination of the heart, and the extensive use of the left hand should be limited to certain trades or professions, and the work should be changed when it is found that too great a strain is being thrown upon the heart.

It would undoubtedly have been greatly to the advantage of those who have lost their right arms if they had previously been ambidextrous, and there is no proof that either heart or brain suffers unduly from two-handedness; the Japanese, if it is true that they are largely ambidextrous, do not seem to have suffered thereby, for they are as hardy and as mentally alert a race as any on earth. The arguments in support of the training of the left hand are stronger than the objections which have been brought against such training, and the wounds of war appear to have supplied a powerful plea in favor of ambidexterity.

COMPTOCORMIA.

THIS term, which means literally flexed trunk, has been applied to a static deformity resulting from the accidents of modern warfare. The point of flexion is at the level of the first lumbar vertebra. The subject exactly resembles a normal man whose spine is in a state of physiological flexion. The profile shows nothing abnormal. There is a compensatory extension of the head in the interest of vision, and the abdominal muscles are contracted. The patient is not much inconvenienced, and walks with a cane. Upon examination, one is surprised to find perfect suppleness of the vertebral column, with normal mobility of the spine. The condition is evidently a purely functional one, which could readily be simulated.

The condition seems to have been first noted by Souques in patients in the Salpêtrière. Mme. Rosanoff-Saloff has studied sixteen cases, and an abstract of her work is found in the *Journal de Médecine et de chirurgie pratiques* for September 25. Ordinary methods of diagnosis failed to reveal any indication of organic disease. The deformity affected both wounded and unwounded soldiers, the latter being much more numerous. In fact, but two of them had been wounded, and in one case the injury was remote from the point of flexion. Of the unwounded men, the great majority had suffered from shell shock, and suffered violence at the dorsolumbar spine. As a rule, they remained unconscious for a considerable period. Bruises over the spine were mentioned by the victims, but on examination neither wound nor fracture was in evidence save in the exceptions mentioned. Lumbar pain had invariably been present at the outset, and in certain cases had persisted for months, slowly abating thereafter. The pain is described as severe and incessant, aggravated by the slightest movement. During this period the sufferers remain in bed, in the attitude least uncomfortable, until the lessening of the pain permits them to rise in the flexed position. All treatment is unavailing. Spinal puncture now shows that if any abnormalities had been present originally their consequences must have totally disappeared. The muscles, which were for a long time immobilized by suffering, may now show contractures, which, however, may be regarded in part as psychogenic. The treatment may be briefly summarized as "plaster jacket and suggestion." A general anesthetic is indicated in some of the cases in which the jacket is to be applied. Once the corset has relieved the patient, the latter must be handled with a certain strictness of discipline. He is not allowed to receive visits or write letters, and is made to suffer other privations until it is time to remove the corset. When this is done he must be told firmly that his recovery is complete. In this manner Souques succeeded in curing all of the patients.

CURING SCARS BY ELECTRICITY.

THERE are some who think that the present aeon will be known to posterity as the electrical age. At any rate that potent force is coming to play a larger and larger part in industry, in war, and a

not insignificant part in medicine. Textbooks on electrotherapeutics are gradually becoming bulkier, so that we may look forward to the day not so far distant when no physician will think of hanging out his shingle without a battery in his office. The European War has greatly increased our knowledge of the practical application of electricity, particularly in regard to the detection of the location of bullets and other foreign bodies in the tissues and the examination of parts of the body which have suffered some nerve injury to determine diagnosis and prognosis. Lately we have seen a new application of electricity in the treatment of painful or adherent scars.

In *La Presse Médicale* for August 3, Drs. Chiray and Bourguignon report their experience in treating scars which have become contracted or adherent by ionization with potassium iodide. These doctors have been neurologists to one of the French military divisions and so have had ample material with which to work. Their method was to apply to the scar a negative electrode, its covering soaked in a 1 per cent. solution of potassium iodide. The positive electrode was wet with distilled water and applied to the other side of the limb. Zinc or tin electrodes were used and were covered with asbestos. They were about two feet square, the current was generally 10 milliamperes, and each séance was one hour long. The stages of the treatment were as follows: The scar at first became paler, then thinner and not so indurated, while the skin itself felt more pliable. Finally, the scar became separated from the underlying tissues and could be easily moved over them. Treatments were given every day at the beginning, and the first improvement became evident usually a few weeks after starting them, rarely as early as the eighth or tenth day, but often not for five or six weeks. Chiray and Bourguignon believe that the treatment should be kept up for at least three or four months.

The above is a valuable addition to the medical lessons taught us by the war and will undoubtedly be noted by American surgeons. It is impossible in the event of war to treat all wounds *secundum artem*, and it is inevitable that in some cases scars should result which by their contraction cause discomfort and hinder motility. The ionization method seems to offer an effectual way of dealing with such unpleasant conditions.

Health of the Navy.

One of the most encouraging signs of the times is the awakening of the civilized world to the importance of personal health and sanitation. While every effort is now being made by means of lectures and practical instruction to enlighten the general public on matters of health and hygiene, the Government through the Army and Navy has lost no time in carrying out plans for the development of hygiene of the highest type. In his annual report for the fiscal year the Secretary of the Navy says that the chief object of concern to the Surgeon General and the Medical Corps of the Navy is the matter of health and sanitation and the clean living of the personnel essential to efficient service. Few people outside of the Navy realize how carefully guarded as to health conditions these young men are. When a comparison is drawn between the men who enter commercial or other walks of life and those in the Navy, the secretary expresses wonder that more young men do not choose the sea for a life occupation; it is probably, he thinks, due to a knowledge only of its apparent hardships, and an ignorance of its advantages for a healthy life. Mortality statistics show that eight out of every thousand men on land die from the ordinary risks of disease and accidents annually during what should be their healthiest years; while last year only 4.48 per 1,000 of the naval personnel were lost by death. This is in itself significant. Tuberculosis gave but 11 per cent. to the death roll, while during the same period in civilian life 30 per cent. of total deaths between fifteen and sixty years were due to this disease. This, however, is of course an unfair comparison, for the sailor is a picked man and no one with incipient tuberculosis would be accepted for the service. The report, indeed, states that during the past year of the 106,392 men who applied for enlistment in the navy, only 30.18 per cent. were accepted. The present rigidity of physical requirements not only insures a high standard of health among the men, but helps to lighten the pension load of the country in the coming years. The work in sanitation which was carried out in Panama and Porto Rico by the Government has also been begun for the people in Hayti and Santo Domingo. That the Government is fairly alive to the advantages of health among the men to whom its first line of defense is entrusted is shown by the increase in appropriations for the medical department from $682,000 last year to $1,187,728 for the current year.

The Brain and Life of Rubén Dario.

The brain of the Spanish poet, Dario, bequeathed to Dr. J. J. Martínez, has been found to weigh 1850 gms., which places it in the same rank with the brain of Dupuytren, Cuvier, and Abercrombie. The cortex and convolutions showed superior development. Dario was precocious, a boy poet, dominated by his emotions. He was, in fact, highly neuropathic and had night terrors in early childhood. He frequently abused alcohol, which often caused delusions of grandeur. He slept poorly. His memory was prodigious. His character showed great weakness. He was always in love. He beheld visions not only at night but in the daytime, and at times seemed to have telepathic and clairvoyant powers. Dr. Galceran Granés in the *Gaceta Medica Catalana* for October 31 sums up Dario as follows: He was incomplete or "not all there," was unbalanced, a Bohemian. He could be summed up as intensive, imaginative, with a prodigious memory. His retention and constructive imagination are apparent in his poetry, but these do not constitute genius or originality, as apposed to formalism. While he always suggested genius, this was apparently dominated by the formalistic. Nevertheless, he was chiefly independent of outside influences. Apparently the extremely contradictory attributes possessed by him are the most certain evidence of lack of balance. Nearly every statement made about him must at once be qualified. The main lesson is that an unbalanced person who is a genius may possess a brain equal in size and with convolutions apparently as well formed as that of a genius who is well poised.

Lumbar Puncture of the Fetus During Podalic Version.

It would hardly suggest itself *a priori* that the withdrawal of a few cubic centimeters of cerebrospinal fluid from the fetus would materially facilitate the moulding of the head; yet Professor Costa, director of the Royal School of Obstetrics at Novara, employs this resource systematically in his clinic (*Il Policlinico*, 1916, XXIII, Medical Section, p. 1212). In addition to his clinical work he has made experiments along these lines. He claims that not only is there a greater compressibility of the head, but a lessened compression of the nerve centers, especially of the respiratory and cardiac centers. After the trunk has been partly delivered, the spine of the child is flexed by an assistant and the needle inserted between the fourth and fifth lumbar vertebræ. Aspiration is contraindicated, for as the fetal head passes through the pelvis the fluid escapes spontaneously. The use of this resource tends to cause an increased dependence on podalic version whenever there is any difficulty whatever in the passage of the head through the inlet, or when there is incomplete dilatation of the cervix. From another viewpoint, in any podalic version, irrespective of indication, lumbar puncture will render less difficult the birth of the head.

News of the Week

American Congress on Internal Medicine.—The first scientific session of the American Congress on Internal Medicine, which was chartered only last year, will be held at the Hotel Astor, New York, on December 28 and 29, under the presidency of Dr. Reynold W. Wilcox, who will address the members on "The Domain of Internal Medicine and the Purport of the Congress." On the first day of the congress there will be a discussion on the ductless glands in cardiovascular diseases and dementia precox, and on the second a symposium on duodenal ulcer. Following the congress a convocation of the American College of Physicians will be held, at which time candidates for fellowship in the college will be elected. All communications and inquiries relative to these meetings should be addressed to the secretary general, Dr. Heinrich Stern, 250 West Seventy-third Street, New York.

Symposium on Cancer.—In connection with the convocation in New York the last part of this month of the American Association for the Advancement of Science, a symposium on cancer will be held at a meeting at the American Museum of Natural History, Columbus Avenue and Seventy-seventh Street, at 2.30 P. M., on Friday, December 29. The American Society for the Control of Cancer has been asked to co-operate in bringing to public attention this important meeting, the program for which has been arranged by Prof. E. O. Jordan and Prof. C.-E. A. Winslow. The speakers and the title of their addresses are as follows: Prof G. N. Calkins of Columbia University, "The Stimulating Effects of Protoplasmic Substances on Cell Division." Prof. Leo Loeb of Washington University, St. Louis, "Tissue Growth and Tumor Growth." Dr. Joseph C. Bloodgood of Johns Hopkins University, "Cancer in the Human Being." In addition, Dr. James Ewing will summarize the latest experience and conclusions regarding the use of radium in the treatment of cancer, and Mr. Curtis E. Lakeman, executive secretary of the American Society for the Control of Cancer, will tell of the past and present efforts to combat this disease through the education of the public. The meeting will be open to the general public as well as to the medical profession.

Navy Hospital Ship.—The projected navy hospital ship, construction of which has been authorized, will be the first vessel designed and built for this purpose by any nation, it is said. Every convenience of an up-to-date shore hospital has been provided, and provision will be made for 300 patients in peace times and 500 in war. The ship will carry special stabilizers to minimize rolling and pitching, and will be equipped with laboratories, a complete *x*-ray plant, and a full shore-going hospital outfit, including ambulances.

Leprosy in Newark.—A case of leprosy has been reported from the Newark City Hospital. The patient, a Syrian rug peddler of Springfield Mass., is being held in the isolation ward. He has been in this country two and a half years.

Ban on Heroin.—All physicians of the United States Public Health Service have recently been ordered not to dispense any heroin for any purpose hereafter, and to return to headquarters any quantities of the drug they may have on hand. This action has been taken in the hope of counteracting the increasing use of heroin throughout the country. It is pointed out that less dangerous agents possess as powerful medical qualities, and that the sooner physicians realize this the easier it will be to curb the constant increase in the number of habitual heroin users.

Nurses' Home Dedicated.—The Central Club for Nurses, New York, dedicated its new building at 132 East Forty-fifth Street, on December 10. The membership of the club already numbers more than 800, representing 250 nursing schools, and although the building has just been completed it is already overcrowded.

Centenarian Dead.—John M. Phipps of Shenandoah, Ia., died suddenly at his home on December 10, aged 105 years.

"Anesthesia Rag."—A dispatch from Chicago to the New York *Sun* introduces the "anesthesia rag," with the following explanation: "The operating room at Columbus Hospital was equipped with a phonograph by order of the surgeons when a patient failed to succumb to the anesthestic. A popular air was started. The patient was soothed into accepting the anesthetic and his appendix was fox trotted out without a misstep. The method will be used regularly."

Site for Tuberculosis Hospital.—The Nassau County (N. Y.) Board of Supervisors on December 13 voted to purchase a 100-acre farm at Bethpage, L. I., to be used as the site for a tuberculosis hospital for the county. At a referendum election some months ago the people of the county approved of the appropriation of $100,000 for the site and the hospital.

Civil Service Examination.—The United States Civil Service Commission will hold an examination on January 3, 1917, open to men only, for the purpose of filling vacancies in the position of deputy collector, inspector, and agent under the anti-narcotic act. There are at present about seventy-five vacancies in this position in the Internal Revenue Service, Treasury Department, at $1,600 a year, with actual traveling expenses and subsistence while away from post of duty on official business. Graduation in pharmacy or medicine from a recognized

institution, or the possession of a State license to practice pharmacy, is a prerequisite for consideration for this position. Further details may be obtained on application to the United States Civil Service Commission, Washington, D. C.

Personals.—Dr. F. E. Harrington of the United States Public Health Service has been assigned by Surgeon General Blue for a year's health work in Jefferson County, Alabama.

Dr. C. Frederic Jellinghaus announces the removal of his office to 572 Park Avenue, New York.

Dr. Millard Knowlton, chief of the Bureau of Education and Publicity of the New Jersey State Department of Health, has tendered his resignation, to take effect on January 15. Dr. Knowlton plans to continue his studies in public health in Harvard University and the Massachusetts Institute of Technology.

Dr. E. R. Hildreth, resident physician at the Presbyterian Mission Hospital, San Juan, Porto Rico, who has been in the United States on furlough, sailed from New York on December 15 to resume his work.

Dr. Henry A. Bernstein has been elected Obstetrician and Associate Gynecologist, to the Beth David Hospital, New York City.

General Gorgas Returns.—The International Health Board Commission of the Rockefeller Foundation, headed by Gen. W. C. Gorgas, U. S. A., which has been carrying on a study of yellow fever and other contagious diseases of the tropics, returned to New York on December 11. In addition to General Gorgas the party comprised Dr. Henry R. Carter of the U. S. Public Health Service, Dr. C. C. Lyster, Dr. Eugene R. Whitmore, and Dr. William R. Wrightson. Dr. Juan Guiteras, also a member of the commission, stopped off at Barbados to investigate yellow fever conditions there. The report of the commission will be made public shortly through the Rockefeller Foundation.

Enforced Health Insurance Opposed.—The directors of the Board and Trade Transportation of New York, anticipating the reintroduction in the Legislature of the bill for compulsory State health insurance, put themselves on record recently as opposed to such "arbitrary and unsound legislation." The bill is considered too arbitrary because the liability of various classes of workingmen to illness or disease varies, because much depends upon the workingman's habits, intelligence, and sobriety, and because the responsibility of employers varies so greatly.

Gifts to Charities.—By the will of Mrs. Mary Warden Harkness of New York, who died recently, bequests are made to a number of charitable and educational institutions. Among the gifts to medical institutions are the following: $10,000 to St. Bartholomew's Church, New York, for the purposes of its clinic; $100,000 to the Morristown Memorial Hospital, Morristown, N. J., for endowment; $100,000 to the Flagler Hospital, St. Augustine, Fla., for endowment; $100,000 to the Germantown Dispensary and Hospital, Germantown, Pa., for endowment; $50,000 to St. John's Guild, New York, as endowment for its fresh-air work; $100,000 to the Babies' Hospital, New York, for endowment; $100,000 to St. Mary's Hospital, New York, for endowment.

By the will of the late Joshua L. Bailey of Philadelphia bequests are made as follows: Pennsylvania Hospital $5,000; Bryn Mawr Hospital, Philadelphia Hospital for Women, Frederick Douglass Hospital, Lying-In Hospital, Friends' Hospital for the Insane, Oncologic Hospital, each $2,000.

To Treat Occupational Diseases.—The Medical Board of the Union Hospital, Borough of the Bronx, New York, at a recent meeting voted to establish a division of occupational diseases with Dr. Frederic W. Loughran as attending physician in charge. Patients treated in this division will, before their discharge, be instructed in methods of lessening or preventing the dangers that surround them while at work; and, should opportunity offer, employers will be advised as to the value of industrial hygiene.

Gift to Long Island College Hospital.—It has recently been announced that the late Dr. John A. McCorkle of Brooklyn, before his death, set aside, in trust for the Long Island College Hospital, bonds of the value of $50,000, thus forming one of the largest gifts ever made to a medical institution by a physician in active practice. As the bonds became payable to the college upon Dr. McCorkle's death, the gift did not become known at the time his will was read. A committee of citizens of Brooklyn has now undertaken to raise an equal amount as a memorial to Dr. McCorkle.

New West Side Hospital.—Plans are being prepared for the erection of a new hospital to be known as the St. Nicholas Hospital, on the upper West Side of New York, a part of the city where hospital provision has not kept pace with increase in population. A site running through the block between St. Nicholas and Edgecomb Avenues at 148th Street has been donated to the incorporators of the hospital, and a large portion of the building fund has already been subscribed, it is stated. The first building, which will be erected as a unit so that others of a similar type may be added, will be a five-story building with accommodations for sixty patients. The State Board of Charities now has the application for a charter for the hospital under consideration, and the plans for the buildings and general scope of the hospital will also be submitted to the Hospital Committee of the New York College of Surgeons. The chief of the medical division, it is announced, will be Dr. Harlow Brooks, and the surgical division will be under the charge of Drs. Seth M. Milliken and John T. Moorhead.

Medical Society Elections. — ANDROSCOGGIN COUNTY (ME.) MEDICAL ASSOCIATION: The annual meeting of this society was held in Lewiston on December 5, when the following officers were elected: *President*, Dr. S. E. Sawyer, Lewiston; *Vice-President*, Dr. E. B. Buker, Auburn; *Secretary-Treasurer*, Dr. L. F. Hall.

KENNEBEC COUNTY (ME.) MEDICAL SOCIETY: At the annual meeting held on December 7, in Augusta, the following officers were elected: *President*, Dr. O. C. S. Davies, Augusta; *Vice-President*, Dr. A. U. Desjardins, Waterville; *Secretary*, Dr. S. J. Beach, Augusta; *Treasurer*, Dr. Stephen E. Vosburgh, Augusta.

SOUTHWESTERN MINNESOTA MEDICAL ASSOCIATION: The annual meeting of this association was held in Mankato on December 4, officers being elected as follows: *President*, Dr. A. F. Schmitt, Mankato; *Vice-Presidents*, Dr. W. F. C. Heise, Winona, and Dr. A. Olson, Nicollet; *Secretary*, Dr. W. T. Adams, Elgin; *Treasurer*, Dr. G. F. Merritt, St Peter.

Obituary Notes.—Dr. SILAS A. BOAM of Topeka, Kan., a graduate of the University of Birmingham, England, in 1870, died at his home on November 15, from heart disease, aged 70 years.

Prof. Hugo Münsterberg, whose sudden death occurred in Boston on December 16, at the age of 53 years, was a graduate in medicine from the University of Heidelberg in 1887. Five years later he came to this country to take up the work of professor of psychology and director of the psychological laboratory at Harvard University, which he continued until his death. He did no work in medicine, although the field of psychotherapy attracted his interest, but as a psychologist he received the widest recognition.

Dr. John McGuffin of Hastings, Mich., a graduate of the Detroit College of Medicine and Surgery in 1900, died at his home on November 7, aged 42 years.

Dr. Riland Dillard Berry of Springfield, Ill., a graduate of the Medical College of Ohio, Cincinnati, in 1879, and a member of the American Medical Association, the Illinois State Medical Society, and the Sangamon County Medical Society, died in St. John's Hospital, Springfield, on November 3, from cerebral hemorrhage, aged 61 years.

Dr. Isaac H. Mayer of Willow Street, Pa., a graduate of the Jefferson Medical College of Philadelphia in 1859, died at his home on November 13, aged 73 years.

Dr. Verne Ernest Winston of Keystone, S. D., a graduate of the University of Illinois, College of Medicine, Chicago, in 1903, died in the Methodist Deaconess Hospital, Rapid City, S. D., on November 12, following an operation for appendicitis, aged 37 years.

Dr. Robert E. Cunningham of Castile, La., a graduate of the Medical Department of the University of the South, Sewanee, Tenn., in 1902, died suddenly at his home on November 11, aged 44 years.

Dr. Joshua H. Gheesling of Greensboro, Ga., a graduate of the Medical Department of the University of Georgia, Augusta, in 1879, and a member of the American Medical Association, the Medical Association of Georgia, and the Greene County Medical Society, died in the Grady Hospital, Atlanta, on November 20, following an operation, aged 60 years.

Dr. John Frank Kane of Minooka, Pa., a graduate of Georgetown University, School of Medicine, Washington, D. C., in 1911, and a member of the Medical Society of the State of Pennsylvania, and the Lackawanna County Medical Society, died in the Mary Kellar Memorial Hospital, South Scranton, Pa., on November 20, following an operation, aged 32 years.

Dr. James M. Evans of Clarksburg, Ohio, a graduate of Starling Medical College, Columbus, in 1850, died at his home on November 15, aged 91 years.

Dr. Thomas W. Smith of Kiefer, Okla., a graduate of the Hospital College of Medicine, Louisville, Ky., in 1900, and a member of the American Medical Association, the Oklahoma State Medical Association, and the Creek County Medical Society, died in a hospital in Tusla, Okla., on November 10, aged 42 years.

Dr. George W. Parr of Geuda Springs, Kan., a graduate of the School of Medicine of the Western Reserve University, Cleveland, in 1868, and of Bellevue Hospital Medical College, New York, in 1876, died at his home on November 19, from pneumonia, aged 75 years.

Dr. Charles Gray Cole of Binghamton, N. Y., a graduate of the Albany Medical College in 1897, and a member of the American Medical Association, the Medical Society of the State of New York, the Broome County Medical Society, and the Binghamton Academy of Medicine, died at his home on October 27, from pneumonia, aged 51 years.

Dr. Samuel Erskine McClymonds of College Springs, Ia., a graduate of Miami Medical College, Cincinnati, in 1877, died at his home on November 17, aged 64 years.

Dr. Jesse M. Ledbetter of Shreveport, La., a graduate of Charity Hospital Medical College, New Orleans, in 1876, died at his home on November 9, aged 62 years.

Dr. Robert L. Walker of Carnegie, Pa., a graduate of the School of Medicine of the University of Pennsylvania, Philadelphia, in 1866, and a member of the Medical Society of the State of Pennsylvania, and the Allegheny County Medical Society, died at his home on November 19, from pleuro-pneumonia, aged 78 years.

Dr. George E. Nickel of Belle Vernon, Pa., a graduate of the Physio-Medical Institute, Cincinnati, in 1881, died at his home on November 13, aged 57 years.

Dr. Onas Smith of Ash Grove, Mo., a graduate of the St. Louis College of Physicians and Surgeons in 1904, died at his home on November 15, following an operation, aged 33 years.

Dr. Andrew James Park of Oak Park, Ill., a graduate of the Medical School of Harvard University, Boston, in 1852, died on November 25, from senile debility, aged 90 years.

Dr. Oliver Herman Heidt of Detroit, Mich., a graduate of the University of Michigan Medical School, Ann Arbor, in 1915, died in Harper Hospital, Detroit, on November 23, aged 26 years.

Dr. John A. Warner of Clarksville, Mich., a graduate of Saginaw Valley Medical College, Saginaw, Mich., in 1901, and of the Detroit College of Medicine and Surgery in 1908, died in Chicago on November 5, aged 51 years.

Dr. Edwin Hunt Robinson of Robinson Springs, Ala., a graduate of Memphis Medical College in 1849, died at his home on November 22, aged 89 years.

Dr. David Claytor of Bedford, Va., a veteran of the Confederate Army, died at his home on November 17, aged 84 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

SANITATION OF CAMPS—WIND OF THE BULLET—FUNCTIONS OF THE CEREBROSPINAL FLUID.

London, Nov. 18, 1916.

The Epidemiological Section of the Royal Society of Medicine has had under consideration the sanitation of camps introduced by Capt. C. G. Moor, who after describing the organization of a sanitary section dwelt upon certain aspects of sanitary work at a base: as to water supply, he would cooperate with the civil authorities and so secure double sterilization, as the men's water bottles would be systematically dealt with at the same time. In disposing of horse manure, the plan he considered most satisfactory was to lay down a tram line to the yard at a gauge of 18 in. and a weight of rails of 12 lb. to 18 lb. Sleepers should be not more than 2 ft. apart and properly packed. By this plan manure

could be removed a mile or a mile and a half from the camp. To burn the manure a cross-trench incinerator was best. To keep down flies when burning or close packing was not practicable, a good plan was to run fowls on the dumps, as they devoured great numbers of larvæ; to keep them from latrines close-fitting lids to the buckets were essential and also care to ensure these lids were replaced instantly after use. Very efficacious fly wires might be made of the wires of hay bales by smearing them with a mixture of two parts of powdered resin and one of castor oil, melted and applied hot. Various devices employed by the sanitary sections in the field were illustrated by Major Fremlin, commander of the City Sanitary Company. Lieutenant-Colonel Copeman insisted on the importance of close packing manure as stifling the fly pest at its source, and spoke of excellent results of chemical treatment of sullage water. Mr. Bacot, entomologist of the Lister Institute, pointed out the danger of applying results obtained with fly sprays at ordinary temperatures to tropical or subtropical conditions. Lieutenant-Colonel Kenwood hoped that many of the simple and effective devices invented under the stress of war conditions would be utilized in civil public health work in rural districts. Captain Hartley related his experience with a sanitary section at the front and showed the danger of allowing wastage in the sanitary ranks to be replaced by untrained men.

The question of the effects of the "wind of the bullet" has been again brought forward in view of the war. The problem is whether the displacement of air alone can cause serious or even mortal injuries, without the man being touched by the projectile. You will remember that Baron Larrey maintained that all the stories of men being killed or wounded in such a way were due to a false interpretation of the facts. Nevertheless, it is certain that soldiers have been rendered deaf by the explosion of a shell near them. Further, one French soldier was found dead in a field after exposure to such danger, although no splinter seemed to have touched him. This has naturally revived the question of the wind of the bullet. There does not appear to be any record of soldiers being actually killed without being touched by a solid piece of the projectile. There is, however, a great difference between the shells of to-day and those of former years. This is due to greater speed as well as the greater power of the explosive element, and results in more men being knocked out. Shells bursting near them may cause concussion of the brain or spine with violent headaches or deafness. In a case recorded by Professor Symonds a soldier walking on one side of the road was knocked down by a shell bursting on the other side, making him insensible for several days. He tells, too, of cases in which the bullet traversed the skin and caused a burning wound an inch in length. Symonds has had no case due to the wind of the bullet, but if such occurred they would be treated in the field hospitals.

Professor Halliburton's address at the Neurological Section of the Royal Society of Medicine was devoted to the "Possible Functions of the Cerebrospinal Fluid," a subject which he opened with a statement of the present state of knowledge as to the character, composition, and fate of the fluid. Under normal conditions it is clear, like pure water, of low specific gravity, contains in solution inorganic salts similar to those in the blood with a trace of coagulable protein and some reducing substance which has now been determined to be glucose; it is practically free from formed elements. Under some abnormal states the protein may be greatly increased or other substances added to it, such as cholesterol, choline, or a similar substance. Cellular structures may also be added and the differentiation of these is a valuable aid to diagnosis. Parasites of different sorts are found in other cases. The fluid is formed primarily by the secreting cells which so prominently cover the choroid plexuses in the cerebral ventricles, so that this structure was well named by Mott, the choroid gland. The fluid is normally present at a certain pressure which is not the result of arterial pressure transmitted passively. This pressure may, indeed, be influenced by either the arterial or the venous, but does not depend on these, and often varies quite independently of them. The true cerebrospinal pressure, said Professor Halliburton, is the result of the secretory pressure of the choroid epithelium cells; in other words, the craniospinal contents can no longer be regarded as a fixed quantity without power to expand or contract in volume. Three groups of substances promote the flow and increase the pressure independently of those which affect it secondarily by altering blood pressure; first group, excess of carbon dioxide (or lack of oxygen) in the blood, as in asphyxia or drugs which interfere with respiration; second group, volatile anesthetics, which may act by interfering with or altering respiration or the physical conditions of secretion; third group, this is specific and consists of an extract of the choroid gland, or of the brain; the former is the more powerful. The chemical nature of the hormone in this extract is uncertain, but it is probably some product of nervous metabolism, which, arising in the brain, passes to the choroids, accumulates in them, and stimulates the secreting cells to activity; it cannot be discovered in the normal secretion, but in general paralysis and brain softening—conditions in which catabolic processes are excessive—it can be recognized (by physiological tests) in the fluid itself. The plexuses have abundant nerves, but there is no evidence that they are secretory; probably they are not. This fluid is without doubt being formed continually. Then, what becomes of it? Neutral fluids disappear in a few minutes, if introduced into the cranio-vertebral cavity, and the course taken by them, and presumably by the normal fluid also, can be traced by chemical tests or by the physiological action. By such methods it has been proved that the exit is through the bloodstream. The speed with which such substances appear in the blood is very remarkable, especially if introduced into the subcerebellar region; *e.g.* adrenalin, nicotine, or atropine will show typical physiological action in a few seconds, almost as rapidly as if injected into the venous circulation. On the other hand, those substances not readily diffusible (*e.g.* commercial peptone) do not produce their effects when introduced into the cerebrospinal fluid, so that the old theory of valved orifices leading to the large veins at the base of the brain must be abandoned. Diffusion is most rapid in the subcerebellar district, but is extremely slow in the spinal, especially the lower spinal region, and probably occurs in the venous sinuses by the microscopic arachnoid villi—possibly also by transference through the thin walls of the blood vessels within the central nervous system. Diffusion in the opposite direction does not occur except in a negligible degree in the case of alcohol and a few drugs.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 7, 1916.

1. Preparedness for Health. Haven Emerson.
2. Spinal Fluid Sugar. J. B. Rieger, S. M. and H. C. Solomon.
3. An Outline of the Elements and Treatment of Stammering. Anne Bradstreet Stedman.
4. Fatty Degenerative Changes in the Purkinje Cell Belt of the Cerebellum in Exhaustive Infective Psychoses. Egbert W. Fell.
5. The Yerkes-Bridges Point Scale as Applied to Candidates for Employment at the Psychopathic Hospital. C. S. Rossy.
6. The Intensive Group of Social Service Cases. Mary C. Jarrett.
7. An Expedient for the Radical Cure of Some Retroversions. Edward Reynolds.
8. Ether Anesthesia. H. H. Amsden.

1. Preparedness for Health.—Haven Emerson, Commissioner of Health, New York City, makes a strong plea for preparedness for health along three avenues: The prevention of communicable diseases; the correction of habits which determine or contribute to premature death, and the prevention of industrial hazards. With relation to the registration laws for births and deaths—to our shame, be it said—we, who claim to be a civilized nation, have still so cheap a notion as to life and death that we are without a national registration law or uniform State laws demanding the reporting of births and deaths. Only 66 per cent. of the population of the United States lives in States where the registration of deaths is compulsory, and less than 31 per cent. live where registration of births is required. Emerson states that while there are the thousands killed in Europe in battle, more people are killed by preventable disease annually in this country than the annual loss of any nation in the present war. He refers to the yearly death rate in New York City, which has fallen from 29 per thousand to 14 per thousand of population, and that out of 75,000 deaths a year, 31,700 were from causes which are largely, if not wholly, preventable. We still lose 13,866 children under a year of age. But in reviewing the results obtained by the half-century experiences of the Department of Health, we find that if the death rate of 1866 had prevailed in 1915, we should have lost in New York City last year 88,000 people who are now living. The best results are shown in the infant mortality rate, which has fallen from 242 per thousand living births in 1891 to 98 per thousand births in 1915, and in the past five years from 170 to 98 per thousand births. Whereas only 80 per cent. of the babies born in 1898 lived through their first year, now more than 90 per cent. survive. He compares the work in the examination of food handlers done by the physicians of the Health Department and the results obtained by the same number of private physicians employed for the same purpose. The results showed that the departmental physicians discovered 3.7 times as many cases of pulmonary tuberculosis as the private physicians. He further states that whether by organization, by endowment, or by State employment, there must come a change in the basis of medical practice. While reviewing some of the brilliant results obtained through the efforts of the Department of Health, he also shows wherein weakness lies, and the urgent need for public and scientific cooperative medical service promptly summoned and consistently obeyed; the quick and efficient handling of contagious and communicable diseases, which make heavy inroads on lives; education in the right ways of living, from the training of the expectant mother, through the schooling of her child, and until the new home is started in the next generation; union of effort by the State, the employer, and the employee, to prevent wastage from occupational disease. Upon these principles of action must our social program for national service be built. It is not a conflict with the popular clamor for a military and naval preparedness that Emerson suggests, not a hindrance to commercial preparedness for greater national wealth, but a warning of the futility of both of these without the assurance that the first need and greatest asset of a nation, its health, should take the leading place in men's thoughts. There is nothing so democratic as disease, no bond so strong as the appeal of suffering fellowmen.

3. An Outline of the Elements and Treatment of Stammering.—Anne B. Stedman says that with the cases of structural defect, stammering is of purely mental origin; otherwise the expression in faulty speech of the neurotic temperament. Therapy must therefore be based on this fact. Two methods are used: One, used by physicians, aims to cure by working from the inside out, that is by giving all the attention to the frame of mind when speaking; the second, employed by teachers not of the medical profession, endeavors to treat from the outside in by the use of vocal exercises without regard to the mental element. Now the stammerer can produce perfectly normal consonants and vowels when unembarrassed, and practical treatment of the habit, vocal exercises, etc., are only half the battle. The treatment must go deeper until it reaches the *fear*—the emotional disturbance that occurs under trying circumstances between the thought and its expression. It is here that the training of a neurologist is required, as stammering is as truly the province of the neurologist as any other nervous affection. The layman in teaching this condition narrows his field and must depend on the personal touch. Often, to tell a child who is constantly bracing himself for difficulties, that he need not do the things he dreads, is followed by surprise, gradual relaxation, and a new perspective, which is a great help to normal speech. In a public clinic this plan cannot be carried out, so class treatment must be resorted to, which is of inestimable benefit in many ways, but aside from benefit to the stammerer it shows to the teacher the weak spot in the patient's progress, and then improvement, though frequently hard won, is no longer superficial. Elemental speech exercises, principles of singing, elocution, and phonetics, breath control, and relaxation are methods all employed. These cannot be followed out alone at home, no matter how conscientious the pupil; the newly acquired mode of speech must be used constantly until it becomes mechanical. In the majority of the patients, character plays an important part in recovery. Will, perseverance, and ambition make up the final third when a patient has been brought two-thirds of the way toward normal speech. Besides the above mentioned aids, a change has to be brought about in the patient's attitude of mind; something has to relax, to let go before the force of ambition can even be appealed to. Character—moral force, that is—is not synonymous with mental makeup, and it is the stammerer's mental makeup, for which he cannot be held responsible, which is at the bottom of his trouble. Cure the habit, but cure the mind as well.

7. An Expedient for the Radical Cure of Some Retroversions.—Edward Reynolds makes special reference to the cases of women who between pregnancies suffer from retroversion, yet for whom an operation is not indicated, but the wearing of a pessary between pregnancies becomes necessary. He gives his treatment as follows: All that is necessary to secure effective puerperal involution of the supporting structures, and a cure of the retroversion, is so to arrange the puerperium that the supporting structures undergo involution, and complete involution, while the uterus is held in an extreme forward position. Under these circumstances

the supporting structures will almost invariably shorten and resume firmness to a degree which will hold the uterus permanently in a normal position. At a period in the puerperium at which the uterus is too large to be capable of retroverting, *i.e.* between the tenth and fifteenth day of the puerperium, the uterus should be thrown into strong anteversion bimanually, and a carefully fitted, hard rubber pessary should be made to hold it there. Such a pessary will usually be larger than the stock sizes and must often be specially procured. Very hot vaginal douches should then be administered twice daily. From two to four quarts should be used, and the injection should last from fifteen to twenty minutes. It should be given with a fountain syringe and under a fall of not more than twelve to fifteen inches in order to avoid forcing fluid through the open os. In this position of the uterus and under the influence of the hot douches involution is usually very rapid. In most cases it will be found that within a week the original pessary will have become too large and too highly curved for the contracting vagina. A second and smaller, but equally well fitting, pessary should then be adjusted, and the douches continued. This will usually need to be replaced by one of lesser size in from ten days to a fortnight, and after a few weeks this must again be reduced. The hot douches should be continued until the uterus is but little above the normal size and firmness, but should then be intermitted, as too long a continuance of the douches sometimes results in hyperinvolution, which might cause subsequent dysmenorrhea.

New York Medical Journal.

December 9, 1916.

1. Gonorrhea a Curable Scourge. George A Wyeth.
2. Hay Fever. William Scheppegrell.
3. Surgical Immunity. W. Wayne Babcock.
4. The Psychopathology of Noise. A. A. Brill.
5. Profound Secondary Anemia Due to Ulcerated Internal Hemorrhoids. J. F. Saphir.
6. Internal Hemorrhoids. Arthur A. Landsman.
7. Hard Water and Health. Frank Leslie Rector.
8. Parenchymatous Glossitis. Max Lubman.

1. Gonorrhea a Curable Scourge.—George A. Wyeth states that the modern means at the command of the physician are so definite and precise that it is inexcusable for a case of gonorrhea to remain uncured. He does not suggest that it is a simple or easy thing to fight the gonococcus, but painstaking care in diagnosis and definite location of the lesion are now possible. Until a short time ago both profession and laity joined in considering gonorrhea an unimportant affection, while the seriousness of syphilis was early recognized. He considers it gratifying that certain of the daily papers are lending their columns to the fighting of this dread disease, for only by education can headway against it be made. Gonorrhea is a *preventable* disease, as has been amply proved in the U. S. Navy. Gonorrhea can be aborted in the majority of cases if seen within twenty-four hours after a purulent discharge has begun, except in primary cases. While it is not the object of his paper to give detailed treatment, general principles may be outlined as follows: First, definitely to locate the seat of infection and treat it locally by irrigations and applications. Here, too, mild solutions of protargol have served us well. Wyeth wishes to emphasize the importance of the systematic use of the microscope in treating this disease; first from a diagnostic standpoint. Surely no one can say positively of any given case of urethral discharge that the cause is gonorrheal unless gonococci are demonstrated. More than once has it been his pleasing experience to convince a patient who thought himself infected with gonorrhea, that his belief lacked foundation. Since there can be no hard and fast rule as to the duration of an attack of gonorrhea, the physician is, and must be dependent upon the microscope for definite information as to the progress of his patient. In conclusion, Wyeth quotes from Dr. George Luys, of Paris, who says in his "Traité de la blennorrhagie": "Our therapy is nowadays so perfect that it is not permissible for a medical man to allow a case of gonorrheal urethritis to go on without curing it. Modern science has made such conquests that we can say without exaggeration that there is no inflammation of the urethra which cannot be cured completely by appropriate treatment. But it should not be forgotten that this result is obtained only by means of prolonged and painstaking observation and that urethroscopy alone enables us to diagnose the local lesions with accuracy, and to apply the sovereign remedy correctly. Without the control of his eye it is impossible for the medical man to select the best and most efficacious treatment."

Journal of the American Medical Association.

December 9, 1916.

1. Spinal Fluid Findings Characteristic of Cord Compression. James B. Ayer and Henry R. Viets.
2. Municipal Health Administration. Ernest C. Levy.
3. A Further Report on Thromboplastin Solution as a Hemostatic. Alfred F. Hess.
4. Itching as a Symptom. Philip Kilroy.
5. The Problem of Diphtheria Carriers. Sophie Rabinoff.
6. District Health Organization. C. St. Clair Drake.
7. Thyroid Disease in Relation to Rhinology and Laryngology. B. R. Shurly.
8. Autogenous Colon Vaccines in the Study, Diagnosis and Therapy of Chronic Intestinal Toxemia. G. Reese Satterlee.
9. A New Development in Sanatorium Treatment. Daniel E Drake.
10. Institutional Typhoid Epidemic Combated by Vaccination. Philip B. Newcomb.
11. Streptococcus Infection as a Cause of Spontaneous Abortion. Arthur H. Curtis.
12. The Treatment of Certain Diseases of the Skin by the Intravenous Injection of a Foreign Proteid. M. F. Engman and R. A. McGarry.
13. Cerebellar Localization: An Experimental Study by a New Method. I. Leon Meyers.

3. A Further Report on Thromboplastin Solution as a Hemostatic.—Alfred F. Hess refers to his report given about a year ago from the Research Laboratory, Department of Health, New York City, and a little later another report on the same subject from Cronin, both published in *The Journal A. M. A.*, on the experimental work done with thromboplastin as a hemostatic. During the past year Hess has continued his clinical experiments at the Research Laboratory, Department of Health, New York City, along this line together with laboratory tests to determine more fully the various properties of thromboplastin. Since an account of the first report was given in these columns, it is only necessary to give now his later results. Thromboplastin solution has been supplied to several of the maternity hospitals of New York City, where it has been employed locally in cases of melena neonatorum, in bleeding from the cord, skin, mouth, vagina, etc., and also as a dressing where there was undue hemorrhage following circumcision. Thromboplastin should be applied directly to the bleeding area; clots should first be removed. Hess reports the following results from his latest investigations: Tissue juice made from brain (thromboplastin solution) has proved itself of practical value in controlling hemorrhage wherever it can reach the site of bleeding. In cases of true hemophilia it may be regarded almost as a specific hemostatic. It is to be recommended for local use in the bleeding of the newborn, in nasal hemorrhage, and in the parenchymatous bleeding associated with various operations, etc. Where local applications fail, it should be injected into the site of hemorrhage, as in bleeding from the gums following tooth extraction. This method can readily be resorted to, as thromboplastin solution loses but little of its potency as the result of dilution and cursory boiling. Further clinical experience is necessary before

its value can be determined as a hemostatic in connection with hemorrhage of the gastrointestinal tract. However, it is innocuous when given by mouth in considerable dosage, and would seem to be indicated in bleeding from the stomach and from the upper intestine. In addition to its hemostatic action, this tissue extract has been found to possess healing properties, actively stimulating granulation tissue and hastening epithelization. It is therefore applicable as a dressing for torpid ulcers and for sluggish wounds.

5. **The Problem of Diphtheria Carriers.**—Sophie Rabinoff found in her investigations during an outbreak of diphtheria in an institution caring for 400 children in New York City that in the group of eighty diphtheria carriers which were studied, it was found that a certain number became negative, irrespective of the treatment employed. No better results were obtained with iodized phenol or with Fullers' earth, than with the silver preparations or other antiseptics. Indeed, those cases which were not treated in any way did equally as well. An exception must be made only as regards the results obtained with Fullers' earth in adults, which were fairly satisfactory. The real problem of the carrier lies in the ultimate group in which the bacteria persist in spite of all local treatment. The presence of a foreign body in the nose may provide a favorable environment for the growth of the diphtheria bacilli. Removal of tonsils and adenoids seems to offer a safe and rapid method of eliminating diphtheria bacilli from the nose and throat of carriers, and should finally be resorted to where other methods have failed.

11. **Streptococcus Infection as a Cause of Spontaneous Abortion.**—Arthur H. Curtis states that the object of his report is to produce evidence which will be helpful in the solution of the problem of definite cause or causes of spontaneous abortion from infection. It is already known that the *Treponema pallidum* is directly responsible for the death of the fetus in the later months. From thorough experimental and clinical work carried on in the Pathological Laboratory and Gynecological Service of St. Luke's Hospital, Chicago, he offers the following report as a summation of his work thus far: From the urine of a patient who gave spontaneous birth to a stillborn child were obtained large numbers of streptococci. Two pregnant rabbits were intravenously inoculated with cultures of this organism. Death of the fetuses followed. One mother appeared to be in normal health, the other became seriously sick some days after the death of the fetuses. Pure cultures of the streptococcus were obtained from the kidneys and from the uterine contents of both animals. From a spontaneous stillbirth were obtained pure cultures of a Gram-positive streptococcus. A series of three pregnant rabbits was intravenously injected with washed cultures of this organism. In each instance there was premature labor or death of the embryos with absorption. Serious maternal illness was not evident. At necropsy, pure cultures of the streptococcus were recovered from the uterine cavity. Whether organisms other than the streptococcus possess the power of interrupting the course of pregnancy does not materially influence these results. These facts remain: Streptococci can be isolated from women who give spontaneous birth to stillborn children; streptococci have been obtained in pure culture from the placenta and from the stillborn fetus; intravenous injection of pregnant rabbits with cultures of these streptococci is followed by fetal death; the streptococcus can be isolated in pure culture from the fetus and from the uterine cavity of the mother rabbit. The streptococcus encountered in these cases appears to be peculiarly adapted to infection of the genitourinary tract. Several closely related, probably identical strains, have been isolated from patients with uterine, tubal, and kidney infections. Possessed of certain variability in cultural characteristics, these strains have much in common. We may have here to do with a type of streptococcus especially modified by, and with especial affinity for, growth in the genitourinary tract; it is characterized by persistence of infection, low virulence, and richness of growth on artificial mediums.

The Lancet.

November 18, 1916.

1. An Inquiry into the Natural History of Septic Wounds. Section III. Kenneth Goadby.
2. A Note on the Value of Vaccine Therapy in the Treatment of Gunshot Wounds, Viewed from a Surgical Aspect. R. H. Jocelyn Swan.
3. The Psychology of Malingering and Functional Neuroses in Peace and War. Thomas Lumsden.
4. The Angle of the Dropping Pipette and Accuracy in Agglutination Technique. R. P. Garrow.

1. **An Inquiry into the Natural History of Septic Wounds.**—Kenneth Goadby gives an exhaustive account in the third section of his report, covering tissue reactions. The first two sections previously published contained certain facts relating to sinus formation and sinuses and vaccine therapy. His conclusions from this last extensive work are drawn as follows: (1) That the energy dissipated in the tissues from projectiles produces changes in a wider area than that immediately lacerated by the projectile itself. (2) That the cellular activity promoting repair in the affected areas proceeds concomitantly with degenerative processes; with the degenerative processes are associated anaerobic bacteria, *B. perfringens*, B. malignant edema, and possibly B. Hibler IX type. (3) That there is direct histological evidence of tissue digestion, in addition to necrotic changes due to traumatism or coagulation owing to interference with circulation. Evidences of degenerative tissue changes are found in tissue removed from wounds at long periods after the original infection of the wound. (4) That acid production by anaerobic bacteria of the perfringens class is an important factor in the determination of clinical gas gangrene. (5) That the general blood reaction in the direction of leucocytosis is more related to infection with the pathogenic cocci than the anaerobic bacilli. In the three sections of the present report an attempt has been made to correlate certain facts obtained in the course of an inquiry as yet uncompleted. The bacteriological data as to the organisms occurring in the depth of the sinus have been confirmed by direct examination of the tissue concerned. The bacteriological evidence of sequestered organisms in the sinus walls of "flare" cases also receives striking confirmation from the histological examination. The evidence adduced confirms the opinion previously expressed that the organisms remaining in the tissue retain their activity and potentiality for disease. Theoretically there is further evidence that the use of vaccine therapy of appropriate antigen is of advantage in combating the infections. No drainage in the ordinary sense of the term can easily affect the contorted intricacies of a sinus passing first of all into bony tissue and thereafter radiating in several directions; it is in this type of wound, or rather sequelæ to a wound, that the bacteria are found lodged in the tissues, partially shut off from the action of the living cells. Operative interference sets them free; they may, and do, reinfect the surrounding areas, and to raise the patient's resistance to such disability is clearly a therapeutic step of supreme importance.

2. **The Value of Vaccine Therapy in the Treatment of Septic Gunshot Wounds.**—R. H. Jocelyn Swan has continued his studies of vaccine therapy with reference to septic gunshot wounds with Goadby, the writer of

the foregoing article. Swan says that while the future course of vaccines naturally depends upon the examination revealed in the individual wound, he directs that every case of septic wounds arriving from overseas shall receive an initial dose of a mixed polyvalent vaccine of proteus and streptococcus until the true bacteriology of the wound can be worked out and before any surgical measure, other than freely incising the wound to secure adequate drainage, is adopted. It is only in a comparatively few cases that a mixed infection containing the above named organisms will not be found, and he impresses upon readers the importance of making an examination of both the superficial and deeper aspects of the wound, for he has found frequently that the deeper part of the wound only will give the true indication of anaerobic activity. In selected cases operative interference of some sort is necessary as an urgent measure before vaccine therapy can be given, and these are the cases that are so frequently followed by pyrexia 102°—103° F. for from twenty-four to forty-eight hours, whereas similar cases in which vaccines have been used usually show no pyrexia even when anaerobic gas-forming organisms were proved to be present in the depth of the wound. Since radiographic examination is always necessary for knowledge of hidden bone and tissue condition and the presence of metal fragments, it is this time that is so valuable in an attempt to immunize patients against the proteus and streptococcal infection, and should be done in all cases. Swan has found the greatest value of vaccine therapy in the treatment of complicated septic fractures of long bones and of fractures which open into joint cavities. In the treatment of septic compound fractures is made a routine practice of giving a preliminary dose of polyvalent vaccine (proteus and mixed streptococci), and then after two or three days freely open the wound to secure adequate drainage, approximating the fragments and only removing those fragments which are undoubtedly completely separated, at the same time taking advantage of the opening of the wound to obtain further bacteriological examination. Extension apparatus of various types or splints suitable to the individual fracture are applied, but should the resulting position of the fragments prove on further radiographic examination to be unsatisfactory, he has no hesitation, after a further few doses of specific vaccine, in securing the bone fragments in apposition by means of silver wire or even bone plates in the presence of sepsis, and can now look back on a series of cases in which not only have limbs been saved, but bones in good alignment and functional use. Further, the result as regards sinus formation and necrosis of fragments of bone in the seat of fracture has been more appreciably lessened in those cases in which vaccines have been used than in those in which exactly similar surgical measures were employed without the assistance of vaccines. In the treatment of septic gunshot fractures which involve a large joint, vaccine therapy holds an important place. In these cases he has obtained a freely movable and serviceable limb, and a much better result than after excising a fixed joint after the wounds have healed, when the tissues around the joint are so matted by the long-continued suppuration. Another feature is the freedom from secondary hemorrhage in cases treated with a polyvalent proteus and streptococcal vaccine. Whereas before its use secondary hemorrhage was not uncommon in septic wounds, no case under his care has occurred where vaccines have been employed. It seems probable that the control of the proteus and streptococcal infection arrests the digestive action in the tissues of the anaerobic coexisting infection. He cannot venture to discuss the bacteriological problems involved, but is convinced of the great use of vaccines as a supplementary treatment to surgical measures in septic wounds, and is satisfied that the routine employment of a polyvalent vaccine of proteus and streptococcus is of value in inhibiting the tissue-necrosis caused by anaerobic bacilli, which are so commonly associated with these organisms in gunshot-wound infection.

British Medical Journal.

November 18, 1916.

1. An Investigation Concerning the Disinfection of Meningococcus Carriers. M. H. Gordon and Martin Flack.
2. An Experimental Study of the Cultural Requirements of the Meningococcus. H. M. Gordon, T. G. M. Hine, and Martin Flack.
3. Epidemic Cerebrospinal Meningitis: Its Bacteriology and Pathology. W. J. Denehy.
4. Observations on the Treatment of Cerebrospinal Fever. C. Worster-Drought.

1. An Investigation Concerning the Disinfection of Meningococcus Carriers.—Gordon and Flack state that in all outbreaks of cerebrospinal fever where bacteriological investigations have been made, carriers have been found greatly to outnumber the cases; even then the extent of the carriers of the true organism has been somewhat overestimated. By application of the agglutination test, based upon a study of meningococci isolated from the cerebrospinal fluid of over 200 of the actual cases, and applied throughout in a strictly quantitative fashion with suitable controls, the number of persons who would otherwise be identified as carriers merely because they harbor in their nasopharynx an organism resembling the meningococcus is reduced by as much as 30 to 40 per cent. But even with this precaution, the number of carriers considerably exceeds the number of cases. Thus from contacts of sixteen cases ninety-two carriers were found in a recent outbreak. Dry warm weather with sunshine apparently has some beneficial influence in enabling carriers to become free, and cold, damp, sunless weather the opposite. How far this apparent influence of the weather is due to its effect on the secretion of the nasal mucus, remains to be seen. Now the meningococcus is one of the least resistant of all pathogenic bacteria to disinfectants, and it is rapidly destroyed by some of the mildest of these bactericidal agents in concentrations easily tolerated by the mucous membrane of the nasopharynx. Theoretically, therefore, the meningococcus should be destroyed in the nasopharynx with ease if only it could be reached there by a suitable disinfectant. The means employed for applying disinfectants locally has consisted up to the present chiefly of hand sprays and douches. It seems needless to mention that these means have not proved successful, especially in the treatment of chronic carriers, for all the organisms could not be reached on the nasal mucous membrane. The object of these experiments was to find a disinfectant and to apply it to the nasal membrane in the form of a vapor, reaching the necessary parts in a fine shower of droplets. Experiments have been made with a considerable number of disinfectants, but the ones of which chief use has been made so far are chloramine 1 to 2 per cent., or zinc sulphate 1.2 per cent. Eusol was tried, but was found more irritating and less efficient for the present purpose than the substances named. The cubic capacity of the room in which the carriers have been subjected to treatment with the spray has been reduced, by means of a canvas ceiling, to 750 cubic feet. One liter of the solution of disinfectant is sprayed into this area in the course of fifteen to twenty minutes. The carriers remain in the room during the whole of that time, inhaling the air through their nostrils. Thirteen men were subjected to the treatment with chloramine, ten of whom were found free of the organism after from four to thirteen days. Three re-

maining showed either neurotic symptoms or failed to inhale properly. As a result of more extensive work than can be given here, Gordon and Flack consider that these observations have led us to belive that, in the case of carriers of the meningococcus, prognosis with regard to the duration of their future period of carrying varies largely with the degree to which their nasopharyngeal secretion is infected by the meningococcus. In our experience, the majority of carriers whose nasopharynx yields only a few colonies of the meningococcus clear up quickly. In the case of these persons good results follow local treatment either by direct application of a 1 per cent. solution of chloramine, or by subjecting them to inhalation of a steam spray charged with zinc sulphate. On the other hand, carriers whose nasopharyngeal secretion yields a copious growth, or a practically pure culture of the meningococcus, are often far more difficult to cure. The results on these persons with zinc salts were disappointing, but they served to emphasize the success of those obtained with chloramine, which, though still somewhat few in number, are more than encouraging, and would appear to indicate that a large proportion of these chronic carriers can be definitely freed of the meningococcus by this form of treatment in a comparatively short space of time. We would add that while these observations on meningococcus carriers were in progress, several cases of chronic nasal or postnasal catarrh have been submitted to disinfectant treatment by the automatic steam spray. As in all of these persons improvement has resulted, we offer the suggestion that this method is worthy of trial on a larger scale for the treatment of such cases.

Münchener medizinische Wochenschrift.

October 17, 1916.

Diagnosis of Weil's Disease.—Professor Bäumler takes up this subject in detail, describing one case at great length and speculating on its nature. The resemblance to yellow fever is marked and a corresponding cause is suggested. In the former the blood is infectious for the first three days, while in Weil's disease infection may be conveyed by the first day to animals. The guinea pig shows the same disease as man. In Weil's disease the period of infectiousness of the blood may extend to the tenth day. Uhlenhuth and Fromme have isolated a delicate, slender spirochete from the blood and tissues of infected guinea pigs. Krumbein and Frieling have shown that the flea can convey the disease from man to the dog. Rare among the civilian population Weil's disease appears with epidemic incidence in the troops. In the author's 50 years of hospital and consultation practice he has seen but one case of Weil's disease, as described by Weil. Of many cases of icterus gravis seen by him not one could have been confounded with the former, with a solitary exception, which was seen 22 years ago. During the first 3 days the resemblance to Weil's disease was striking, but the temperature persisted and the icterus and renal symptoms were unusually severe; it was four months before the patient recovered. He still lives and is earning his living. All this history speaks strongly against icterus gravis which Bäumler regards as a sepsis proceeding from some infection of the liver or gall-ducts. Had the guinea pig test been available at that period such a condition could have been readily excluded. The case history is now reproduced from the hospital record of 1894.

Lung Tuberculosis or Lung Syphilis?—Wilmars describes 8 cases in which this question had to be decided. All were regarded eventually as examples of pure lues, but the author quotes others in which both diseases were associated. Patients with pure pulmonary lues may be admitted into tuberculosis sanatoria where they do not belong. A positive Wassermann reaction cannot exclude tuberculosis in such cases. Absence of tubercle bacilli in extensive pulmonary disease in association with syphilitic history or stigmata of that disease means that intensive syphilis therapy should be practised. Of great value in diagnosis is the presence or absence of fever. A patient may have emaciation, night sweats, cough, and bloody sputum, but if he has no temperature syphilis should be suspected. Tuberculin as a diagnostic test is mentioned in but one case. These patients often do surprisingly well on potassium iodide. In cases of association of both diseases the presence of tubercle bacilli and positive Wassermann will often make the diagnosis, but in closed tuberculosis the bacillus may not be found. While the author has found a positive Wassermann in all of his mixed cases, others have not been so fortunate. He would place all subjects with tubercle bacilli and fever in the sanatoria and would keep all others out. He closes by quoting from a well-known syphilographer to the effect that in many cases an autopsy alone can explain the true mechanism, *i.e.* to what extent is one disease determined by the other?

Case of Pulmonary "Calculi."—Helbig describes a case of this clinically rarest of affections, which is termed in German *Steinhusten* because stones are coughed up by the victim. Autopsy finds are not included, for these are not so infrequent; but of clinical cases few have ever been placed on record. In the most recent, reported by Bickel and Grunmach, the stones were no larger than a pea. The author's patient was a woman of 58, healthy until recent years, when she began to suffer with symptoms suggesting influenza. During the first attack no "stones" were coughed up, but during a second visitation she began to expel small "stones." She has never since been entirely free from cough. A third attack of "influenza" one year after the preceding led to paroxysms of coughing, with dyspnea, and finally in expulsion of what she termed a "bone." About 8 months later a fourth attack culminated in a like manner, while at the end of another two weeks a fifth seizure brought the patient for the first time under medical care. She brought with her four of the "stones," two of which were as large as hazel nuts. An *x*-ray showed two circumscribed shadows in the lung which doubtless represented unexpelled "stones." Miscroscopic section showed the presence of bone corpuscles and lamellæ in all the foreign bodies. This surprising find really furnished an explanation of the whole disease process which must have been tuberculous. The patient had developed latent calcified foci of the disease, which in turn had led by processes known to pathologists to a metaplasia of osseous tissue as a result of constant irritation of the fibrous capsule of the focus. The "stones" expelled were in reality osseous tissue. While a "stone cough" may be a reality, the present case should be termed "bone cough."

Cause and Transmission of Volhynia Fever.—According to Töpfer the five day or Volhynia fever has not yet been proved to be due to a parasite, although the circulating blood of the patient can convey the disease. The author inoculated guinea pigs intraperitoneally with human blood and obtained a fever curve identical with that caused under the same conditions by typhus. Transmission by the body louse is therefore the most probable cause and the author has studied the insects from that viewpoint. As a result he found organisms which were readily distinguished from the supposed exciting cause of typhus despite considerable resemblance. Notwithstanding the clinical differences between the two fevers, it is not improbable that clinical typhus

may really be at times the result of mixed infection. From analogy the cause of isolated five-day fever should be a protozoan (recurrent character as seen in relapsing fever); but it seems that this view must now be abandoned.

Acute Urethritis Due to the Streptobacillus Urethræ of Pfeiffer.—According to Engwer this microorganism, first described by Pfeiffer in 1904, may exert a pathogenic action, but only in cases of prior acute gonorrhea or actual gleet. With a soil thus prepared the streptobacillus, naturally a saprophyte, can cause a special form of urethritis. If chronic gonorrhea is already present a symbiosis results. The streptobacillus can then cause a genuine bacterial urethritis with increased secretion and exacerbation of the clinical behavior.

Retransfusion in Abdominal Hemorrhage.—According to Kreuter attempts were first made about two years ago to restore to the circulation the blood lost in internal hemorrhages. The subject had a good experimental basis and quite recently the author attempted its application to a wounded soldier who suffered from profuse intraabdominal hemorrhage following projectile wounds of the liver, spine, and one kidney. Laparotomy was at once performed, and while much blood escaped in clots, the fluid portion was allowed to absorb in sterile compresses and was also washed out with saline infusion. The soaked compresses were squeezed and the escaping blood was passed through a filter into the irrigation-blood. In this manner a liter of clot-free blood was quickly obtained. The lower abdomen and pelvis contained an abundance of thick clots and the total loss of blood was estimated at from 2½ to 3 liters. With patient moribund blood was transfused into an elbow vein, 15 minutes of time being required for the operation, in addition to 20 minutes required for laparotomy, etc. The abdomen was cleansed and closed during the transfusion. The immediate effect was marvelous, but another hemorrhage followed from the wounded kidney and death soon occurred.

Leeches in the Larynx.—Härting, who is serving in the Balkan campaign, had among his first Turkish patients three with "worms in the throat." He was unable to converse with these soldiers, and his first diagnosis was ascarides in the pharynx as a result of vomiting. Cathartics were ordered. Next day the men were spitting blood and the diagnosis was changed. The laryngoscope showed in each patient a dark blue mass below the vocal cords. The men were told to gag, which act raised the larynx and enabled the author to grasp and extract the parasites. The grateful patients nearly smothered the doctor with hugs. The soldiers had recently drunk from a puddle of water while suffering greatly from thirst.

La Presse Médicale.

November 2, 1916.

Acute Azotemic Nephritis in the Troops.—Ameuille states that in civil practice acute nephritis *a frigore* is of rare occurrence. Since the outbreak of the war it has become so common that up to the end of June, 1915, 1,062 cases had been recorded in the French expeditionary force, and we know now that it is abnormally frequent throughout the entire army. It appears to increase in frequency as the war is prolonged, and is now known to be independent of atmospheric conditions, while still of the type of nephritis from exposure—anasarca, massive albuminuria, uremic symptoms mild in character. But there are other cases without edema but with a variety of symptoms pointing to the kidneys. Such cases the author terms acute azotemic nephritis. Concerning the latter surprisingly little is known. Hogarth has recently noted its occurrence in the English troops under the name of acute nephritis without edema. We see fever, hematuria, albuminuria, and evidences of infection. The blood shows nitrogen retention. The affection may begin as a simple fever and devoid of symptomatology. Typhoid would perhaps be first thought of, but the occasional presence of remissions opposes this possibility. Moreover the temperature rises suddenly and not gradually, with oscillations more marked. The vomiting which may set in is too marked and persistent for an ordinary infection. Headache may be persistent and violent. Certain cases begin with an angina or other local manifestation. The diagnosis may be grippe or bilious attack or merely a general feverish cold with muscular soreness and stiffness. Then it will be noted that the urine is scanty and perhaps bloody. The diagnosis of acute nephritis is evident through the presence of formed elements of blood in the centrifugalized sediment. Mere presence of albumin means nothing in febrile and hematuric cases. A blood test for urea is alone of value in prognosis, and if the proportion increases a fatal outcome is assured. In nearly every case seen cough and expectoration were noted and sonorous rales heard over the chest. The liver is sometimes sensitive to palpation and slight icterus may occur. Acute nephritis with icterus has been seen by a number of observers. Severe headache and meningism point to increase of nitrogen in the blood. In some cases convulsions have been mistaken for epilepsy. In one such case the amount of urea per liter of blood was 2.55 gms. The course of the disease varies greatly. It may be short and fatal, short and benign, and may be long, usually with complete recovery, but often with some persistence of ill health. When both fever and albuminuria are absent we have only the blood to guide us. The purely azotemic type attacks the patient "brutally" and he may not recover from its impetus. The onset of the edematous type is less brutal but more profound; life is not so much menaced for nitrogen retention is less and quite constant. Still the dropsical and nondropsical forms are manifestations of one disease—"war nephritis." When a subject dies from acute azotemia signs of an old renal lesion may be found, with the superaddition of acute intestinal nephritis. Practically the histology of the kidneys is the same in both diseases. Something about prolonged trench life damages the resisting power of the kidneys and the active cause is doubtless microorganisms in every instance, although this point has not been demonstrated beyond doubt.

Revue Médicale de la Suisse Romande.

October 20, 1916.

Infrequency of Extrapulmonary Tuberculosis Under Tropical Sunlight.—Steiner speaks only of Java, where he has practised for 20 years. Pulmonary tuberculosis is common enough, alike in the aborigines and various foreigners. No race or class has any immunity. But it is most rare to encounter white swelling of the knee, hip disease, scrofulous glands, scrofulous ophthalmia, etc. These conditions are the very ones which benefit by heliotherapy in the North. The Javanese live in almost perpetual sunshine, for in the rainy season the rain seldom appears before 4 p. m. Only the Europeans are protected from the solar light and heat, but these are lightly clad and partly exposed to solar rays; much more in fact than during the European summer, especially in childhood. The country is by no means salubrious, and typhoid, cholera, dysentery, ankylostomiasis, and malaria flourish. The bubonic plague has of late years become familiar. Cleanliness is hardly understood. The natives expectorate everywhere.

Bathing is common but only as a refreshment. Food is ample—rice, fish, and legumes with not a little meat. The Europeans and Chinese seem alone in the use of alcohol. There is no milk industry. Cows' milk seems plentiful but is little used as a beverage, save by European children. It is by no means good milk, but can hardly contribute to the spread of pulmonary tuberculosis because of the absence of extrapulmonary forms which are usually associated with a possible bovine transmission. Whether or not the so-called scrofula is directly related to eventual pulmonary tuberculosis, every child (and nearly all are believed to have latent tuberculosis) ought to have the benefit of heliotherapy. During the warm months the skin should be exposed as much as possible to the sun—at least 50 per cent. of the surface. The Javanese certainly gets plenty of fresh air, both because he is outdoors so much and because the loosely built houses are ventilated automatically. The inside air, however, is smoky and otherwise disagreeable. The frequency of pulmonary tuberculosis in Java may perhaps be accounted for by the lack of sanitary knowledge and by conditions like malaria and ankylostomiasis which tend to lower the general resistance.

Le Progrès Médical.

October 20, 1916.

"Cesarean Section" Due to Shell Explosion.—Saint, Goehlinger, and Poiré relate the case of a woman who lived in a town on the British front which was under daily bombardment. She was 33, and 6 months' pregnant when a fragment of shell exploded in the street, injuring her abdomen. When first seen there was a marked peritoneal defence toward the right. The uterus was anteverted and its highest point was two fingers breadth above the navel. Attempts to palpate the fetus failed because of pain and defensive reaction. The shell fragment had passed through the abdominal cavity, the points of entrance and exit being close together. The woman bled freely from the vagina, and a wound 5 cm. long was found in the fundus uteri. Amniotic fluid and meconium were found in the lesser pelvis. The fetus was seen to lie in the left occipital position, presenting a slight shell wound in the lumbar region. The authors made a hysterotomy incision which conformed to the external wound and extracted the fetus and placenta, as in the ordinary cesarean operation. The premature fetus was left alone, as dead, but began to cry from exposure to the cool air. In the meantime the uterus had been sutured after careful hemostasis, the other visceri having been found intact. The infant, a female, weighing but 950 gms. and already wounded by the projectile, succumbed, perhaps for want of proper care, in a few hours. The mother made a good recovery; doubtless the presence of the fetus saved her own life by preventing injury of the intestines. The case is perhaps unique and the infant may be regarded as the "youngest victim of the war."

Cerebrospinal Commotion from Shell Shock.—Bonhomme and Nordmann mention three kinds of disorder which result from this form of shock. 1. Troubles of character. The subject becomes irritable, will not tolerate the slightest contradiction, is surprised to find himself angry without apparent cause. He is impressionable in other ways, weeps when visited by a friend, and may not be able to converse until after some time. A bold man becomes timid, begs his relatives to obtain certain simple privileges from the physician which would readily have been granted. Subjects are depressed, seek solitude, finally become melancholic. 2. Troubles of intellect. Ideation is slow and even at times incoherent; it is difficult to maintain a conversation. The confusion which followed the injury has subsided but cerebral activity is lessened throughout. The subjects, usually of a higher social plane than the average soldier, realize their condition keenly, think of suicide. Amnesia is common with inability to fix attention. There can be no improvement until this symptom vanishes. 3. Somatic disturbances. Headache is very common, with vertigo and insomnia with hypnagogue hallucinations. The body tires readily, as well as the mind. Attempts at work lead to tremor, pains in the limbs, etc. Sexual desire is usually abolished. Horror of noise is often present. To sum up the picture corresponds with that of Erichsen's "railway spine" and post traumatic neurosis of civil practice. There is nothing pathognomonic about shell shock as compared with physical shock from severe shell injury, which is of course largely psychical. After a number of weeks the patient while "convalescent" still suffers a good deal and his state may remain stationary. The patients classed as "improved" may recover completely in time. These represent averages, for there are some rapid recoveries, while some patients may not even show improvement for many months. The so-called stationary case may after a variable time, perhaps several years, proceed to recovery.

Le Progrès Médical.

November 5, 1916.

Glandular and Humoral Repercussion in Shock.—Loeper and Verpy state that these manifestations are as yet but little known while by no means rare. The majority of "commotionists" treated by the authors were asthenic and for a few days incapable of any effort. Another symptom is absolute anorexia. Not much urine is voided and constipation is the rule. Lowered blood pressure is seen in two-thirds. The entire picture can be explained by adrenal insufficiency, and if adrenalin is given the picture tends to disappear. The adrenals may be thus affected through a nervous mechanism or perhaps by direct violence over the loins, in which case renal hematuria should coexist. The anorexia may be attributed to various anomalies of gastric secretion arising in part through the vagus. The pancreas may also be affected through the effects of shock on the central nervous system, while the disturbed nitrogen coefficient in the urine is characteristic of hepatic disturbance. The blood is profoundly modified in these shock cases, although the individual variation may not be marked. Bloodsugar is abnormally low after the day of the injury. To sum up, the digestive organs, adrenals and blood all suffer from the rudeness of the central nervous shock.

A New Adjuvant Remedy for Tetanus.—Lopez reports a cured case of tetanus in which the substance diallylmalonylurea was used to replace chloral. The case was one of delayed outbreak and serum along with chloral showed no power whatever over the convulsions. The new remedy was substituted for chloral and notable improvement followed with prompt recovery. The amount of serum given was but 240 ccm. The new substance is known to be a hypnotic and nerve sedative. It may be able to replace chloral and is free from some of the latter's drawbacks.

Posttyphoid Ocular Paralyses.—According to Ginestous, not over six or seven cases of this complication are on record. The common motor nerve is the one chiefly involved. In two cases the sixth nerve was affected. In one of the latter the complication appeared during the course of the disease. The author pushed the mixed treatment in his case, which proved to be incurable.—*Le Caducée.*

Book Reviews.

A Practical Treatise on Disorders of the Sexual Function in the Male and Female. By Max Hühner, M.D., Chief of Clinic, Genitourinary Department, Mount Sinai Hospital Dispensary, New York City; formerly Attending Genitourinary Surgeon, Bellevue Hospital, Outpatient Department and Assistant Gynecologist, Mount Sinai Hospital Dispensary, New York City; Member, American Urological Association, American Medical Association, New York Urological Association, Fellow of the New York Academy of Medicine, etc.; Author, "Sterility in the Male and Female and Its Treatment," etc. Price, $3. net. Philadelphia: F. A. Davis Co.; London: Stanley Phillips, 1916.

Dr. Hühner's book gives the impression of the republication of a number of papers on this subject which he has cemented together and put in a permanent form. Thus cases are reported and the same statement appears often in various parts of the book, giving a somewhat monotonous effect. The author succeeds in finding a physical basis for nearly all the sexual ills that flesh is heir to; usually it is a congestion of the posterior urethra, or prostatic trouble. He dismisses psychoanalysis briefly: "The ardent disciples of Freud, in their enthusiasm, are apt to be entirely too narrow in their interpretations." He further states that the cases he reports are sent to him only after the psychoanalysts have failed to help them.

The conservative, orthodox viewpoint is the one taken all through the present volume. The chapters on masturbation are especially good. It is difficult to see, however, why a chapter on enuresis was included in a volume with this title.

A Text-Book of Pathology. By W. G. MacCallum, Professor of Pathology in the College of Physicians and Surgeons, Columbia University, New York. With 575 illustrations, chiefly from drawings by Alfred Feinberg. Price, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1916.

The appearance of a new text-book by a teacher of wide experience is always of interest, chiefly in the personal reaction of the writer toward his subject and in the perspective which he brings, rather than in any especial contribution by which the total matter of the particular phase of the science under consideration may be expanded; for, alter all, no one volume can contain all the facts which have been amassed, and the real originality of the book must lie in the style, classification, and necessary elimination of the less important subjects. So in this admirable but rather portly volume we have an interesting contribution to this aspect of literary psychology. The writer, with engaging frankness, states in his preface that he has freely and willingly omitted many subjects ordinarily included in the conventional text-book of pathology, that he has tried to make the etiological influences the basis of his classification, and that without making any claim for novelty, he has wished to feature, so to speak, the concept of injury as covering all activities, whether parasitic or chemical, which induce in the animal body the reactive phenomena ordinarily designated as disease. That, in our present somewhat dense ignorance of a number of conditions, this procedure leads to grave difficulties is to be expected, and the rebellious subject of tumors, of the cause of which we certainly have not the slightest inkling, is perforce promptly excluded from the classification and treated in a separate section. Even in other subjects, the etiological treatment leaves gaps; for example, if paresis and tabes are to be considered as due to the *Spirochæta pallida* alone, the query instantly arises as to the infrequency of these diseases in the negro and, also, in the white female, though syphilis affects black and white of both sexes in approximately equal numbers. Some etiological factor is missing, evidently, though the student may gain the idea that the spirochete is alone to blame. In consequence of this method of classification the reader may, also, find it difficult even with the aid of the index to complete his knowledge of certain processes. Appendicitis is included under inflammatory processes induced by bacteria; but, unless he possesses more than the average stock of erudition observable in his genus, the student will not realize that mention of the possible correlation between inflammatory lesions of the organ and the presence of oxyuris in the appendical mucosa is to be looked for in the index under the name of the parasite and not under the caption "appendix" or "appendicitis."

But these slight defects are matters of small moment in comparison to the real and positive value of the text taken as a whole. The style is so clear and admirable that the author's hope, expressed in the preface, of making a continuous story of the facts of general pathology, is excellently realized. Among the most valuable chapters are those on the blood-forming organs and on the diseases due to injuries of the organs of internal secretion. In the first, the lesions of the bone marrow are illustrated by a beautiful series of plates, some of them in color, while in the second the various clinical aspects of hyper- and hypoactivity of the hypophysis are brought out with unusual clearness, assisted by striking photographs of cases, many of them from Cushing's monograph.

The volume is brought to a close by a long and admirable chapter on tumors with many illustrations and a final summary of the modern views on etiology. The temptation to impose a new classification of neoplasms on a long-suffering scientific public is happily resisted by the writer, and as a consequence the old familiar designations now hallowed by long use are still employed.

Les Blessures de l'Abdomen. Par J. Abadie (d'Oran), Correspondent National de la Société de Chirurgie. Avec Préface du Dr. J. L. Faure. Une volume de 240 pages avec 67 figures originales et 4 planches, hors texte. Price, 4 francs. Paris: Masson et Cie., 1916.

This volume is intended to be timely above all. Concerning abdominal wounds there are more differences of opinion than when other localities are involved. We cannot reconcile the results of expectancy with those of operation, because cures are seen under non-operative management. Palliative as well as radical operations have a field. Three objects are always kept in view, viz., the doctrine, or determination of the method of choice for the individual case; the organization, which makes it possible to treat the case properly, and, finally, the technique.

Medical and Surgical Reports of the Episcopal Hospital, Philadelphia. Volume III. Edited by Astley P. C. Ashhurst, M.D. Published through the generosity of a friend of the hospital. Octavo of 356 pages. Philadelphia: Press of William J. Dornan, 1915.

This volume consists of collected papers by members of the attending staff, the papers being based on work done in the Episcopal Hospital during the years 1914-1915. Many of the articles have been published in medical journals and are reprinted so that the hospital shall receive credit for all articles based upon material it has furnished. There are twenty-five contributors who have furnished thirty-eight papers representing work in the following departments: Medical, Surgical, Orthopedic, Ophthalmic, Aural and Laryngeal, Obstetric, Dermatological, and Dental. Many of the papers are profusely illustrated and practically all reflect much credit upon the institution with which their authors are connected.

A Manual of Otology for Students and Practitioners. By Charles Edwin Perkins, M.D., F.A.C.S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital; Associate Aural Surgeon to New York Eye and Ear Infirmary; Fellow of the American Otological Society, New York Otological Society, New York Academy of Medicine, etc. Illustrated with 120 engravings. Price, $3 net. Philadelphia and New York: Lea & Febiger, 1916.

A thorough knowledge of the ear from the anatomical, physiological, and pathological standpoint is notoriously very difficult of attainment. By which is meant that to learn how to properly treat diseases and affections of the ear is by no means easy. It follows then that this branch of medical study is a difficult part of the student's curriculum. The aim of Dr. Perkins's manual is to lighten these difficulties for medical and post-graduate students and to supply data which will enable those who thoroughly master them to become capable aurists. This aim appears to have been accomplished in a satisfactory manner. The chapters of the suppurative diseases of the labyrinth may be especially recommended.

Society Reports.

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Eighty-first Regular Meeting, Held November 3, 1916.

DR. JOHN S. THACHER, PRESIDENT, IN THE CHAIR.

Rhinoplasty. — Dr. ROBERT ABBE showed a man on whom he had made an unusually presentable nose by a novel plastic operation. The entire nose, except the edges of the nostrils and tip, had been destroyed by cancer, which involved the septum and sides so that they required extensive removal. To make a nose by the usual flap from the forehead would have left a deep saddle-nose defect, so that a central support was required. This Dr. Abbe made by undermining a triangle of skin from each cheek, its base at each side of the nose. The nutrition of these flaps came from the cellular tissue and periosteal base, inasmuch as the skin was cut through superficially clear up to the nasal defect, but deeply on the cheeks. These flaps were turned over the nasal defects so that their points crossed each other and they were stitched together side by side where the bridge was needed. The flaps had their skin side inward and wet side up. On this bridge was now laid a forehead flap wet side down carefully stitched to the tip of the nose and cheeks. Thiersch's skin grafts then covered the forehead defects. In two weeks the redundant skin at the root of the nose was carefully cut out and the shape of the nose was symmetrically balanced. The patient breathed freely through both nostrils on account of the skin lining where the cheek flaps were inverted. Each cheek presented a fine horizontal scar. There was every reason to believe there would be no sagging of the bridge.

Inoperable Peripheral Gangrene. — Dr. W. GILMAN THOMPSON read this paper (see page 1103.)

Dr. G. E. BREWER said that in many cases of peripheral gangrene the general condition was so poor that amputation beyond the probable extent of the gangrene was extremely risky. In many cases small local amputations were imperative whatever the patient's condition and these had to keep pace with the extension of the gangrene. He was greatly interested in the hot-air treatment. He had used the hot air in treating burns, but not in treating gangrene. The relief of pain and the elimination of the odor were strong recommendations for the procedure as outlined by Dr. Thompson.

Dr. WM. H. PARK said that he had had two experiences in gangrene which were interesting. In a case of typhoid fever, two subcutaneous injections of horse serum for the control of intestinal hemorrhage had been followed by gangrene and sloughing of the surrounding connective tissue and the overlying skin. The areas were as large as one's hand but, while serious, did not interfere with the course of the disease. In a case of scarlet fever, gangrene and sloughing had followed a subcutaneous injection of serum. No permanent harm had resulted. Dr. Park was of the opinion that some other elements than pressure entered into the causation of the gangrene in both cases.

Dr. J. A. FORDYCE said that gangrene was not infrequently encountered in syphilitic endarteritis. This gangrene might be very extensive. A confusing point in these cases was that they not infrequently showed a negative Wassermann reaction. It was very unsafe to regard them as nonsyphilitic on this alone. In all such cases a provocative dose of salvarsan should be given. This frequently changed a negative reaction to a positive one and made the diagnosis certain. In all cases of doubt autosyphilitic treatment should be instituted.

Dr. L. A. CONNER said that in cases of gangrene associated with diabetes a determined effort should be made to reduce the patient's blood content of sugar to as nearly normal as possible. Under normal procedures this end could usually be attained with a fair degree of promptness and the cases of gangrene in diabetes which he had seen had been greatly helped. He strongly advised conservative measures in the treatment of these cases and considered medical care more helpful than surgery.

Dr. ROBERT ABBE said that one of the chief advantages of the hot-air treatment of these cases was the purification of the atmosphere. This was a very important feature of the treatment. At times prompt amputation must be insisted upon. He had used spinal anesthenia in these cases with great satisfaction and had obtained quick convalescence. He had seen one case of apparently severe gangrene make a spontaneous recovery. The surface of the great toe had been blue black, but only a shedding of the cuticle had occurred.

Dr. M. ALLEN STARR asked if hot air had been employed in the treatment of Raynaud's disease.

Dr. C. L. DANA said that he had used dry heat for a good many years and had obtained good results with it in Raynaud's disease.

Dr. GILMAN THOMPSON, in reply to a question of Dr. Thacher's, said that the best temperature he regarded as about 150° F. He considered the free circulation of the hot air as most important to produce evaporation. The current of hot air should be fairly strong. Where the employment of hot air had been impracticable he had used 95 per cent. alcohol with satisfactory results, this being far better than the weak solutions usually employed.

Tonsillectomy in Poliomyelitis.—Dr. J. C. ROPER presented this communication. In the recent epidemic of poliomyelitis the New York Hospital had opened a special branch hospital for the treatment of this disease. At this hospital the bacteriology of the disease had been studied by Dr. E. C. Rosenow of the Mayo Clinic, Rochester, Minn. From pus expressed from the tonsils of the patients during life, Dr. Rosenow had isolated a streptococcus which produced paralysis in small animals and monkeys. Tonsils removed at autopsy had revealed small foci of purulent material from which same organism was isolated with the same result. This organism Dr. Rosenow considered identical with that recovered from the spinal cord by Flexner and Noguchi. Many cases of poliomyelitis showed a tendency to progress as regarded paralysis. After the acute symptoms had subsided in these cases, extreme irritability persisted accompanied by a slight fever and apparently at times an extension of the paralysis. In these cases, on the basis of Dr. Rosenow's work, the possibility was assumed that the process was being kept up by reinfection from some source, probably the tonsils. Tonsillectomy was performed in twelve cases and foci were found in many of the tonsils removed. No acute cases were operated upon. In the case showing the most marked improvement, operation had been performed on the 21st day of the disease. The tonsils contained three typical foci. Operation on all of the other cases had been performed from the 23rd to the 35th day of the disease. Several seemed distinctly benefited. Because of the number of deaths occurring after the first week (50 per cent. in this series) if Dr. Rosenow's work was confirmed we would seem justified in cases of delayed recovery in removing the tonsils as possible infecting foci. No untoward results were observed.

Dr. W. H. PARK said he did not feel that much progress had been made during the past six months in the knowledge of the disease. Personally, he could not yet accept the possibility of the process of the disease being kept up by repeated infections from a tonsillar focus. Rather he regarded it as akin to rabies and cerebrospinal meningitis in being a single infection of the central nervous system. There was no question but that Dr. Rosenow was a skilful and enthusiastic worker, but Dr. Park doubted if he had established the identity of the streptococcus isolated from the tonsils with the Flexner and Noguchi organism recovered from the spinal cord. At the Department of Health laboratories, they had gotten the small forms from eighteen of nineteen cases but had seen no transmutations to large forms. It was probable that infection occurred through the intestinal tract as well as through the nasopharynx and tonsils. Possibly something of interest and importance would be developed during the next six months from the work now being carried on at the laboratories of the Department of Health.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-second Annual Meeting, Held at Indianapolis, October 10, 11, and 12, 1916.

THE PRESIDENT, DR. WILLARD J. STONE OF TOLEDO, OHIO, IN THE CHAIR.

(*Concluded from page 1094*)

Operative Treatment of Tuberculous Spine. — Dr. HENRY B. THOMAS of Chicago stated that the Hibbs technique had the following advantages: it copied nature in her preparation for the fixation of the verte-

bræ. It required operation only in the posterior region of the spine itself, making unnecessary the removal of bone from the leg. The technique, though difficult at first, became simple with repetition. It immediately reduced the kyphotic deformity by the length of the spinous process, usually one-half to one inch. Ankylosing the articular processes greatly aided in the fixation. Welding the opposed laminæ was an additional link in the chain of ankylosis. The most important suggestion regarding the after-treatment concerned the mechanical fixation after the patient was kept in bed for six weeks; either a cast or a brace was worn for from six to ten months, with constant observations of the position and progress.

Dr. John Ridlon of Chicago said that in these operations of Hibbs and Albee for the treatment of tuberculosis of the spine, he still used braces. It was claimed that it shortened the duration of the sickness. Perhaps it did, but sometimes it certainly did not, because all these cases were not perfect restorations, despite Albee. Some of the patients died as the result of the operation, some of the grafts came out, some of the grafts broke, and a great many of them that were put in were put into spines already ankylosed through the course of time and by the grace of God. These were the best results that were to be had when a graft was put into a spine that was already perfectly solid. There was no doubt that in selected cases this operation had a place, and he was of the opinion that the Hibbs operation was a little more appealing to one's judgment of what was right than the Albee. On the other hand, he had seen many of these operations, he had assisted in some, he had done none himself, and he never would.

Dr. Charles Davison of Chicago stated that any procedure which would shorten the duration of anything so serious as Potts' disease should be entitled at least to consideration. The probabilities were that the real benefit could only be decided by a large series of cases collected for many years. He had been very much interested in Dr. Thomas' work at the Cook County Hospital, and he had the honor to see some of the cases of Albee, which he did, collected through quite a period of time. The thing that he was most interested in was what happened to the transplant. He made experiments also along other lines and along lines of bone grafting. With a transplant taken from the same individual and opposed to the same kind of bone, for instance a contact of the tibia, to a contact bone of the spine, if it was done in an esthetic manner, if there was absolute immobilization of the transplant, we got a primary union similar to the primary union of one of the soft parts. For the time being at least the transplant left a succulent pabulum between it and the host when it went on and became an integral part of the bony framework. As long as it had function it would remain; when the function ceased it would deteriorate to a certain extent. In the Hibbs method of bony repair it seemed to be different. The bone was taken from the same neighborhood, but instead of being kept in a mass it was largely minced or broken up in particles. Some of the pieces might be intact so that they would heal promptly and become a part, but largely the bone was broken up, the bony cells were liberated, the lining of the bone cell was given up, and we got a new growth of bone there much like a callous. That continued to immobilize as it became osseous as long as there was function; when function ceased it gradually absorbed and went to the compensation between strength and bone.

Dr. John D. Trawick of Louisville said that he had seen Dr. Thomas operate and he must say he was just a little enthusiastic about the method of his operation. He should be very glad if he would discuss the question of the anesthetic for these little patients. Was the risk of the anesthetic the ordinary risk that was to be expected in any capital operation for a child? Was there a choice of anesthetics, and if there were any particular points he could bring out in his closing discussion bearing relatively on the mortality as it pertained to the anesthetic, he should be very glad to have his view.

Dr. W. B. Owen of Louisville thought we made a great mistake in using the word "cured" for these cases. In tuberculosis of the spine, or pulmonary tuberculosis, no matter what area of the body might be involved, we made a mistake to use the word "cured." The first reports were really almost too good to be true. He thought they had proven not to be true; that is, they had not lasted. Two hundred and fifty operations for bone transplant with one hundred per cent. cure was hard to swallow at one time. He had had a good many of these cases and did not feel the operation itself was a serious one. The shock that resulted from it was very slight. In many cases an opiate was not necessary. He did not think it made any difference what anesthetic was used, so long as we were using the best that was known for any surgical procedure. As to the two operations that Dr. Thomas discussed, while he had had very little experience with the Hibbs operation, it seemed to him very simple and in some respects a more feasible procedure, although he should think there would be one objection, and that was the point that was first claimed as a point in its favor—the flexibility of the spine produced by the Hibbs rather than the autogenous splint. If we allowed motion in the spine the cure was not so apt to take place. One splint would probably be retained in place more satisfactorily than several splints, and in the breaking down of the spinous process that was what it meant—it was made up of a number of pieces of bone.

Doctor Thomas, in closing, said that in regard to the anesthetic, he thought Dr. Trawick probably asked the question because he saw a fatal result he had. He had had two deaths on the table. He thought both of them were from the anesthetic, or the way the anesthetic was given. At one of the cases he lost Dr. Trawick was present, and he had made it a rule ever since to attempt to do no operation on the spine unless he had a professional anesthetist. He wanted no intern to give the anesthetic for him when he operated on tuberculous spines. There was no trouble, the children got along nicely, especially if we kept them in the hospital for a few days beforehand and got acquainted with them, so they went to the table without fright. They did nicely so far as the anesthetic went.

Tumors of the Breast.—Dr. J. Garland Sherrill of Louisville considered proper palpation the most valuable of all the means at our command for determining the character of a mammary tumor. If not properly employed, however, it might be worth less. Very little could be learned by pinching the breast between the fingers; the proper plan was to place the palm of the hand flat on the breast and gently press the gland against the chest wall. This would reveal any abnormal mass, show whether it was indurated or not, determine its mobility over the chest wall or pectoral muscle, also its mobility under or attachment to the skin; its outline elasticity, and whether or not it was encapsulated. The observer would also note the amount of pain produced by pressure and manipulation. By gently sliding the breast over the pectoral muscles with the palmar surface of the examining finger its attachment could be readily made out, and dimpling of the skin with slight fixation occurring early in cancer could be detected. Palpation also enabled one to determine the enlargement of the axillary and cervical glands. Recently a case came under his observation where the patient had a malignant tumor of considerable size in the breast, which could scarcely be detected by flat palpation over the breast; but was readily made out by lateral compression. He had also seen a case where there was a malignant growth of supernumerary glandular tissue lying some distance above a normal mammary gland. Certain characteristics were present in benign enlargements whether of cystic or solid type. They occurred at any age, more often in the young. They grew slowly or not at all. They were usually encapsulated and never infiltrated the surrounding tissues; they were mobile, showed no glandular enlargement and were usually painless, but in certain neuralgic patients might be quite painful. They occurred in unmarried and nulliparous women especially. Malignant growths usually developed after thirty, but sometimes as early as eighteen years of age. They were likely to grow slowly but constantly if carcinomatous; fast but spasmodically if sarcomatous. They were encapsulated, with the possible exception of certain cases of sarcoma. They became attached to the skin and fascia quite early. Early glandular involvement was shown in carcinoma. Pain was a late symptom, but always present in the later stages. These growths usually occurred in parous women. An irregular outline and induration gradually merging into surrounding tissue is characteristic of scirrhus. It was not always easy to differentiate between adenoma, adenocystoma, cystoma, and a cysto-sarcoma; and adenocysto-carcinoma of the proliferating type was always difficult to distinguish from the above types.

There was also a border line condition where pathologically the tissue was benign in one portion and malignant in another, seen in cases of chronic cystic mastitis of Koenig. In such cases histological examination at operation was imperative to determine the best line of operative procedure. In rare instances abscess and suppurative cysts of the breast had been mistaken for a malignant growth. In order to verify the clinical diagnosis every mammary tumor should be subjected to microscopic examination.

New Methods of Pyloroplasty for Congenital Pyloric Stenosis.—Dr. ALFRED A. STRAUSS of Chicago drew the following conclusions: "The advantages of pyloroplasty over posterior gastroenterostomy are (1) The incision required is very small, in contradistinction to that necessary in performing posterior gastroenterostomy, large enough to deliver the partially distended stomach, transverse colon, and then to find the right loop of jejunum. (2) Those who have performed gastroenterostomies in these infants will appreciate the saving of a tremendous amount of shock thus secured. (3) The methods of operative procedure described cover every form of pathologic condition so far found in congenital pyloric stenosis. (4) The operations reconstruct a pathologic pylorus to a more normal pylorus, particularly as to its lumen and enormous thickness of musculature. Finally, the normal anatomical relation of the stomach to bowel is preserved by the pylorus remaining the normal connecting tube between stomach and duodenum. The developing liver and pancreas in the infant, which we know from experiments in physiology are stimulated reflexly by food passing through the duodenum, must certainly be considered in a more normal condition here than with a closed-off pylorus, as occurs after a posterior gastroenterostomy. Moreover the duration of the operation is one-third the time taken by posterior gastroenterostomy. The most important fact regarding this operative procedure is that these children come back from the operating room with no more shock than from the smallest minor operation. The projectile vomiting has ceased, no peristaltic waves are seen. they take their nourishment, and do not appear ill at all, as one would expect from an abdominal operation."

Surgical Treatment of Internal Hemorrhoids Under Local Anesthesia.—Dr. LOUIS J. HIRSCHMAN of Detroit stated that the technic was very simple and was efficacious for the following reasons: "(1) The anesthesia was complete and satisfactory. (2) There was no necessity of damaging the sphincter by dilating or divulsing it by mechanical means. (3) By the everting forceps the use of specula which only obstructed the view was obviated. (4) The method of placing the ligature at the junction of pile and healthy mucosa by shutting off the blood supply from the branches of the superior hemorrhoidal vessels rendered the operation almost bloodless. The only hemorrhage with which one met came from the power portion of the wound which was largely supplied by the inferior hemorrhoidal vessels and was of no consequence. (5) By tying the ligature with a long and short end the long end of the ligature was used as a suture and when tied to the short end and at the top of the wound brought the edges together so that good hemostasis was assured. (6) By excising the hemorrhoid and removing all diseased tissue below the mucosa level and down to the sphincter all of the pathology was eradicated and recurrence was impossible. The clamp-and-cautery or clamp-and-suture operations were so often followed by recurrence because only the top of the hemorrhoid was removed. All under the bits of the clamp was left behind and that very often was the major part of the hemorrhoid. By the open operation and the excision, nothing could be left behind and all of the hemorrhoid was accounted for. If the average surgeon who used a clamp would before he sewed or seared remove the clamp, opening the wound, thus discovering what he left behind, the author was sure there would be no more clamp operations performed for the removal of hemorrhoids. (7) Postoperative anesthesia was so satisfactory when quinine and urea were employed that the patient was able to be up and around after the first day or two, and many of them refused to stay in bed at all. (8) The lateral position prevented any sacroiliac strain which was often caused by the lithotomy position."

Fat as a Hemostatic in Renal and Prostatic Surgery.—Dr. IRVIN S. KOLL of Chicago said that the clinical experience at this time was sufficiently extensive to warrant the conclusion that the method could be considered of practical value. The fat was preferably obtained from a dog, under strict aseptic precautions. Placed in an airtight, sterile container, in salt solution, on ice, it could be kept indefinitely. Should it not be possible to obtain it from a dog, the fat could be taken from the patient at the time of operation. There was usually sufficient perirenal fat for the kidney work, but the patients were often not sufficiently adipose to obtain enough fat from the site of the incision in suprapubic prostatectomy. Following the enucleation of the prostate, the bleeding was checked either by hot water irrigation or tamponing the cavity tightly for a few moments with gauze. The cavity was then well fitted with fat, and several interrupted catgut sutures were tied over the edges of the cut mucous membrane of the bladder to hold the fat in place; enough of an opening was left for drainage. The fat would slough out in two or three days after it had served the purpose for which it was intended. The efficiency of this method of hemostasis was indicated by the cessation of the oozing, as noted by the rapid clearing of the urine. When doing a pyelotomy, two sutures were placed longitudinally at either side of the pelvis before it was incised. After removal of the calculus and exploration by the finger, a piece of fat—preferably perirenal—was placed over the incision and the opposite ends of the two sutures were tied over the fat. This made a perfect closure and required no further suturing. Should it be necessary to cut into the cortex of the kidney for the removal of the stone—the cavity thus left was plugged with a piece of fat, another piece was placed over the incision, the sutures were then run through this plug and tied over the other piece. Lacerations were repaired by using a large piece of fat and including it in the suture. This prevented tearing through the kidney at the same time it held the fat in place. The rapid clearing of the urine and recovery of 19 suprapubic prostatectomies, together with the satisfactory use of the above method in 20 kidney operations, the writer felt, should place the use of fat as a hemostatic in renal and prostatic surgery upon a sound surgical basis.

Tumors of the Kidney and Stone.—Drs. H. H. MARTIN and H. O. MERTZ of LaPorte, Ind., from their studies, concluded: "(1) Epithelial tumors of the kidney are most frequently associated with renal calculi. That of these, the relative proportion of association is greater in epithelial tumors of the kidney pelvis. (2) Cystic tumors, associated with renal stone are next in frequency. (3) The coexistence of renal calculi and mesotheliomatous and sarcomatous tumors is rare. (4) There does exist a definite and constant relation between the stone and epithelial tumors of the same kidney. The stone in the majority of cases, fifty-six per cent. in epithelial tumors of the parenchyma and sixty-two per cent. in epithelial tumors of the pelvis and ureter, being the primary lesion, "which because of its irritation, direct and consequent, is the principal etiological factor in the production of the neoplasm." (5) In cystic tumors of the kidney, in the true polycystic degeneration the calculus is invariably secondary, or but chance, while in a large cyst it not infrequently is one of the etiological factors. (6) In mesotheliomatous tumors the stone is always secondary, or but chance occurrence, while of the sarcomatous neoplasms we have collected two cases with an uncertain relationship existing, while in the third case the stone was secondary. (7) That in the coexistence of stone and neoplasm in the kidney of a child must be extremely rare. In our searches we have found no such association."

High-Frequency Electricity in Treatment of Uterine Fibroids and of Prostatic Enlargements.—Dr. NATHAN ROSEWATER of Cleveland summarized as follows: "(1) High frequency currents applied through glass vacuum electrodes upon the mucosa of the vagina and rectum are not painful, irritating, nor seemingly harmful in moderate doses over long periods of time. (2) High frequency currents given as described do not tend to cause sterility, but on the contrary several cases of pregnancy occurred after treatment in married women who had been sterile over periods of eight to eleven years. (3) In cases of acute specific prostatitis, immediate cessation of painful symptoms and rapid cure without recurrence, occurred in the cases treated. (4) In the cases of enlarged prostate of the senile, without inflammatory conditions a slower but equally posi-

tive improvement was observed. The first noticeable passage of urine—after two years absolute cessation except with catheter—was after one month's treatment, bi-weekly, and the next six weeks later, followed by others soon after. (5) In cases of even extremely large uterine fibroids an extra prolonged treatment weekly, or even once a month was followed by decided reduction in size and in restitution to normal function. It is uncertain how many treatments should be given, over what period of time they should be repeated; but most of those who stopped treatment subsequently submitted to operation; none died subsequently of malignancy. (6) Case 6 was not given iodides, ergot or other medication nor was she bandaged, yet her fibroid was materially reduced in size, and normal function returned, so that the high frequency current stands credited with mass reduction and uterine tonicity. In case 5, function was improved long before mass reduction was noticeable and leaves it uncertain as to what aid was given by the bandage, the iodides or the ergot, singly or combined with the electricity. The reverse is also true; the use of the bandage in appropriate cases, together with the iodides and ergot, is not incompatible with a successful result in the treatment of uterine fibroids. (7) High frequency electricity applied in the rectum and vagina for tuberculous peritonitis is not incompatible with a successful recovery after laparotomy, reserving laparotomy for those cases that show no improvement without it."

Value of the Cystoscope in the Differential Diagnosis of Abdominal Lesions.—Dr. COURTNEY W. SHROPSHIRE of Birmingham, Ala., stated that the very best results in the differential diagnosis of abdominal lesions were obtained by the combined efforts of the surgeon, cystoscopist, Roentgenologist, and laboratory technician. It was impossible in a great many cases to say without the aid of the cystoscope whether an existing lesion was within the abdominal cavity or represented some pathological condition of the urinary tract. It was therefore his belief that a cystoscopic and radiographic examination should be made in every case which bordered on uncertainty. For it was only in this way that we would avoid serious errors in diagnosis and increased risk to our patients. Chute of Boston reported some time ago a case of renal calculus causing marked intestinal symptoms, referable to the splenic flexure of the colon. The patient was advised that laparotomy was necessary, but for some trivial reason refused operation. During a similar attack some time later an examination of the urine revealed the presence of pus and blood. These findings were followed by a cystoscopic and Roentgenographic examination. A large calculus was discovered in the left kidney. Following an operation relief was immediate, and the patient had had no further symptoms. The fact which impressed him more than any other in this instance was the failure to make a cystoscopic examination in this very obscure condition—for neither the symptoms nor the radiographic examination of the intestinal tract was of great value—and it was not uncommon for lesions of the left kidney to produce symptoms simulating obstruction at the splenic flexure of the colon. Symptoms somewhat similar to the above occurred in a patient whom he saw in consultation at one of the local infirmaries. There was intense abdominal pain, which was general, accompanied by marked tenderness to pressure along the lower border of the ribs on the left side. The patient's bowels had not moved since the beginning of the attack, three days previous, and there was intermittent vomiting, a distended abdomen, and a temperature of 102°. After considerable effort on the part of the surgeon the patient's bowels moved. Examination of the feces for blood was negative, and nothing of value could be learned by means of radiographic examination. After the bowels had been emptied he was very comfortable and remained so for several days. His pain then returned, and the original symptoms again developed. At this time we were called to make an examination of the urinary tract. A cystoscope was easily introduced, bladder negative, right ureteral opening negative, left ureteral opening very much congested. Catheter passed to right pelvis with difficulty, left catheter was introduced, meeting with some resistance about 5 c. above ureteral opening, but it was gradually forced higher by gentle manipulation. Urine dripped from left ureter continuously and rapidly until 150 c.c. were collected. Functional test with phthalein as follows: Right, appearance 3 minutes; 30 minutes 48 per cent.; left, appearance, 10, 30, 10 per cent. Thorium was injected into the left pelvis and the radiographic examination showed a large irregular shadow extending from the kidney region downward to the brim of the pelvis. Diagnosis, hydronephrosis on left kidney. The surgeon who operated on this patient made an incision anteriorly, removing the left kidney with great difficulty. On examination, we found a large hydronephrotic kidney, the kidney substance proper being reduced to a mere shell. This sac was filled with a gelatinous substance. The patient died on the third day following operation. No autopsy was held. In concluding his paper he said that: (1) Too much reliance should not be placed upon pain or even tenderness to pressure in vague abdominal lesions. (2) Lesions of the left kidney often produced symptoms referable to the intestinal tract. (3) Renal colic was caused by an overdistention of the renal pelvis, and that an obstruction in the lower third would often cause symptoms referable to the kidney region. (4) A cystoscopic and radiographic examination were an absolute necessity in the differential diagnosis of abdominal lesions.

Treatment of Fractures of the Long Bones.—Dr. F. P. CORRIGAN of Cleveland said that reduction under anesthesia should be the procedure unless strongly contraindicated by age or infirmity. Immobilization, using immobilization only in the sense of maintenance of reduction. Complete immobilization with splints was not possible nor was it necessary; if reduction was maintained slight motion between the fragments did no harm, and it was even held, by some authorities, that it was in a sense physiologic and an important factor in stimulating osteogenesis. The form of immobilization apparatus was not important, but there was a very decided trend toward the made-to-measure splint, of plaster Paris, silicate of soda, etc., rather than the ready-made splints turned out by the manufacturers to fit all fancies. The principle of extension and early reduction were the ones upon which he wishes especially to lay stress because extension had never been given the attention in this country that it deserved. The work of Bardenhauer of Cologne, which was well known and largely accepted, in Europe, had been very little mentioned in this country, and it was his belief that the greatest advance in fracture treatment would come from a wider study of the principles of extension laid down by him. In order to facilitate the early application of extending force to the limb, he had devised an extension bandage or sleeve woven in such a fashion that when pulled upon from below it became smaller and gripped the limb. The advantage of this extension bandage was primarily that it did away with the disagreeable and annoying features of adhesive plaster. Moreover, it was easily and quickly applied, easily removed and was sterilizable.

Technique of Nephrectomy for Renal Tuberculosis and Other Infections of the Kidney.—Dr. PAUL MONROE PILCHER of Brooklyn, N. Y., said that, leaving out many of the points upon which most surgeons agreed, such as a sufficiently large incision to expose the kidney region, resection of the ribs, if necessary, and removal of much of the perinephritic fat, he wished to direct attention to three points: (1) The adhesions of the kidney to the surrounding tissues. (2) The treatment of the pedicle. (3) The treatment of the ureter

1. In studying the specimens which he had removed, it had been repeatedly noted that at those points where the active tubercular lesions came to the surface of the kidney, the surrounding tissue always threw out a defensive line of plastic material forming adhesions covering this point. This was especially true at the upper pole of the kidney. He respected these protective barriers thrown out by nature by carefully ligating the adhesions and cutting the adhesions between ligatures leaving a considerable portion attached to the kidney itself. As soon as the capsule beneath the point of attachment of these adhesions was lifted up active tuberculous foci were almost invariably discovered. It was his contention, then, that the stripping up of these adhesions in removing the kidney was a source of danger, for if the kidney surface be left unprotected during the manipulation of nephrectomy it was very easy for caseous material to be squeezed into the wound, and infection take place. He had found it of advantage as a rule to attack the upper pole, for it was here the adhesions were strongest, and while it took some time to tie and cut these adhesions, still the result was a freely movable upper pole which allowed us more quickly to approach the vessels which were in the superior half of the pedicle.

2. If the upper pole had been freed it was usually possible to pass the finger down beneath the pedicle and by careful dissection to expose the elements of the pedicle. There was very little danger of rupturing the pedicle if too much strain had not been put upon it. By a certain blunt dissection and the use of gauze the fat which made up the chief bulk of the tuberculous pedicle could be stripped down and the artery usually became plainly evident. Then in most cases the ureter was found and easily differentiated. Having controlled the pedicle by the finger beneath it to hold it up, a ligature carrier was passed between the vessels and the ureter, and a chronic gut ligature was applied to the vessels before they were cut. Then a second ligature was applied to the vessels near the kidney itself, a clamp applied near the ligature which controlled the vessels and the vessels were then divided. Before doing further, a second ligature was placed around the vessels and, if possible, the artery and the vein were also tied separately. It was needless to say that this was not always possible. Having freed the kidney from its restraining vessels it was lifted up, and it was very simple then to strip the tissues away from the ureter for a very considerable distance, usually allowing us to control 4 or 5 inches of the ureter without much difficulty. Up to this point it would be noted that the wound had been entirely protected from infection, first by not disturbing the adhesions protecting the active tuberculosis near the surface, and, second, by not having exposed anything which communicated with the pelvis of the kidney or the interior of the ureter. He then allowed the kidney with its ureter still attached to hang out from the lower end of the wound and proceeded to close the wound from which the kidney had been removed, draining together all of the deeper tissues and bringing together the fascia and the muscles in their proper relations and entirely closing the wound, suturing the skin, leaving the kidney still attached by its ureter coming out at the lower angle of the wound.

3. The final step: Suture was passed through the skin just above the ureter, and this was used as a ligature to tie off the ureter. Then the needle of a hypodermic syringe containing 95 per cent. phenol was inserted into the upper portion of the ureter and 10 to 15 drops of phenol was injected into the ureter. Then the upper portion of the ureter was clamped and was cut between ligature and clamp. The stump was cauterized and dry dressings applied. His experience since he had employed this technique had been more uniformly satisfactory than it had been with any other method.

Roentgen Examination of Fractured Skulls.—Dr. WILLIAM H. STEWART of New York City said that the frequency with which fracture of the skull was mistaken for various other conditions, especially in cases of coma, called for any method which would make a rapid and positive diagnosis. This, with many other difficulties which were encountered in the correct interpretation of this lesion, rendered the routine Roentgen examination of the skull of the greatest importance in all head injuries. It offered an actual visual demonstration of the presence or absence of fracture, its location, character and extent. It was a noteworthy fact that each succeeding collection of statistics of the relative frequency of fractures gave this lesion an increasing percentage; thus Guilt gave 1.45 per cent., von Bruns 3.4 per cent., and Chudosky 3.8 per cent. These figures, he believed, in view of the more accurate diagnosis with the Roentgen ray, were altogether too low. If a systematic Roentgenographic examination were properly made of all injuries, either direct or indirect, of the head, he felt confident that the relative frequency of fractures of the skull would show a much larger percentage. He based this statement on the number of cases in which the diagnosis could only be made by means of the Roentgen examination, especially when the patient had no symptoms, either objective or subjective, only a history of a fall. In one of the institutions he was connected with 250 cases of head injuries had been examined since Jan. 1, 1915, forty-five of which were positive for fractures—about 20 per cent. Patients were often in a comatose or irritable condition when referred to the Roentgenologist; therefore, extreme patience and perseverance were required. It must be borne in mind that the minimum amount of disturbance and movement was the rule. In the examination of these cases the head must be absolutely fixed and all respiratory movement overcome. If the objective symptoms, such as bleeding from the ear, nose, or mouth, laceration of the scalp, hematoma, or paralysis were present, they were a clue as to the possible site of the fracture, and attention was naturally directed toward that area. This must not mislead one, however, for every examination should cover the frontal, both parieto-temporals, occipital and basilar regions. Having obtained satisfactory Roentgenograms, it was necessary for us to have the experience and anatomical knowledge to make the correct interpretation. In the reading of Roentgenograms of the base of the skull, beginning behind, we saw the foramen magnum and within the odontoid process of the axis. Just forward from this opening on either side the mastoids were distinctly reproduced with the associated shadows of the petrous portion of the temporal bones. Anterior to this was a clear view of the middle fossa. If we had not produced too much extension of the chin the anterior fossa could be seen well in front of the overlying shadow of the lower jaw. Fractures of the zygomatic arch with the amount of displacement were usually beautifully shown in these base plates. In the interpretation of the frontal, lateral and occipital regions we had to remember the normal radiating lines cast by the grooves on the inner table of the skull which accommodated the meningeal blood vessels. These grooves spread out fan-shaped from an anterior point backward. The shadows cast by the diploic spaces, between the inner and outer tables of the skull, were lines extending vertically upward from a point at the base, directly in variance to the shadows representing the meningeal grooves. Fractures usually showed as light, sharply cut lines of varying width, depending upon the amount of separation; they might be vertical, horizontal, or curved, but were seldom directed in the same manner as the blood vessel grooves.

Roentgen Studies in Bone Pathology with Special Reference to Spontaneous Fractures.—Dr. LEON T. LE WALD of New York City, stated that in two cases the spontaneous fracture occurred in the femur, one in the middle of the shaft and in the other at the junction of the shaft with the neck. In neither case could complete reduction be accomplished, but as the final outcome proved, this appeared to be a desirable rather than an unfortunate outcome, as the general alignment was better than the corresponding bone on the other side in each instance. This would almost make it appear as if the spontaneous fracture were an attempt on the part of nature to straighten the extreme deformity which one saw in these cases. Rapid and complete union of the fragment occurred in both cases. In his series of pathological fractures, bone cyst merited most careful consideration, for without careful Roentgen examination an ordinary fracture would have been diagnosed, and inadequate treatment would have been instituted. In two cases a perfect result was obtained, in one by open operation and curettage, in the other a similar procedure supplemented by a bone graft. A rare form of bone cyst was encountered in the skull of a young woman. This was successfully dealt with by removal. Without Roentgen examination, which showed the absolute limitation of the process, sarcoma would have been thought of, and either no operation or a very extensive one might have been the method of treatment. In the past, without doubt, many cases of bone cysts had been dealt with too radically even by amputation of an extremity under the supposition that one was dealing with a sarcoma. Spontaneous fracture might give the first clue to a primary or secondary new growth in bone. Roentgen examination of the part involved might immediately establish the diagnosis. Clinical examination based upon the Roentgen findings might then locate a primary growth at some remote part of the body, such as the kidney or prostate gland. Syphilis of the bones might not be suspected until a spontaneous fracture followed by Roentgen examination and a Wassermann test established the diagnosis and pointed the way to a cure, not only of the bone condition but of other unsuspected syphilitic lesions.

Radiation Treatment of Cancer of the Cervix.—Flatau removes the mass with scissors and curette until no cancer tissue remains. Radium is used at the operation surface, while with the *x*-rays an attempt is made to head off metastases by raying all lymphatic areas. The entire pelvis is next irradiated. Recently (1913-1916) eight out of nineteen inoperable cases have been improved or arrested. Of six recurrences, two have shown improvement or cure. Of twenty-four beginning cases, twelve have been cured and seven improved. Of the forty-nine cases treated, twenty are dead and in fourteen the disease is arrested (provisional cure).—*Zentralblatt für Gynäkologie.*

Miscellany.

Mortality Statistics for 1915.—A preliminary announcement with reference to mortality in 1915, issued by the Bureau of the Census, shows that nearly one-third of the 909,155 deaths reported for that year in the "registration area," which contained approximately 67 per cent. of the population of the entire United States, were due to three causes—heart diseases, tuberculosis, and pneumonia—and nearly two-thirds to twelve causes—the three just named and Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, arterial diseases, diabetes, influenza, diphtheria, and typhoid fever. The deaths from heart disease numbered 105,200, or 156.2 per 100,000 of population; this is a marked increase as compared with 1900, when the death rate was only 123.1 per 100,000. The increase has not been continuous, but has fluctuated from year to year. Tuberculosis in its various forms claimed 98,194 victims in 1915, of whom 85,993 died of tuberculosis of the lungs. The decline in the death rate from this disease has been continuous from year to year since 1904 and has amounted to over 25 per cent., from 200.7 per 100,000 in 1904, to 145.8 in 1915. Tuberculosis in all its forms, however, still causes more deaths annually than any other form of bodily illness except heart disease, and about 46 per cent. more than all external causes— accidents, homicides, and suicides—combined. Pneumonia, including bronchopneumonia, caused 89,326 deaths, or 132.7 per 100,000. This rate, although lower than for most of the years from 1900 to 1911, is higher than for 1912, 1913, and 1914. The rate for 1914, 127 per 100,000, is the lowest on record. The death rate from pneumonia, like that from tuberculosis, has shown a marked decline since 1900, when it was 180.5 per 100,000. The fluctuations in the rate from year to year have, however, been continuous. The only other death rate higher than 100 per 100,000 during 1915 was that for Bright's disease and nephritis, 104.7, the total number of deaths due to these maladies being 64,480 and 6,020, respectively. The mortality rate from these two causes increased from 89 per 100,000 in 1900 to 103.4 in 1905, fluctuated more or less between 1905 and 1912, and has shown little change since that time. Next as a cause of mortality come cancer and other malignant tumors, which caused 54,584 deaths in 1915. The death rate from cancer has risen from 63 per 100,000 in 1900 to 81.1 in 1915, and the increase has been almost continuous. It is quite possible, however, that at least a part of this increase is due to more correct diagnoses and greater care in making reports. Of the deaths from this cause in 1915, nearly 39 per cent., 21,221, were due to cancer of the stomach and liver. Apoplexy caused 53,397 deaths, or 79.3 per 100,000 Diarrhea and enteritis caused 48,325 deaths or 71.7 per 100,000; this rate has declined almost steadily since 1900 when it was 133.2. Arterial diseases caused 15,685 deaths, or 23.3 per 100,000; diabetes, 11,775 deaths, or 17.5 per 100,000; and influenza, 10,768 deaths, or 16 per 100,000. The rate for diabetes has risen almost continuously since 1900, when it was 9.7 per 100,000. Of the lesser causes of death, the rate for diphtheria and croup was 15.7 per 100,000, for typhoid fever, 12.4 per 100,000, for whooping cough, measles, and scarlet fever, 8.1, 5.4, and 3.6 respectively.

That the "safety first" campaign has borne good fruit is shown by the figures for accidental deaths. For 1913, 54,011 deaths were reported as due to accident; for 1914 the number was reduced to 51,770, and for 1915 to 51,406; and during this period there was not only an increase in population of the registration area but an increase in the area itself. The rate, therefore, fell from 85.3 in 1913, to 78.5 in 1914, and to 76.3 in 1915. The number of suicides reported during the year was 11,216, or 16.7 per 100,000; the suicide rate has varied but little during the past ten years.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

LES BLESSURES DE L'ABDOMEN. Par J. ABADIE (d'Oran). Préface de J. L. FAURE. Avec 69 figures dans le texte et 4 planches hors texte. Published by Masson et Cie., Saint-Germain, Paris. 238 Pages. Prix, 4 fr.

NERVOUS AND MENTAL DISEASE MONOGRAPH SERIES No. 7. THREE CONTRIBUTIONS TO THE THEORY OF SEX. By Prof. SIGMUND FREUD, LL.D., Vienna. Authorized Translation by A. A. BRILL, Ph.B., M.D. With Introduction by JAMES J. PUTNAM, M.D. Published by Nervous and Mental Disease Publishing Co., New York, 1916. Second Revised and Enlarged Edition. 117 pages. Price, $2.00.

LES SÉQUELLES OSTÉO-ARTICULAIRES DES PLAIES DE GUERRE. Par A. BROCA. Avec 112 figures dans le texte. Published by Masson et Cie, Saint-Germain, Paris, 1916. 177 pages. Prix, 4 fr.

RADIODIAGNOSTIC DES AFFECTIONS PLEURO-PULMONAIRES. Par F. BARJON. Avec figures dans le texte et 26 planches hors texte. Published by Masson et Cie., Éditeurs, 120 Boulevard Saint-Germain, Paris, 1916. 182 pages. Prix, 6 fr.

BEITRÄGE ZUR KLINIK DER INFECTIONSKRANKHEITEN UND ZUR IMMUNITÄTSFORSCHUNG (mit Ausschluss der Tuberkulose). Herausgegeben von Prof. Dr. L. BRAUER. Redaktion: Für die Originale: Prof. Dr. H. Schottmüller (Klinischer und bakteriologischer Teil) and Prof. Dr. H. MUCH (Immunitätswissenschaftlicher Teil). Für die Ergebnisse: Prof. Dr. H. LÜDKE, in Würzburg. V. Band, Heft 1. Verlag von Curt Kabitzsch, Egl. Universitäts-Verlagsbuchhändler, 1916. 234 pages. Illustrated. Price, 12 marks.

MANUAL OF CHEMISTRY—A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text-Book Specially Adapted for Students of Medicine, Pharmacy and Dentistry. By W. SIMON, PH.D., M.D. Published by Lea & Febiger, Philadelphia and New York, 1916. Eleventh edition, thoroughly revised, with fifty-five illustrations, one colored spectra plate and six colored plates, representing forty-eight chemical reactions. Price, $3.50 net.

CONSTIPATION, OBSTIPATION, AND INTESTINAL STASIS (Auto-Intoxication). By SAMUEL GOODWIN GANT, M.D., LL.D. Published by W. B. Saunders Co., Philadelphia and London, 1916. Second edition, enlarged, with 259 illustrations. 584 pages. Price, $7.50 net.

BLOOD-PRESSURE FROM THE CLINICAL STANDPOINT. By FRANCIS ASHLEY FAUGHT, M.D. Published by W. B. Saunders Co., Philadelphia and London, 1916. Second edition, thoroughly revised. Illustrated. 478 pages. Price, $3.25 net.

PERSONAL HEALTH—A Doctor Book for Discriminating People. By WILLIAM BRADY, M.D., Elmira, New York. Published by W. B. Saunders Co., Philadelphia and London, 1916. 407 pages. Price, $1.50 net.

THE OPERATING ROOM—A Primer for Pupil Nurses. By AMY ARMOUR SMITH, R.N. Published by W. B. Saunders Co, 1916. 295 pages. Price, $1.50 net.

TRANSACTIONS OF THE AMERICAN OTOLOGICAL SOCIETY, Forty-ninth Annual Meeting, Hotel Raleigh, Washington, D. C., May 9 and 10, 1916. Published by The Society: Mercury Publishing Co., Printers, New Bedford, Mass., 1916. Vol. XIV, Part I. Illustrated. 201 pages.

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Original Articles.

SENSITIZED TYPHOID BACTERIA. (TYPHOID SERO-BACTERINS.)

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SENSITIZATION of antigens is becoming a recognized important procedure. Sensitization means the mixing of an antigen (bacteria, red-blood cells, proteins, etc.) with its specific antibodies. These antibodies are supplied by the serum of an animal that has been previously immunized with the particular antigen. If, for example, a rabbit or goat receives injections of typhoid bacteria, the usual antibodies (agglutinins, bacteriolysins, bacteriotropins (opsonins), complement fixation bodies, etc.) appear in its serum. If an emulsion of typhoid bacilli be mixed with this immune serum, the bacteria become sensitized; that is, during the process of sensitization the bacteria unite with the specific immune bodies present in the serum.

Several important general rules pertaining to sensitization must be mentioned right here. (1) It is not sufficient merely to mix the bacteria and the corresponding immune serum; it is essential that the bacteria and their antibodies unite, before we can say that they have become sensitized. Thus it is important, primarily, to have an excess of immune serum and, secondarily, to expose the bacteria to the action of the immune serum for a sufficient length of time in order to obtain complete and thorough union. Otherwise incomplete sensitization occurs which manifests itself on animal injection by a production of antibodies stimulated by those bacteria which had remained unsensitized. (2) The immune serum used for sensitizing the bacteria should be free from complement. This is accomplished by heating the serum, if fresh, for half an hour at 56° C. before adding it to the emulsion of the bacteria, or if the serum has been kept for a long period, the complement will have been destroyed. (3) The immune serum may be obtained from an animal of the same or different species, *e. g.* the typhoid bacteria may have been isolated from the human being and the immune serum for sensitization obtained from a convalescent typhoid individual. As a general rule, such a procedure is not practicable; so that the serum for sensitizing is usually obtained from an animal (goat or horse or rabbit) that has been immunized by successively increasing quantities of the respective bacteria, in this way obtaining a strongly immune serum. (4) Finally, sensitized bacilli may be dead or living, depending on whether the bacteria have or have not been killed previous to being mixed with the immune serum.

Results of Injection of Sensitized Bacteria.—Let us first take up animal experiments and see what happens after injections of sensitized bacteria (Garbat and Meyer).[1] It is of interest to compare these findings with those obtained by immunization with the same dosage of non-sensitized bacteria. A description of an actual experiment in rabbits will contrast these clearly. Virulent strains of typhoid bacteria are grown upon agar for 24 hours at 37° C. The growth thus obtained is washed off and suspended in normal saline. The bacteria are killed by exposing the emulsion to 60° C. in a water bath on two successive days. The entire amount is divided equally. One-half is mixed with an excess of a highly immune, inactive typhoid serum obtained from a horse; the mixture is allowed to sensitize in the incubator at 37° C. for 24 hours, then washed carefully in saline, suspended in saline, and injected intravenously. The other half is simply washed the same way, suspended in an equal amount of saline, and also injected intravenously. Certain differences in the two animals are evident:

A. Temperature.—The temperature of the sensitized rabbit begins to rise about one hour after the injection and rises 2 or 3° above the normal temperature. The maximum degree is reached in about 4 to 6 hours. The fever does not remain high, but falls rapidly in 2 to 4 hours. This quick response to sensitized bacteria was recently proven also by Schottstaedt.[2] The temperature of the non-sensitized rabbits rises slowly; it does not, however, reach the same height as did the rabbit injected with non-sensitized bacteria. It returns to normal only after 24 to 36 hours.

This difference in the temperature is observed regularly, and not only after the first, but also after all subsequent injections. As will be seen later on, it is dependent upon the rapid destruction of the sensitized bacilli. This phenomenon proves to us an important characteristic of sensitized bacteria, *i. e.*, that their action is rapid, almost immediate, and of quick response. Any immunity that their action may produce is necessarily more quickly attained.

B. The General Condition of the Animals.—When the maximum temperature has been reached, the sensitized rabbits are much more active and sprightly than the non-sensitized animals, which seem greatly depressed and show signs of serious illness; they sit still and often have diarrhea. They remain in this condition for about 36 hours, while the sensitized rabbits are completely restored to activity after 8 or 10 hours.

When the rabbits received repeated injections at intervals of 8 days and at each time the dose of the antigen was doubled, the non-sensitized rabbits died almost without exception after the third injection. Their temperature dropped far below normal; severe diarrhea continued until death. Post mortem examination showed merely a severe inflammation of the small intestine. This result confirms the con-

clusions arrived at by Kraus and Stenitzer, regarding bacterial anaphylaxis. The sensitized rabbits, on the other hand, reacted more favorably to the third injection, so that it would seem that sensitization reduces the danger of anaphylaxis. The recent work of Jobling supports this finding. Of 7 non-sensitized animals 6 died. Of 7 sensitized animals 2 died.

The above description of the reaction from the injection elicits a second important point in favor of the sensitized bacteria, namely, the *slighter disturbance after inoculation.*

C. Antibody Content of Serum.—The typhoid antibodies are agglutinins, precipitins, complement fixation bodies, bacteriolysins, and bacteriotropins or opsonins. After one or two injections of *sensitized* typhoid bacteria, rabbits do not develop any agglutinins or complement fixation bodies. On the other hand, the rabbits immunized with non-sensitized bacteria get up a high power of agglutination and complement fixation. After a third and subsequent injection of sensitized bacteria some agglutinins and complement fixatives appear, but far fewer in number than in the sera from rabbits immunized with non-sensitized bacteria.

That no agglutinins were produced by the injection of the sensitized bacteria, was by some attributed to the possible development of antiagglutinins, but this is disproven by mixing the non-agglutinating serum in equal parts with a strongly agglutinating one and finding that the power of agglutination is not decreased any more than can be accounted for by the dilution. The absence of agglutinins or complement fixation bodies is very well explained in the light of Ehrlich's theory of saturation of the antigen with its antibodies. The classical experiments of Neisser and Lubowski[3] showed that killed agglutinated typhoid bacilli produced no antibodies. The fact that some degree of agglutination appears after the third or subsequent injection of sensitized bacteria may be due either to the difficulty of complete saturation of such large quantities of bacteria or to a separation between the agglutinin and its bacillus in the blood stream, setting some of the bacilli free and unsensitized and thus capable of stimulating agglutinins. This is hardly ever the case after the first or second injection, if the bacteria have been properly sensitized.

The question that next arises is: Do rabbits that have been immunized with sensitized bacteria, and that have developed no agglutinins or complement fixation bodies, possess any typhoid antibodies at all? Most emphatically, yes. The serum from these rabbits, when examined by Neufeld's method of phagocytosis in the test tube, or Pfeiffer's method in the peritoneal cavity of the guinea pig, shows a very high degree of opsonic or bacteriotropic activity. The examination of the peritoneal exudate shows marked phagocytosis. On the other hand, similar experiments undertaken with the serum from rabbits that had been immunized with non-sensitized bacteria, show a much lesser opsonic activity in vitro and a strong bacteriolytic (*not phagocytic*) action in the peritoneal cavity of mice and guinea pigs. Furthermore, and even more important, is the fact that the serum from rabbits immunized with sensitized bacteria, and containing no agglutinin or complement fixation bodies, is capable of saving mice that had been injected with lethal doses of live typhoid bacteria. This curative property was either entirely absent, or present to a much lesser degree, in the sera of rabbits injected with non-sensitized bacteria. Thus, in summarizing this question of immune bodies, it may be said that injections of sensitized bacteria produce hardly any agglutinins, precipitins, or complement fixation bodies, a moderate number of bacteriolysins, but large numbers of bacteriotropins and curative bodies for mice; while unsensitized bacteria produce large numbers of agglutinins, precipitins, complement fixation bodies, and bacteriolysins, but few bacteriotropins and curative bodies for mice.

In studying the literature on this subject, I have found that some observers, Nègre,[4] Ardin Delteil, Nègre et Raynaud,[5] report some degree of agglutination after the injection of sensitized typhoid bacteria, although only about one-tenth as strong as after non-sensitized. More recently, Lieberman and Acél[6] found identically the same titer of agglutinin and bacteriolysin in rabbits after injection of sensitized as of non-sensitized bacteria. They do not, however, state their method of sensitization, so that I am almost convinced that their procedure was faulty. On the other hand, Pfeiffer and Friedberger[7] corroborated my results. They found *no* precipitation action, an agglutination action of only 1:20, and an especially low bacteriolytic action after injection of sensitized typhoid and cholera bacteria. Their conclusion, however, is erroneous when they say that sensitized typhoid bacteria had no antigenic value; they omitted to test the opsonic value of the serum or its action in animals.

A recent article by Schottstaedt[8] also shows low agglutinating and bactericidal power of the serum in rabbits after injection of sensitized typhoid bacteria. It is wrong to conclude therefrom, as this author does, that "the height of the immunity curve after sensitized vaccines is only about one-quarter as potent, or that sensitized vaccines are less potent than non-sensitized typhoid vaccines." From merely agglutination or bactericidal action, such comparison is not permissible. Bacteriotropic or opsonic experiments in vivo and in vitro, or curative action in animals, will refute such statement. High agglutination or bactericidal action should not be *expected* after injections of sensitized typhoid bacteria. In man, the systematic study of antibodies after the prophylactic injection of sensitized typhoid bacteria has been carried out most carefully by Broughton Alcock,[9] working under Bezredka's supervision. They found *no* agglutination or complement fixation in the individuals after two inoculations of sensitized living bacteria, while the power of phagocytosis was very high (6 bacilli per phagocyte in dil. 1:192). These results correspond fully with my animal experiments.

I have dwelt in detail upon this subject of antibodies because the general relationship between immunity and the detection of antibodies is still a problem for discussion. We all know that immunity can last long after the disappearance of known specific serum properties; then, too, we have often found that the serum from patients who died contained many antibodies, while those that recovered had very few. Leishman[9] considers an increase in phagocytic activity as the most important immunity. Klein[10] attaches more importance to phagocytosis than to agglutination and bacteriolysis. Most recently, Bull[11] has shown that agglutination does enter as the primary stage in the destruction of the bacillus typhosus and other bacteria.

Virulence and Toxicity of Sensitized Typhoid Bacilli.—Next in importance to the question of antibodies is the question of the virulence and toxicity

of sensitized typhoid bacilli. I already mentioned, under the heading of general reactions, that rabbits immunized intravenously with progressively increasing doses of sensitized bacteria withstood the inoculation much better than those inoculated with non-sensitized bacteria. Of seven rabbits thus immunized with dead non-sensitized bacilli, six died after the third injection, with symptoms of anaphylaxis; while of seven rabbits immunized with dead sensitized bacteria only two died. No explanation for this was offered, but Jobling[12] has since found that bacteria treated with serum do not absorb the antitrypsin ferments of the blood, the disappearance of which is associated with the phenomenon of anaphylaxis.

Guinea pigs inoculated intraperitoneally with lethal doses of dead sensitized bacilli remained alive, while the animals injected with the same dose of non-sensitized bacilli succumbed within ten hours, with severe symptoms of intoxication. Two hours after the injection, the rectal temperature of these non-sensitized guinea pigs was so low that it could not be estimated by the thermometer. The temperature of the animals treated with the sensitized bacilli rose slightly. Stained specimens of the peritoneal exudate from the sensitized guinea pig showed, two hours after the injection of the sensitized bacteria, no intact bacteria and an excess of leucocytes, for the greater part vacuolated. Later on, macrophages appeared, which took up the leucocytes, all this being strong evidence of positive chemotaxis. The peritoneal exudate from the non-sensitized guinea pig showed many broken up bacilli, but only few leucocytes.

Already in 1902, Bezredka[13] had found that the sensitized vaccine of typhoid and cholera bacteria (killed by heating one hour at 60° C.) when injected intraperitoneally in guinea pigs, was less toxic than the unsensitized vaccine. My above-mentioned experiments confirm this absolutely. More recently, Cecil[14] repeated these experiments, and, in addition, used *live*, sensitized bacilli. He also came to the same conclusion, namely: (1) Sensitized, living typhoid bacilli, when injected intravenously in rabbits and guinea pigs, are less virulent than non-sensitized living typhoid bacilli. (2) Sensitized typhoid bacilli, killed by heat, are in a similar way less virulent than non-sensitized, killed typhoid bacilli. (3) The most probable explanation for this difference is that sensitized typhoid bacilli undergo phagocytosis and bacteriolysis more rapidly than the non-sensitized bacilli.

Mode of Action of Sensitized Bacilli.—We may now discuss the mode of action of sensitized bacilli. Pfeiffer and his workers showed that the typhoid, as well as the cholera bacillus, belongs to a class of microorganisms whose poisonous substances are contained within the body of the bacillus, and are not easily given off into the surrounding medium in which they grow, as is the case, for example, with the diphtheria bacillus. This central substance was named the endotoxin, and was for a long time considered highly poisonous to the animal body. For example, death has been reported in the literature (Drigalski[15]) as having been caused by the sudden liberation of these endotoxins in typhoid fever after the use of a highly bacteriolytic serum. The term endotoxin had always been considered a misnoma, as it did not fulfill the requirements of a true toxin; *i.e.* it was devoid of antigenic properties, and its toxicity did not follow the rule of multiple proportions.

With this view in mind, associated with the animal and test-tube experiments mentioned in this paper, it seems permissible to the author to propose as a working basis the following explanation for the action of the sensitized bacteria: The typhoid bacillus consists of two parts: an inner, central or nuclear substance, the endotoxin, and an outer or enveloping protoplasmic substance or membrane. Injection of the whole bacilli stimulates antibodies first referable to the outer capsule, the usual bacteriolytic, agglutinating and complement fixation antibodies. After the production of these bodies they combine in vivo with the typhoid bacteria, *i.e.*, sensitize them in the circulation, and, with the aid of the complement of the blood, bacteriolysis occurs, resulting in the liberation of the central substance or endotoxin. This endotoxin is now capable of producing its own antibodies, the anti-endotoxins. When *sensitized* bacteria are injected the outer capsule is already saturated with its antibodies (agglutinins, bacteriolysins, complement fixation bodies, etc.); thus, none of these antibodies, or only a few of them, are formed; antibodies *are*, however, produced referable to the endotoxin, because as soon as the sensitized bacteria reached the circulation bacteriolysis at once occurred; the bacteria were immediately broken up by the aid of the complement, and the endotoxins were liberated and allowed to stimulate their antibodies. These antiendotoxins, as they may be termed for purposes of designation, are strongly bacteriotropic or phagocytic in nature. This has already been proven above by the examination of the serum of man and animals after inoculation with sensitized bacteria. Thus *sensitization may be considered a biological means for the liberation of endotoxin.* For years attempts have been made to liberate the typhoid endotoxins by physical and chemical methods of extraction or maceration of the bacteria. The methods of M. Hahn, MacFayden, Bezredka, Kraus and Stenitzer, Meyer and Bergell, are well known. Lüdke's adoption of the Gottstein and Matthes' method by ferment digestion has the same object in view. Sensitization accomplishes this end, in a manner more closely resembling that of nature. The endotoxin should not be looked upon in the light of the *only* poisonous element of the typhoid bacillus, because it has been shown above that rabbits and guinea pigs are not killed by the sudden liberation of large quantities of endotoxin after inoculation with multilethal doses of sensitized bacteria, while animals inoculated with same doses of the whole bacteria succumbed with marked symptoms of intoxication. Thus the outer portion of the typhoid bacillus must also have its poisonous constituents, if not even more so than the endotoxin.

I am fully aware that the theory of endotoxins had exposed itself to criticism during the recent split products and ferment period of Vaughan, but as some of this latter work has been shaken in its foundations by the works of Jobling, Bronfenbrenner,[16] and still more recently by the experiments of Novy, the endotoxin theory seems as yet to be the best working hypothesis for immunization with sensitized vaccines. I am glad to see that Nichols,[17] in a recent paper on sensitized vaccines, has arrived at a similar conclusion. Vaughan's explanation for the action of sensitized vaccines, as expressed by him in the very short but lucid paper of Stewart[18] seems to me, after all, to agree fundamentally with the view advocated above, but he

expresses it in terms of protein split products, instead of Ehrlich's nomenclature.

A few words should be allotted to Theobald Smith's[19] consideration of the mode of action of sensitized bacteria. He draws the analogy between bacteria saturated with their antibodies and toxin-antitoxin mixtures. Definite active immunity is produced with neutral toxin-antitoxin mixtures. A single such injection surpasses in effectiveness many doses of pure toxin. The mixture penetrates quite generally through the body, whereas the pure toxin is chiefly held at or near the place of injection. This diffusion tends to cause maximum antibody formation over a wide territory by a relatively very small amount of free or perhaps dissociable toxin in the toxin-antitoxin mixtures. Theobald Smith is inclined to believe that a similar phenomenon of diffusion occurs with sensitized bacteria. Naturally, this idea is purely theoretic.

Preparation of the Sensitized Vaccine.—Before taking up the practical application of sensitized bacteria in man, certain problems in the preparation of the sensitized vaccine merit a little additional discussion.

First, and most important, is the question of *live versus dead sensitized bacteria* and the posible dangers associated with the use of the former. As a rule, if there are several methods for producing immunity, that one should be chosen which approaches most closely the way that nature employs in producing that same immunity, provided that there are no harmful effects. In general, living virus has proven itself superior to a heated one in calling forth immunity. The less artificial manipulation of a vaccine during its preparation the better; thus we can destroy the entire efficiency of a vaccine by too prolonged or too high exposure to heat. From a study of antibodies, Schottstaedt found that vaccines killed by heat seem to be less active than those killed by the addition of phenol only. However, the possible *infectious power of a living sensitized vaccine,* or its *liability to produce a typhoid carrier state,* has kept many physicians from the use of the live virus. This is erroneous. Both of these factors are dependent upon the proper sensitization of the vaccine. An emulsion of live bacteria, but which have been *thoroughly and completely sensitized, i.e.* all bacteria saturated with antibodies, can do no harm, because, as has been so often said in this paper, when injected even in a massive dose the sensitized bacteria are quickly destroyed at the site of injection or in the circulation with the aid of the complement there existing; no live bacteria remain to cause a typhoid carrier state. Certainly, if the vaccine is not completely sensitized so that there are a great number of live bacteria ununited with their antibodies, these bacteria will not be destroyed when they are injected, but may multiply, and thus cause a typhoid infection. Even in this instance the almost immediate immunity produced by those bacteria which had been sensitized may destroy the unsensitized ones if they are not too numerous. The fact that cultures made from live sensitized bacteria show a profuse growth should not lead one to believe that the same thing will happen in animals or human beings when inoculated with living sensitized bacilli. Naturally, when live sensitized bacteria are cultured they will grow; they have remained alive and have not been destroyed, as they would be in a living body, by the help of complement. This is further proven by mixing living sensitized bacteria in one test tube with fresh normal horse serum, and in another tube with heated horse serum (the heating has destroyed the complement). Both mixtures are allowed to remain at 37° C. for one hour, and then cultures are made from each. After 24 hours' incubation a profuse growth will be noted from the test tube which contained living bacteria plus heated serum, while no growth occurs from the mixture of living bacteria plus fresh, non-heated serum. The latter contained sufficient complement to allow bacteriolysis, or destruction of the bacteria, even in the test tube. (Rowland.[20]) These experiments are in accord with my theory expressed above for the freedom from danger in sensitized bacteria, and disprove the statements made by many that sensitized bacteria are inocuous because they are easily and rapidly taken up by the phagocytes. In this test-tube experiment there were no leucocytes, so that phagocytosis was no element. The important factor is the *bacteriolysis* which takes place almost immediately with sensitized bacteria. The property of increased phagocytosis comes into play later by stimulation from the liberated endotoxin. The immediate bacteriolysis in the presence of complement explains also the important question relative to producing a typhoid carrier.

For several years after Bezredka first advised the method of the live sensitized bacteria he was met by opposition on the grounds that a typhoid-carrier state might possibly thus be produced, with the gall bladder as the central supply. (Editorial *Jour. Am. Med. Ass'n,* Vol. LXI, No. 20, p. 1914.) Bezredka[21] and others had reported on over thousands and thousands of cases without a single mishap of this kind. At the same time, this skepticism prevailed—unrighteously so. In rabbits, no gall-bladder lesions are produced after subcutaneous and intravenous injections of sensitized bacteria. If the sensitized vaccine were accidentally taken by *mouth,* as is possible from contaminated water or food, it may be inferred that disease *would* be produced, because under ordinary circumstances there would be no complement available in the gastro-intestinal tract for the completion of the bacteriolytic phenomenon. For the same reason, when sensitized vaccine is injected directly into the gall bladder of rabbits a purulent cholecystitis will be produced, and typhoid bacilli can be recovered from the pus as well as from the stools. In this instance the bile is simply a good medium for the multiplication of the typhoid bacilli. There is insufficient complement for the destruction of the bacteria. Even *after* rabbits have been immunized with Bezredka's vaccine, subcutaneously or intravenously, an active purulent cholecystitis from which typhoid bacilli can be recovered may be produced by direct gall-bladder inoculations with the live sensitized virus (Nichols[17]). This is to be expected; because the fact that rabbits have been immunized does not mean that their bile has developed typhoid protective bodies, or contains more complement. It is the complement and associated bacteriolysis which are the deciding factors in the inertness of the live sensitized vaccine, but the latter must be completely and properly sensitized. Typhoid infections, or typhoid carriers from the live sensitized vaccine, are thus entirely preventable if these immune reactions are kept in mind. Most of the sensitized vaccines on the market at present are made up of dead bacteria. At this stage of their use this may be a wise step, for it prevents any possible trouble that might arise from an im-

properly prepared live vaccine. With the great number of unreliable commercial firms or laboratories which have entered into this field, such poorly prepared vaccines would be more than probable. This would be a great hindrance to the further development of the live virus type of vaccine.

It may be of interest to dwell for a few moments upon the question of what *strain of typhoid bacillus should be employed* in the preparation of the sensitized vaccine. As you know, both the English and American armies have made up their non-sensitized typhoid vaccine from a single strain of the typhoid bacillus (known as the Rawling strain), which was obtained from the spleen of a soldier who died of typhoid in England in 1900. It was selected originally by Leishman for experimental use in preparing vaccines, not on account of its low toxicity or superior immunizing properties, but because it gave a remarkably even emulsion when washed off agar with salt solution (Leishman, Harrison, Smallman, and Tullock[22]). Recent examination (Nichols[17]) has shown this strain to be still definitely pathogenic for rabbits, in that it produces a typhoid cholecystitis when injected into the gall bladder of rabbits. It is relatively avirulent, as in general the recently isolated strains are more virulent; finally, it is distinctly toxic, and its efficacy is believed to depend upon this toxicity. Naturally, this same strain can be used in preparing the sensitized vaccine, and the serum for sensitization obtained from a horse that has been highly immunized against this Rawling strain. It has always been an open question which type of typhoid bacterium is most suitable for a vaccine (Broughton-Alcock[5]). Thus, Leishman, Russel, and Vincent have recommended a strain of feeble virulence; Wassermann has proposed a strain that calls forth the greatest response in antibodies; Bezredka has obtained contradicting results in trying the virulence of several strains upon animals. Thus, a strain taken from a carrier killed guinea pigs in one-sixth the quantity found necessary of a strain taken from a man after death from typhoid fever. The injection of the latter gave rise to an attack of typhoid in a chimpanzee, while an injection of the former had but a slight transitory effect on another chimpanzee infected. The clinical evidence, as furnished by the very convincing results in the English and American armies, favors the use of the Rawling strain in the preparation of the vaccine. The writer, however, has always been strongly of the opinion that a polyvalent typhoid vaccine, non-sensitized as well as sensitized, is the ideal preparation. In the prophylactic inoculation of my patients in private practice, and of the nurses and doctors at the German Hospital of New York, a polyvalent vaccine from eight different typhoid strains, isolated from the blood of different patients at the hospital, has been used. It would be rational to include also the two types of paratyphoid in the vaccine. This was primarily carried out by Kabeshima[23] in the Japanese navy. More recently, Vincent,[24] Widal,[25] and Chantemesse[26] speak favorably of this plan. Also in the treatment of typhoid fever with sensitized bacteria have I employed a polyvalent vaccine. Naturally, the polyvalent emulsion of bacteria has to be sensitized with a serum that has been produced by immunization with all of the different strains, in order that the very important factor of complete sensitization is assured. The failure in immunization, as has been reported in several civil communities after the use of the army vaccine, may possibly be accounted for by the lack of the polyvalency; *i.e.* antibodies, stimulated by the Rawling strain, were inert against the type of the typhoid bacillus causing the infection. This seems plausible when one considers the experimental evidences by Teague and Torrey,[27] Raskin,[28] and Garbat,[29] who showed that various strains of the same bacteria differ from one another in their specific antibodies, both agglutinins and complement fixation antibodies. Furthermore, the different action observed in sugar media of dextrose and mannite with the various strains of the typhoid bacillus proves slight individual peculiarities, and should be considered in favor of the polyvalency for both prophylactic and therapeutic vaccines. As for *autogenous* sensitized vaccine in the treatment of typhoid fever, this is somewhat impracticable. First of all, its preparation entails 4 or 5 days, and secondly, it is questionable whether the same patients' serum which it would be advisable to use in order to be certain of absolute sensitization contains sufficient antibodies. Immunizing an animal with this particular strain, and then using this serum for sensitization, would cause entirely too much delay. I have treated three typhoid fever patients with autogenous sensitized vaccines, but found no better response than from the use of a stock polyvalent sensitized vaccine.

It may be interesting from a laboratory worker's standpoint to say a few words about the different methods for standardization or enumeration of the vaccines. As a pupil of Sir Almroth Wright, I have followed his classic method of a comparative count between red-blood cells and bacteria in a stained smear made from a dilution of equal parts of the bacterial emulsion and red-blod cells. Sensitized bacteria are somewhat swollen, but are regular in outline and stain well. At the same time, I have found it simpler, in order to get an even smear, to standardize the bacterial emulsion before sensitization, as it was somewhat difficult after sensitization to break up the agglutinated clumps. One notes the total quantity of the original saline emulsion, a sample of which is used for enumeration, before the addition of the immune sensitizing serum; then, after sensitization and washing of the sensitized bacteria are completed, saline is added in a quantity equal to the original volume noted. In this way the standardization of the *un*sensitized emulsion holds true for the sensitized one. Bezredka suspends a quantity of bacteria grown upon the gelose surface of a Roux bottle, sensitized and washed, in 100 c.c. of saline; 1/10 c.c. of this emulsion is supposed to contain 500 million bacteria. Broughton-Alcock finds that if there are 500 million sensitized bacteria to 1 c.c., and this is diluted 1:40, 1/10 c.c. of this dilution will just fix 1/10 c.c. of guinea pig's complement titrated to just dissolve 1 c.c. of 5 per cent. sheep's blood. Dilutions can be thus arranged so as to come up to this standard. He further found that a 24-hours' growth on an ordinary agar slant approximates about 50,000 million bacteria. A Roux bottle is about 16 times as great.

Some observers (Schottstaedt[7]) employ the hemocytometer method, using the Helber blood-platelet counter, while others (Ichikawa[30]) employ arbitrary dilutions and dosage; thus the growth from one agar slant is sensitized and suspended in 10 c.c. of saline, and of this ½ c.c. is taken as the dose. All these methods probably have their wide margins of error, but give good results with each worker.

The last method of arbitrary dilution is simplest, but indefinite as to actual numbers. It seems to me that the original Wright method, with the above-described modification, aims at an accurate determination, and in the hands of one accustomed to it renders comparatively favorable estimations.

With these introductory experimental findings we are in a position now to discuss the *administration of sensitized typhoid vaccines* for prophylactic and therapeutic purposes. It may be of help to first compare its action with the *ordinary vaccines*. The inoculation of the ordinary dead typhoid bacteria as a prophylactic measure is now well recognized. The results in the American and English armies have been exceedingly satisfactory. The efficiency of this vaccine is easily explained on the basis of the biological indications to be met. The injection of the dead bacteria into a normal individual is usually followed by the production in great numbers of the various antibodies mentioned above: bacteriolysins, agglutinins, bacteriotropins, and occasionally complement fixation bodies. Some of these immune agents are probably capable of destroying the typhoid bacilli. If the inoculated individual is exposed to infection, that is, if live bacteria find their way into his body, they are readily destroyed, and will not multiply. Naturally, if the army of invaders is excessive, or the defense too slight, infection will arise in spite of the prophylactic measure. Fortunately, such instances are exceptional. The immunity is, therefore, explained on a bacteriolytic, and to a less degree on a bacteriotropic or opsonic basis. From clinical experiences it has been shown that immunity persists even after these immune bodies cannot be demonstrated any longer.

The prophylaxis attained by the injection of Bezredka's sensitized typhoid vaccine, living or dead, cannot, if sensitization is complete, be explained on identically the same principles, for as soon as the sensitized bacteria enter the normal system they combine with the complement of the blood and are broken up. The agglutinating and bacteriolytic antibodies and the complement fixation bodies are, therefore, either not produced at all or only in very small quantities; consequently, the reliance for protection must be placed on the phagocytic activity, stimulated by the liberated central substance of the broken-up bacteria, the so-called endotoxin. Thus the prophylactic immunity with sensitized vaccine is of a bacteriotropic character, while that with the non-sensitized vaccine is mainly of a bacteriolytic nature. Which one is superior cannot as yet be definitely stated. Thus far, many thousands of cases have been inoculated by the sensitized method, but sufficient data are lacking for comparison with the Wright method. Metchnikoff and Bezredka[23] have the laboratory experiments in their favor. Possibly this unfortunate war may furnish us more statistics, as members of the French army have been vaccinated with the sensitized virus. We know, however, that the reaction from the sensitized vaccine inoculation is much milder, and the immunity starts more rapidly; possibly the future will prove that it is also more lasting and secure. The doses employed are similar to the non-sensitized, *i.e.*, 500 millions, 1000 mil. 1000 mil. at intervals of about seven days, or 1000 mil. 2000 mil. at intervals of 10-12 days. The inoculations are usually given subcutaneously.

It may be in place here to consider a problem which has suggested itself to me, but which I have thus far been unable to carry out. If the injection of ordinary vaccine causes mainly a bacteriolytic reaction, and the administration of sensitized vaccine mainly a bacteriotropic response, would it not be advisable in prophylactic immunization to inoculate individuals with both sensitized and non-sensitized vaccines? In this way a combined form of immunity would be attained. As experimental basis for this suggestion I have shown that if the serum from rabbits immunized with non-sensitized bacteria is mixed in equal quantity with the serum from rabbits immunized with sensitized bacteria, this mixed serum was more curative for mice infected with typhoid bacteria than equal quantities of either serum alone. Naturally, it will be necessary to establish the best method for such mixed immunization: whether the two vaccines should be administered separately, and at different times, or whether they should be given at the same time, as would be accomplished also by an incompletely sensitized vaccine.

In the therapy of typhoid fever the use of the ordinary non-sensitized vaccines has not met with as favorable results as for purposes of prophylaxis. Up to the present time thousands of cases have been treated, but the beneficial effects in the majority of instances are not sufficiently marked to warrant the employment of vaccines as a routine procedure.

Recently, series of cases treated by *intravenous* injections of non-sensitized vaccine have been reported; occasionally a striking crisis in the course of the disease was observed. There are other reports, however, in which the effects have been distinctly harmful (or even fatal).

When the biologic basis for the possible therapeutic value of ordinary vaccines in typhoid fever is asked, the explanation is much more difficult and hypothetical than in the question of prophylaxis. Several factors are to be kept in mind: First, typhoid fever is a self-limited disease, running a typical clinical course, and probably associated with definite phases of immunity to account for its characteristic picture and self-limitation. Second, the number of bacteria existing in a typhoid patient is very great; they circulate everywhere, and stimulate the tissue cells continually, resulting in the formation of agglutinins, bacteriolysins, bacteriotropins, complement fixatives, etc. These antibodies are apparently produced very slowly, and are either not of sufficient number or are of a nature suitable to overcome the infection quickly. It usually takes four weeks or more to ultimately accomplish this. The reason for this prolonged period may possibly be ascribed to the structure of the typhoid bacillus. As we said above, this bacterium belongs to a class of microorganisms whose central substance, the so-called endotoxin, is liberated only after the bacillus has been broken up. This central substance also stimuates antibodies (antiendotoxins for purpose of designation) which are bacteriotropic in action and probaby important elements in the curative process of typhoid fever.

Were it permissible to divide the phases of typhoid fever from an immunological point of view, as is usually done from the clinical aspect, one would assume that the first stage consists of the multiplication of the invaded typhoid bacilli. Then, as a defensive reaction, the tissue cells stimulate the formation of antibodies (bacteriolysins, agglutinins, and but few bacteriotropins). The next phase sees the numerous bacteriolysins attack the bacte-

ria, sensitize them, and with the aid of the complement the micro-organisms are broken up and their endotoxins liberated. The latter, thus freed, further stimulate the tissue cells, with the result that other protective bodies (antiendotoxins) are produced in sufficient numbers to prevent any harmful effects and finally to overcome the infection. Naturally, these very schematic stages are not sharply limited, and do not fall within definite periods of time. Sluggishness, or absence of the proper reaction on the part of the tissue cells at any stage, is followed by a protraction of the disease, or even death; death by infection, if the bacteria multiply and are not broken up, due to insufficient response by the bacteriolysins, or death by intoxication if marked bacteriolysis has occurred, or has occurred so quickly that the liberated endotoxins are not in turn neutralized by sufficient antiendotoxins.

Keeping this explanation in mind, one can readily observe that the injection of ordinary vaccines in typhoid fever aims at nothing more than what the body is already doing with all its power, namely, the production of antibodies for the breaking up of the bacteria, the liberation of their endotoxins, and the ultimate manufacture of antiendotoxins. There may be cases in which the body cells are inactive, and are stimulated to activity and production of antibodies only after the inoculation of the vaccine. Here the ordinary bacterins are of undoubted aid.

As a general rule, however, it is best to relieve the sick body as much as possible of any active reaction. uring an infection the tissue cells are less responsive than during health, especially if the disease be a severe and prolonged one. That is why an efficient serum (passive immunity) would be the ideal form of specific therapy. Sensitized vaccines possibly hold a position between serum therapy and ordinary bacterin treatment. In the first place, they save the system from the strain of producing the primary antibodies for the destruction of the bacteria, since the bacteria are already laden with these bacteriolysins, agglutinins, etc., artificially supplied; and second, this provision hastens the stage of liberation of the endotoxins and the consequent almost immediate stimulation of the antiendotoxins, an important step in the recovery from the disease. With this explanation one readily sees the more rational basis for the employment of *sensitized* vaccine in the typhoid fever therapy.

As early as 1911-12 I treated a series of 17 typhoid cases with a vaccine killed by heating, sensitized with immune serum from convalescent patients, and given subcutaneously in doses of 200 to 500 million every 5 or 6 days. While the disease terminated by crisis in only a small percentage of cases, the impression was gained that the general course of the disease was milder. With my present knowledge of sensitized vaccines, I would unhesitatingly advise more frequent inoculations.

Ichikawa[30] reported a series of 87 cases treated with live sensitized vaccine administered intravenously. Ten platinum loopfuls of typhoid cultures were sensitized with 10 c.c. of immune convalescent serum for 5 or 6 hours in incubator, and the sediment, after being washed three times, was suspended in 100 c.c. of saline. Of this, ½ c.c., diluted with saline, was injected intravenously. He also treated 23 cases subcutaneously. Usually, one or two injections, when given intravenously, were sufficient to bring the temperature down to normal on the morning following the intravenous administration. A chill and increase in temperature usually occurred before the drop.

Boinet reported a series of 15 cases in 1913[31] and a series of 53 cases in 1914.[32] He used Bezredka's vaccine subcutaneously in increasing doses of 1, 2, 3 and 4 c.c. on 4 to 6 consecutive days. Usually, 3 to 6 injections were given, and the temperature came down to normal.

Szécsy[33] treated 112 cases with a live (not older than 12 days) vaccine, sensitized with immune horse's serum, and injected subcutaneously in doses of 1, 2, 3 and 4 c.c. on four consecutive days. Each c.c. contained 1/10 platinum loop of growth from an agar slant.

Fritz Meyer[34] treated 26 cases intravenously in a manner similar to Ichikawa, and came to similarly favorable conclusions.

The literature of typhoid fever therapy by means of sensitized vaccines intravenously is increasing very rapidly on account of the war. The above few reports are taken as examples of the distinctly encouraging results. Other reports are by Biedl,[35] Eggerth,[36] Sladek and Kotlousky,[37] Boral,[38] Holler,[39] Lang, Luksch and Wilhelm.[40]

With the subcutaneous method of Boinet or Szécsy, sharp reactions were not the usual termination, but the disease ended by lysis. On the whole, the impression was gained that the inoculation rendered the general course of the disease milder and shorter and the complications and relapses fewer. I would be inclined to adopt the intravenous method of treatment even though the reaction following the inoculation is sometimes severe.

The fundamental work of Gay on sensitized typhoid vaccine has not been overlooked. His recent very complete contribution[41] holds forth distinct promise for the vaccine therapy of typhoid fever. The preparation employed by Gay is, however, a modified sensitized vaccine; one from which the endotoxin is extracted, thus differing in principle from the usual sensitized vaccine under discussion.

We are still on the very lowest step of the ladder of sensitized vaccines as a therapeutic measure in typhoid fever. Experience must teach us the accuracy of the dosage, the frequency of inoculations, the mode of inoculation, the contraindications, etc., etc. Only then shall we know definitely the value of this form of treatment.

I wish to warn you, however, how guarded one should be about the results of any form of specific therapy in a disease like typhoid fever. Normally, all types of illness may exist. Clinicians have frequently observed that during some typhoid seasons the patients will present mild infections without any special treatment whatever. One could attribute beneficial effects to vaccine treatment with certainty only if rapid improvement or crisis in the course of the disease would set in soon after the inoculation. Such acute changes can be expected more often by treatment with a specific serum than with a vaccine, for by the former (passive immunization) antibodies are injected ready for neutralizing the poison; while in the latter instance the antibodies must first be manufactured by the tissue cells. This ever-existing factor in vaccine therapy makes it absolutely necessary to start the treatment in typhoid fever as early in the course of the disease as possible, at a time when the reactive power of the individual is still responsive and unimpaired by the infection.

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DIATHERMIA IN THE TREATMENT OF TRIFACIAL NEURALGIA.*

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I HAVE used the diathermia treatment in cases of trifacial neuralgia for more than two years. Looking over the literature I have found that Nagelschmidt has published his results of this treatment with diathermia and Dr. Q. C. Geyser has published in *American Medicine*, 1913, Vol. 8, page 606, a report on one case which he treated in the same way. I am publishing my experience firstly on account of the good results I have obtained in many cases, and secondly because this experience has taught me which type of cases are amenable to treatment.

First a few words concerning diathermia. Diathermia, or thermopenetration, is a method which consists in heating the tissue by means of the high-frequency current. The ordinary high-frequency current cannot be used properly for this purpose, as the tension is too high and the irritation too marked by the sparking. It would take too long, however, to go into the detail of the technique and I have to refer to other publications.

The conservative treatment of trifacial neuralgia of the more severe kind has been considered a hopeless one. The fact that frequent remissions occur in the severity of the pain, especially when the disease is only of recent date, has induced a great many physicians to exaggerate the value of certain methods such as galvanic electricity or the static breeze, but we can say with a large degree of certainty that a fully developed ticdouloureux has rarely if ever yielded to conservative treatment, and we know that even injections of alcohol have failed in a large percentage of cases, or have given only temporary relief.

Under such circumstances it might be of value to report the results, which I have had in the treatment of severe cases of trifacial neuralgia with diathermia.

Case I.—February 10, 1915. A. F., aged about 40 years, has suffered from severe attacks of neuralgia, in the right supraorbital region, for a number of years. The present attack started ten days ago. The pain was continuous, and did not respond to medical treatment of any kind. The patient had not slept for ten days. This pain disappeared after the first treatment and the patient slept for one hour, after which the pain returned, but in a lesser degree. After six treatments, the patient was entirely free from pain.

Case II.—D. L., about 35 years old, suffered for nine years from typical ticdouloureux, the attacks occurring every few minutes, especially in the infraorbital region of the upper jaw. There was typical paresthesia in the mouth. The attacks were rare in the beginning, gradually getting more frequent and of longer duration. The patient was injected twelve times and operated upon on Feb. 10, canal being opened and injected. He did not improve, and was about to be operated upon again, but the day before the operation was to take place I was sent for to see him. At that time he was having attacks every five to ten minutes, and was sleeping badly. We commenced daily treatments, and about ten days later the patient had attacks only twice a day; he slept well, but had pain when eating or talking. After twelve treatments the pain had entirely gone, and the patient was presented in the Yorkville Medical Society. About six weeks later the patient had a recurrence and received three more treatments. I am not able to ascertain whether he was permanently cured.

Case III.—Mrs. E. B., aged 72, had pain in the left side, especially the lower jaw, very severe during the last six months; her nights were sleepless on account of the pain. The duration of the attacks was from thirty minutes to three hours. Alcohol injections were given six weeks previous to this treatment, but without result. The first treatment was given on March 14, 1915. On the following day she reported herself a great deal better, having had but one severe and one light attack. On the 16th there were some very light attacks, but no severe ones. On March 22 she had attacks the whole of the afternoon and from one to two and from five to six on the following morning. There was a burning sensation in the mouth. On March 24 there were light attacks from 7 P.M. to 1 A.M., and on March 25 stronger attacks at 5 A.M. No treatment was given for three days. March 28, somewhat severe and prolonged attacks. March 29, light attacks only in the morning and evening. The patient disappeared for a time and later was admitted to the Mount Sinai Hospital according to prearranged plans (having been put

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on the waiting list). She was then found to be so much better that it was not necessary to give her surgical treatment.

CASE IV.—Mrs. D. F. (recommended by Dr. Abrahamson) had had pain for six months in the middle and lower branches, the attacks being very frequent, with hardly any painless intervals; she could not sleep. There was tenderness at the supramaxillary and inframaxillary foramina. We commenced treatment March 23, 1915. On the following day the condition was the same. On March 25 she was slightly better, and on the following day was much better. Treatment was then discontinued, on account of an intercurrent disease. The patient returned after two weeks in greatly improved condition. She received in all ten treatments, and is now apparently cured.

CASE V.—Mrs. S. S., 51 years (Dr. Abrahamson), had had pain for eight years, without known cause, in the right infraorbital region; it formerly occurred in attacks, but latterly pain has been constant. Eating and drinking cause excruciating pain. She sleeps sometimes four or five hours, lying down seeming to relieve the pain. After four treatments the patient was greatly improved, having only slight pain in the morning. She was treated for a month with varying effect. There was a recurrence during the summer and the patient received a few more treatments. The ultimate result is doubtful, as the *x*-ray picture shows a bony tumor in the neighborhood of the nerve at the base of the skull. This patient, who had been treated by Dr. Abrahamson for years, has not reported for treatment at his clinic since.

CASE VI.—Mr. M. (Dr. I. Strauss), has had severe pain in the upper branch for one month, the attacks occurring every ten minutes. Improvement commenced after first treatment. The day following the second treatment the patient had only three attacks. Discharged after four treatments.

CASE VII.—Mrs. W. N. (Dr. I. Strauss), had had light attacks of neuralgia for a number of years. The pain disappeared after three treatments.

CASE VIII.—Mr. N., 38 years old (Dr. I. Strauss), has had very severe pain during the last seven years, the pain being continuous, with severe exacerbations about twice a day. Two injections did not give any relief; he cannot eat or talk without pain. The patient received about twenty applications without any appreciative relief and discontinued the treatment.

CASE IX.—Miss W. (Dr. W. J. Maloney), had been ill for seven years, the pain being practically continuous, with remissions during the night. A number of alcohol injections were given by prominent neurologists without effect. The treatment brought relief for about an hour, but owing to the patient having to leave the city, it was discontinued after eight sessions. No conclusion could be drawn from this case on account of the limited number of treatments, but I have included it to make my record complete.

CASE X.—Mr. M., referred to me by Dr. Carr. The patient has a long history of suffering. During the past six years he has had attacks of the most severe type of trifacial neuralgia on the left side in the middle and lower branches, alternating with free intervals, which are becoming steadily shorter and the attacks always longer. Patient always describes them as spasms. At the beginning of the war he was in Munich to receive alcohol injections, but left the country immediately before the treatment was commenced. His last attack has continued steadily for six months. *X*-ray examinations revealed caries of the alveolar process, which was operated upon by Dr. Carr. In spite of the operation, the pain continued and the resection of the ganglion Gasseri was contemplated. As a last resort diathermia was used, which completely relieved the pain after ten days. The patient was presented before the Neurological section of the Academy of Medicine, where I expressed my doubt whether the relief of the pain was due to the usual remission or to the treatment. A few days later the patient again began to have slight pain, which, however, has practically disappeared after a few more treatments. The character of the pain changed, it being more a sensation of soreness, without spasm. The patient returned four months later with an unusually severe attack which, according to his previous experience, should have lasted four or five months. He had about 200 spasms (as the patient describes it) in one night, and seemed to be in a desperate condition. After four treatments the pain entirely disappeared. The wound in the upper jaw has not yet healed.

CASE XI.—Mr. Sch. has had a very severe form of trifacial neuralgia of the upper and middle branches for twelve years, alternating with remissions. In the beginning there was swelling of the face. Two teeth were extracted and the pain disappeared. Two years later the pain returned and lasted six weeks. The attacks were slight. Again two years later there was another attack which lasted a few months. Three weeks ago the pain returned with unusual severity. It began at four A.M. and lasted for twelve hours. It was so severe that the patient actually crawled on the floor. An alcohol injection was given without effect. Diathermia treatment was then commenced, with splendid results. The patient was enabled to resume his work after one week, even though he still has slight attacks off and on. The *x*-ray picture was negative.

CASE XII.—Mrs. G. L., has had neuralgia in the upper and middle branches for three years, especially severe during the last six months, without intermissions; the exacerbations occur periodically. Received injection in Mount Sinai Hospital with no result, and was then referred to me. After four treatments patient was so much relieved that she could bear the pain very easily. The treatment has been continued with excellent result.

CASE XIII.—Mrs. T., 50 years of age. The patient's history, as told by herself, is as follows: She had a severe attack of typhoid twenty-six years ago, and has never been quite well since. About twenty years ago pain developed in the right side of the face (always in the lower jaw). In the beginning the pain was very severe, and she had attacks of thirty minutes' duration, at intervals of two to four hours. This occurred about once a year and lasted for about three or four weeks at a time. The attacks became gradually worse until the pain became practically continuous throughout the time mentioned. It has been very bad for ten years. About nine years ago she was treated with injections, but she was unable to tell me what the substance was; it could not have been alcohol, as the injections were given daily with small needles. The attacks then became lighter and less frequent, and she gradually became better. The condition remained much the same for nine years, but since last September the patient has had very frequent attacks—in fact, the pain has been nearly continuous, with very little sleep at night. We commenced treatment three weeks ago, and improvement began three days later, there being no attacks sometimes for two or three hours, even when talking. The patient was able to sleep some nights for six or seven hours without interruption. The attacks are now usually very short, lasting only a few seconds, and the pain is quite mild. The treatment will be continued. Two days ago she complained of chills which start during the night, followed by attack of heat, and sometimes without the latter. Upon investigating I discovered that she had suffered with malaria fifteen years ago, five years after the beginning of the present trouble. I have had no opportunity in this short time to examine her blood for malaria plasmodia, but I am aware of the possibility of their presence. The fact that the attacks began long before the malaria started is not quite sufficient to exclude the connection, as the malaria might have been unrecognized.

Though not belonging to this class, I should like to report a case that was brought to me by Dr. M. Mrs. M. suffered from a sudden attack of neuralgia in the middle branch of the trigeminus. Diathermia treatment stopped the pain after ten minutes and there has been no recurrence.

If we try to analyze the records of these cases we note that those patients who were sick only for a short time were relieved permanently and quickly. Patients who complained of genuine tic douloureaux, with free intervals, reacted well. Old people, in whom the disease seems to be due to arteriosclerotic changes in the vasa nervorum, seem to be greatly relieved by this treatment. Trifacial neuralgia in adults, which causes continuous pain with exacerbations, with paresthesia in the mouth, and which are evidently due to degenerative changes in the ganglia, seem to be refractory to the treatment. The difficulty with these cases is that through the long duration of disease the nervous system has been to such an extent deranged that it is difficult to

induce them to take the treatment for any length of time. They are too quickly discouraged and become unmanageable. Injections of alcohol into the nerve seem to spoil the chances of recovery, as Nagelschmidt has already pointed out; but it has occurred to me this conclusion may not be correct, as the injections are given only in very severe cases of long standing, which yield neither to injections nor to any other form of treatment, except dissection of the ganglion Gasseri.

In one very interesting case the Gasserian ganglion was resected by Dr. Elsberg, and the occurrence of complete anesthesia proved that the operation was successful, but the patient still complained of considerable pain. The condition was improved by diathermia.

So far as the technique is concerned, I wish to point out that we have to try to apply the electrodes in such a way that the affected ganglion shall be located between the two. The best way is to apply one at the back of the neck, at the base of the skull, and the other over the eye, which is first covered with a thick layer of cotton saturated with salt solution, or on the upper jaw.

We seldom use more than 1000 milliamperes and generally only 700. The duration of each treatment is from thirty minutes to one hour.

In conclusion I wish to say that diathermia is a very valuable agent in the management of trifacial neuralgia, and it should always be tried before less conservative treatments, such as alcohol injections or section of the nerves or the ganglion, are resorted to.

None of the patients mentioned as improved or cured have returned to the physicians who recommended them or to me, which may be regarded as proof that the improvement continued.

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EMPLOYMENT OF PERSONS IN THE ARRESTED STAGE OF TUBERCULOSIS.*

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One of the most important questions that the tuberculosis worker has to face is what employment the arrested cases may safely take up. This question has been argued for a great many years and even to-day there is not unanimity of opinion.

The advice given years ago that all arrested cases must seek outdoor employment, irrespective of what that might be, is still given by many men in general practice. There has been in the last few years a decided trend among those engaged in the treatment of tuberculosis to send their patients back to their former ocupations provided, of course, they were not harmful. From an economic point of view this question is of vital interest, bearing as it does upon the income of the family thus determining what living and housing conditions will be available. Considerations that must enter into the advice given the arrested cases are whether the place of employment is going to be in a crowded city or in a small town and whether it will be in a poorly lighted and poorly ventilated building, or in the modern steel and concrete type furnishing a maximum amount of fresh air, sunlight, and efficient ventilation.

All too often these factors are not thought of and what may be perfectly safe employment under ordinary conditions becomes most harmful under conditions of overcrowding and poor sanitation. Furthermore, employment that may be safe and healthful in a well-ventilated shop becomes a menace to the discharged patient when attempted in a tenement home. A great deal of stress is put upon the danger of various occupations but very frequently litle or no attention is paid to the housing and living conditions of the individual. We have discovered time and again that the working conditions of many of our former patients were all that could be asked for but that their housing conditions left very much to be desired. Under such circumstances the employment cannot justly be blamed for a relapse and yet I dare say that but little attention is given to this other important factor I have mentioned in determining the cause of the breakdown. It is supreme folly to treat a man six months to a year in a sanatorium, then send him back to a shop or office where everything is ideal from a hygienic standpoint and have him live in a home where conditions are most unhealthful. Such a patient is almost certain to relapse and his occupation will have nothing whatever to do with it. The time and money sent in obtaining an arrest of the tuberculous process is entirely wasted.

The question has frequently been brought forward as to what occupations are harmful to the arrested case and while there are, no doubt, a few that would fall into this classification, I am convinced that very often the personal habits of the individual are the predisposing factors in the relapse for which the employment bears the burden of blame.

We hear a great deal of the so-called dusty occupations predisposing to tuberculosis and being absolutely unsafe for patients to resume. However, in the modern factories with their various appliances and exhausts to carry off irritating dust, the element of danger to the returned worker seems to be reduced to a minimum. On going over our records we find that we have had a great many more housewives as patients than representatives of all the dusty trades put together and very little objection is raised against the housewife, whose disease has become arrested, returning home to resume her household duties. Surely no work is more wearing or has longer hours than the keeping up of a well-regulated household. Standing in front of a hot stove preparing meals is certainly enervating and the exposure that so frequently occurs going out into the cold from a hot kitchen is a decided factor that predisposes to "catching cold" with a consequent lighting up of the arrested process.

In sending patients back to work a most important injunction to be given them is that they continue to obtain a maximum of rest. If you can thoroughly impress this advice upon discharged patients—that every hour not spent working must be spent resting for the first year, at least, following the restoration of their health—employment will be found not to be such a factor in relapse.

The decision as to sending a patient back to work is often a difficult one to arrive at and this especially is true when the individual is an unskilled hand. The first advice he frequently receives from misguided relatives and his family doctor is that he must seek an outside job and too often do we hear that much-talked-about, but never-realized "light work on a farm." I have no hesitancy in saying that the patient taking an outdoor job where he will

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be exposed to the elements, runs a fifty per cent. greater risk of relapse than does the man who takes inside employment. The farm colony idea, so enthusiastically championed by Forster, Sloan and others, is not practical, due to the difficulty in interesting the average patient in farming. I have no argument whatever with the advocates of this form of employment when used for therapeutic purposes and when the workers are under the care of a well-trained physician. However, to have these patients take up farming after leaving the sanatorium, thrown as they will be upon their own resources and free from any medical supervision, is fraught with danger. The hours of work on a farm are long, there is exposure to all kinds of weather, the worry is great and very often, especially in the beginning, the financial return is small. With this last factor in mind you must realize that the housing and living conditions are bound to suffer. This myth of light work should have been exploded long before this, for the only thing light about the occupation of farming is the pay.

It is a big mistake to take your patient from an indoor position and urge upon him the taking of an outdoor occupation. The field in this regard is limited to canvassers, collectors, teamsters, trolley and railroad jobs, chauffeurs, watchmen, foremen of construction gangs, and timekeepers. The last three might be considered suitable employment for the arrested case, being exposed to the elements less than any of the others mentioned, but the hours would in all likelihood be long, the pay small, less desirable housing be obtained and poor living conditions ensue. Then, added to this, would be the anxiety over the possibility of not making good in the new employment, the bringing into play of previously unused muscles, with consequent marked fatigue, and the worry that would go with the diminished income.

The most logical plan is to send the patients back to their old occupations, for here the mental strain is decidedly less, they would be assured of a larger income than would be the case were they to engage in a new field and they could enjoy better housing and living. Furthermore, they would be working with and for people who in all likelihood would make things as easy as possible for them.

An ideal arrangement is to send the arrested cases back to their old employment, beginning with part time work and keeping them under medical supervision. We have been able to have that plan adopted by a few of the manufacturing companies of our state and it solves the question of employment for the discharged patient as no other plan does. The returned worker reports back to us for periodical examinations and his working hours are increased only on our recommendation. In this way the individual is able to try out his strength and by gradually adding to his working time suffers no bad effects.

There can be no doubt that indoor work for the discharged tuberculosis patient is much to be preferred. On going over the records of Gaylord Farm for the past twelve years we discovered that of the patients who had returned to indoor employment, but 20 per cent. had relapsed; that of those who had returned to outdoor employment, thirty-nine per cent. had relapsed; and that of those who previous to their illness had indoor positions but after discharge had taken up outdoor work, forty-two per cent. have had a setback. The work indoors as a rule is not as strenuous as outdoor occupation and most of it can be done sitting down, which is a decided factor in the prevention of undue fatigue.

I want to mention an occupation that I believe offers much to many of our discharged young women patients—that of the trained tuberculosis nurse. Many of the patients who would have to return to employment where long hours prevail, or to boarding places where living and housing are not up to the requirements that the discharged patient should have, will find here a means of prolonging their life, of earning a good livelihood under favorable auspices and have the satisfaction of doing a good work. There is undoubtedly a distinct field in sanatoria for the trained tuberculosis nurse. However, I do not believe, as some do, that she has a place in public health work. Aside from the fact that her training is not general I feel that such work is much too strenuous and wearing for any one with even a slight amount of tuberculosis.

The problem of employment is rather easily solved when you are dealing only with the incipient cases. By far the great majority of these can safely return to their original occupation and by living a God-fearing life for a year or so will be as good physically as any healthy man. Of two hundred and thirty-six incipient cases discharged from our sanatorium, two to twelve years ago, one hundred and ninety-three, or eighty-two per cent. are alive, well and at work.

The problem of employment is not so easily solved for *some* of your moderately and far advanced cases. For these people part time work, not of too laborious a character, should be obtained; and no doubt through the agencies of employment bureaus, private, municipal and state and through the organized charities associations such work could be found. The moderately advanced and far advanced cases present a tremendous economic problem as the percentage of these cases that can keep at occupations of any kind suffers markedly when compared with the incipient group. Of six hundred and ninety-seven moderately advanced cases discharged in the past twelve years, three hundred and seventeen, forty-five per cent., are alive and at work, while of one hundred and seventy-nine far advanced cases discharged in the same length of time but thirty-three, eighteen per cent., are working.

There is one other factor that will help solve this much mooted problem of employment of these arrested cases and that is an early diagnosis of their disease. I have shown you how large a percentage of our incipient cases have been able to return to their own work and I feel sure that these figures can be duplicated elsewhere throughout the country. In addition to this the preaching of improved home hygiene and better living will have a most beneficial influence. The well-known work of The Home Hospital in New York City has shown us what improved housing will do for many cases of tuberculosis. If then we could have these model tenements built in the large cities where these arrested cases could live and have manufacturers appreciate the enormous value of fresh air, sunlight and efficient ventilation in their plants, I feel sure that the question of employment of arrested cases would not prove the bugaboo that it now so frequently is.

Myelo-erythrocytoma Mediastinicum. — Moreschi under this term describes tumors of the mediastinum which consist of rapidly proliferating and infiltrating erythroblasts and megaloblasts and occur with the blood state erythroleucemia. In more familiar language the tumor was a lymphosarcoma.—*Il Policlinico.*

HEMATURIA AND PYURIA.

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HEMATURIA occurs with bleeding from any cause in or into any part of the urinary tract. The causes are local and general.

Under local causes we have: (*a*) Traumatism of the kidney, bladder, or urethra, by external violence, by calculus, by injury with instruments, or by the scratching with crystals in concentrated urine. (*b*) Inflammation or congestion, which occurs with infectious diseases, from exposure or with the elimination of irritating drugs like cantharides or turpentine. (*c*) Ulceration: simple or tubercular, occasionally leuetic. (*d*) Rupture of dilated veins, in the papillæ of the kidney in the ureter or in the bladder. (*e*) Tumor. (*f*) Parasites, as bilharzia or filiaria. These are very rare in this climate. (*g*) Under the head of congestion, we should include the congestion resulting from the complete emptying of an overdistended bladder. The support which is given to the congested vessels in the bladder wall is suddenly removed and they bleed slightly.

General causes include dyscrasia of the blood which we find with: (*a*) the specific infectious diseases. (b) Hemophilia, purpura, and leucemia, (*c*) Phosphorus poisoning.

Essential hematuria comes under the heading of those resulting from general causes, but the fact is that in the majority of cases of what we call essential hematuria careful examination of the kidney shows that the condition is not idiopathic at all, the kidney showing some interstitial change or change in the blood-vessels, commonly dilatation of the vein, at the apex of a pyramid.

Peculiar cases of family hematuria have been observed where no other symptoms were present in life and no lesions were found in the kidneys post mortem.

The amount of blood in the urine varies from a few blood cells, to what appears to be almost pure blood. The term hematuria, as commonly used, implies that sufficient blood is present to be noticed microscopically.

Diagnosis of Hematuria.—Hematuria must be distinguished from coloring of the urine after ingestion of certain substances, especially rhubarb and senna, or dyes in candy. The microscope is the simplest and best means to exclude them all.

Diagnosis of the seat of the hemmorhage and of its cause is made by: (1) the history of the case and the symptoms; (2) the time of appearance of the blood, whether at the beginning or the end of urination; (3) the appearance of the urine and by its constituents, and (4) physical examination.

For example, a history of attacks of renal colic, made worse by jarring, will point to renal calculus. Hematuria appearing and stopping without apparent cause, and scanty in amount makes us think of tuberculosis of the kidneys or of the bladder. A profuse hematuria appearing and stopping without apparent cause, immediately suggests a tumor. The presence of a stab or a gunshot wound or signs of other severe trauma at the region of the kidney or bladder with the hematuria clearly point to injury of the kidney, just as a profuse purulent discharge from the urethra, with pain or urination accompanying the hematuria, shows a urethritis.

The time of the appearance of the blood is of assistance. Blood appearing with the first part of the stream shows the hemorrhage comes from the urethra. Terminal hematuria means that capillaries at the posterior urethra or at the trigone have been injured by the spasm of the muscles in squeezing out the last few drops of urine. Urine that is well mixed with blood shows hemorrhage above the internal sphincter or in the posterior urethra with the blood draining back into the bladder.

The appearance of the urine, its color, clots, mixture with pus, etc., teaches much. In blood which has long been in contact with acid urine, the oxyhemaglobin is changed into methemaglobin; the blood is therefore dark. In alkaline urine, the blood regains its light color. Dark colored blood in the urine is therefore apt to come from the kidney, the urine being usually acid and the mixture of the blood with the urine being long and intimate. When the bleeding is from the bladder, the condition causing the hemorrhage is apt to be accompanied by alkaline urine: also all the blood not having been in contact with the urine for a long time is therefore apt to be light in color whatever the reaction of the urine. Blood clots in the form of ureteral casts, show hemorrhage above the bladder; blod clots formed in the urethra are broader than ureteral casts. Blood clots of irregular shape show that coagulation takes place in the bladder, but they do not show the source of the blood—whether the kidney, the ureter, the bladder, or the posterior urethra.

Differentiation is made between hemorrhage from the bladder and that from the posterior urethra, by washing the bladder clear, and filling it with clear salt solution. If the bleeding is from the bladder, all the solution is soon colored; if from the posterior urethra, whatever part of the fluid is withdrawn through the catheter is clear, and that part passed by the patient is colored, especially the last part, from expression of any blood present in the posterior urethra, with the last drops of urine.

Other contents of the urine may point to the cause or to the location of the lesion. We may find: (*a*) tumor fragments or cells, (*b*) concretions of stone or numerous crystals, (*c*) renal casts and abundant epithelial cells from the various parts of the urinary tract, (*d*) albumin, which is always present with hematuria, being derived from the blood serum. If however the albumin is out of proportion to the amount of blood the kidneys are probably involved.

The cystoscope is the last and the most certain means of determining whether the bleeding is from the bladder or from the kidney, and, if the latter, from which kidney. If from the bladder, it will also show the cause; if from the kidney, the ureter catheter passed into the renal pelvis may bring away a piece of tumor or withdraw tuberculous urine, or if coated with wax, may show the scratches made by a calculus.

Pyuria.—Pyuria results from some purulent inflammation along the course of the urinary tract: or the emptying of pus from some neighboring focus into the urinary tract. The suppuration results from some infection, simple or tuberculous, or which complicates a calculus, tumor, or stricture.

We must first make sure that turbidity of the urine is due to pus; once satisfied as to that, we look for the site of the suppurating focus and for its cause.

We will review the things from which we must differentiate pus and the simple methods used.

The cloudiness produced by urates, disappears on warming the urine; phosphates clear up on the addition of a little acid; carbonates clear up by the same method with the evolution of some carbonic acid gas; chyluria clears up on shaking the urine with ether; mucus precipitates on the addition of a little acetic acid, and redissolves by adding an excess of the acid after the urine is first diluted with an equal volume of water.

The haze of bacteriuria is not affected by heat nor by chemicals and the germs are not precipitated by the centrifuge unless alcohol is first added to the urine. The urine is opalescent and often has a foul odor.

A simple chemical test for pus is adding a solution of a caustic alkali to the urine and twirling the glass; the pus is coagulated into slimy ropy masses. If the sediment is allowed to settle, the fluid above decanted and a solution of caustic alkali added, the coagulum produced will adhere to the bottom of the glass if that is turned upside down.

We make a diagnosis of the site of the suppurative lesion and its cause by the history of the case, by the symptoms present, and by the physical examination as mentioned in the section on hematuria. Of these we will mention only a few points that are so characteristic of certain pathological conditions as immediately to suggest these conditions.

Intermittent pyuria, where the urine is perfectly clear at certain times and suddenly becomes full of pus, then clear again, shows a condition in which there is a temporary obstruction to the escape of pus from a suppurating cavity. A strongly suggestive accompanying symptom is that the patient presents septic symptoms when the urine is clear, that is when the pus is retained, and these septic symptoms promptly subside with the removal of the obstruction and the discharge of the pus in the urine. The usual condition in which this is present is a pyonephrosis complicating a calculus or a prolapsed kidney, where the ureter is at times obstructed by the calculus or by a kink from displacement of the kidney. An inflamed diverticulum of the bladder may give the same symptoms as will occasionally a seminal vesiculitis, the pus being poured into the bladder at intervals.

We will consider the characteristics of the urine more particularly and the direct examination of the urinary tract. Pus showing in the first glass and not in the second means that the source of the pus is in the anterior urethra. A turbid first and second urine show either an acute posterior urethritis (that is habitually accompanied by an acute anterior urethritis) where the discharge is profuse enough to flow back into the bladder, or a purulent process above the vesical sphincter.

Renal pus is characterized by settling on the bottom of the glass in a flat layer like heavy sand. The fluid above is slightly cloudy from a little pus and bacteria. Since chronic renal irritation, of which this pus is an indication, is usually accompanied by a polyuria, the urine is of low specific gravity. Pyuria of renal tuberculosis shows a light color, often like that of lemonade or lighter; while calculous pyuria is apt to be dark from blood.

Bladder pus is mixed with considerable mucus, so that it floats well and becomes somewhat viscid on standing. Pus from the urethra is also light and fluffy, but is mixed with less mucus, and therefore settles more readily. In neither cystitis nor urethritis is polyuria present; the specific gravity is therefore not low, as with pyuria of renal origin.

Alkaline pyuria was formerly thought to be of visical origin and acid purulent urine from the kidneys. We now know that the reaction of the urine depends on the causative germ. Infection by the *B. coli*, tubercle bacillus, gonococcus and *B. typhosus* is accompanied by acid urine, while infection by the staphylococcus, streptococcus or *B. proteus* results in decomposition of the urea with the formation of ammonia. It is true though, that infection by the ammoniagenic germs is much more common in the bladder than in the kidney, in which it is quite uncommon.

Cystoscopic examination and ureter catheterization is the last refinement in the diagnosis of the source of pus in the urine when that is above the internal sphincter.

The condition of the bladder wall and the presence or absence of diverticula are seen. The efflux from the ureteral mouths is seen to be turbid or clear. When the pus from a kidney is too scanty to be noticed in this way, ureteral catheterization will secure the urine from each kidney separately for careful examination. In rare instances where some neighboring suppurating mass empties into the ureter, the catheter, if passed into the renal pelvis, will withdraw clear urine, while the urine as it comes from the ureteral mouth is contaminated.

The causes of the suppuration may be judged at times by the other urinary findings. Concretions of urinary salts, pieces of tumor, considerable epithelium from the bladder, from the renal pelvis, or from the urinary tubules are good guiding signs. A trace of albumin is due to the pus itself; considerable albumin points to disease of the kidneys.

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RHINAL PREMONSTRATION OF TUBERCULOSIS.

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PREDILECTION to determinate channels of exit from the human body is evidenced by a number of substances which have medicinal applicableness. Some of these display the idiosyncrasy of producing considerable disturbance at their respective areas of departure. One need but recall the hydragogue action of elaterium, or the renal and vesical irritation from cantharides or turpentine. Other corroborative examples readily come to mind, and the truism is merely cited as an anticipatory substantiation of the postulate to be presented. The parts played by the toxins which have their origin in the secluded pockets in pyorrhea alveolaris and the elusive tonsillar crypts in the etiology of arthritis, neuritis, etc., have lately been so extensively exploited that a review of them here would be supererogatory, and reference is made thereto only in collateral confirmation of the concept which inspired the writing of this paper. Reflection on the foregoing commonly accepted knowledge excites astonishment that analogous excretory irritations encountered in patients not having ingested any material which might precipitate such symptoms

should so persistently have been classed as primary maladies. When, for example, percolation of end-products from some remotely situated pathological process occurs within the nose, we may have a clinical picture of coryza similar to that excited by chilling of the surface, or by bacterial invasion. As no nose is sterile, a culture will almost certainly reveal a "mixed infection." But we are not justified in reasoning post hoc, ergo propter hoc. The mere presence of this or that infective agency does not authenticate that it is the instigator of the then present activity. Bacterial guests may simply be neighbors who "dropped in" without being implicated in the disturbance. Hypothetically, the nasal mucous membrane might be assumed to be a sort of safety valve, serving as an indicator of some internal bullition, and in the present discussion consideration will be limited to derangement of nasal functions conjecturally due to incontiguous tubercular sources. Generically speaking, it may be conceded that a secretion is a substance which is of further use to the economy, whereas an excretion is but eliminated débris. Accordantly, the normal moisture investing the nasal mucous membrane may be considered a secretion, because it undoubtedly has efficacy.

When the excretory functions are ordinarily performed, no inconvenience is experienced, but when adventitious elements must be disposed of there may be afflictive harassment at the area of emergence. Sometimes the burden becomes too onerous, yet excites no particular irritation and vicarious elimination is essayed. Such elimination may be superposed upon a secretory surface. For example, it is familiar that the kidneys expel iodine to a certain degree. When their capacity is taxed, the burden of eliminating the surplusage, or at least chemical products of such surplusage, is allotted to the Schneiderian membrane with coincident distressing hydrorrhea. It is a familiar observation that the arytenoids become unduly tumid during the progress of some cases of pulmonary or laryngeal tuberculosis, but the contingence that a sustained coryza might portend a possible concealed tuberculous nidus appears to have been largely disregarded. A unique physiognomy characterizes the victims of early covert tuberculous invasion. In a minor degree there is resemblance to the facies of hay-fever, yet the lacrymation characteristic of that distressing ailment is not present. On the contrary, one often notes a lactescent tint of the sclera, suggestive of low percentage of hemaglobin. The skin of the upper lip and about the angles of the mouth sometimes assumes a faint purplish tint analogous to that observed in some women during the early months of pregnancy. While only similar in type, and less in degree, that comparison conveys a more graphic conception than a lengthy description might. A peculiar psychological propensity is often noted. The patient aims to minimize the defective resonance due to tumescence of the nasal mucous membrane, and develops a habit of gently and rather surreptitiously mopping the moisture from the nose with the kerchief.

It is improbable that any considerable quantity of toxic material is poured into the blood or lymph streams during the early invasive or the latent tuberculous stage. Yet during such periods one encounters the peculiar coryza alluded to. It appears plausible that such toxic products as are formed have a predilection to escape from the body by way of the nasal mucous membrane, and that the secreting surface smarts under the unaccustomed burden.

Of course, these traits are often encountered in flagrant cases of tuberculosis, but are then usually so overshadowed by more salient signs that their import becomes insignificant and negligible. Sometimes the focal center of infection is ensconced in such manner or place as to exact an exhaustive search on the part of the physician. Painstaking indagation of the thoracic organs may at first fail to elicit any evidence of tuberculous involvement there, yet, in heedless or neglected patients, in process of time unmistakable indications of the bacillary invasion will crop out. One may feel comparatively safe in assuming that in the majority of cases a circle whose radius extends three inches from the thyroid notch will encompass the focal area of the tuberculous infective process giving rise to the nasal outburst. Waldeyer's ring, comprising a circle of lymphoid tissue beginning at the lingual tonsil, and in its upward passage following the course of the posterior pillar, and traversing the small lymphoid mass sometimes called the tubular tonsil, then the pharyngeal tonsil via Rosenmueller's fossa, and thence in reverse order down the other side to the opposite lingual tonsil, is a fertile field for tuberculous processes. Whether borne there by the blood current or deposited there by the respiratory perflation may not be determinable, but the clinical features are uniform. The patients are relatively healthy. Their cardinal complaint is the discomfort brought about by the hyperplasia of the lymphoid tissue comprised in Waldeyer's ring. Children so afflicted are commonly considered "scrofulous." Small tonsils, which are secluded between the anterior and posterior pharyngeal pillars, are sometimes so elusive that only a most painstaking search will prove them accomplices in the pathological process.

A patient's statement that "the tonsils have been removed" should not be accepted without challenge. There may be remnants whose undestroyed crypts constitute serviceable propagation depots. Deep palpation along the sides of the neck will probably reveal strings of very small glands, some of them quite sensitive, merged in the cervical fascia. The engorgement of the glands is presumably due to the absorption of products sent forth by the bacilli which have lodgment at one or several points in the lymphoid tissue constituting Waldeyer's ring. The characterizing, unyielding coryza preponderates to such degree that other symptoms appear subordinate and minor signs may be overlooked. Taking all these matters into consideration, they would seem to warrant the hypothesis that intractable excretory irritation of the nasal mucous membrane presents strong presumptive evidence of some tuberculous activation.

The gratifying results attained by judicious treatment of early tuberculosis are too familiar, and the methods of ministration are so well grounded that their recital here appears uncalled-for.

Highland Building.

Cure or Arrest of Hydrocephalus.—Eunika relates the case of a child aged 14 months which sustained a fall from which there followed perforation of a hydrocephalus with bulky effusion under the skin. As a result of three punctures from 500 to 700 cm. of this effusion were drawn off and the balance was absorbed. The disease, if not cured, was at least arrested.—*Zentralblatt für Chirurgie.*

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DEEP BREATHING.

SINCE deep breathing is a popular health measure, advocated also by many physicians, a scientific consideration of the subject by a competent medical observer should be welcome. In the *Berliner klinische Wochenschrift* for October 2, Professor Arnold Hiller writes on the action of deep breathing on certain important somatic functions. The author gives a résumé of the scientific literature of the subject since 1890. Deep breathing has been recommended chiefly for asthmatics and young candidates for tuberculosis, especially children. Aside from these uses the exercises are employed to promote euphoria and efficiency. In 1890 the author was recommending sea bathing because it was naturally calculated to ventilate the lungs through the combination of high atmospheric pressure and the sea breezes. The first component to receive his attention was diaphragmatic breathing, which in superficial breathers is the only form in use. As the diaphragm descends with forced inspiration it compresses the soft, plastic tissue of the liver and increases the passage of blood through that organ. At the same time it increases the secretion and excretion of bile. Any condition like gallstone disease which is aggravated by stagnation in the liver may in theory be prevented by deep diaphragmatic breathing. The stomach, when filled with food, may likewise be favorably influenced by the same factor; because the movement of the stomach-contents through the pylorus is facilitated. The influence exerted on other abdominal viscera, such as the spleen and kidneys, is problematical.

Costal breathing is concerned chiefly with the upper portion of the chest and promotes the circulation of blood in the lungs and heart, because as the chest expands the blood in the great veins is forced toward the heart; while at the same time the circulation of the brain is somewhat depleted when for any reason that organ is congested. Under favorable conditions a deep inspiration with expansion of the chest may be seen to empty the distended veins on the backs of the hands. As similar conservative action may be demonstrated in cases of varicose veins and hemorrhoids. So far as any alleged danger of emphysema of the lungs is concerned, the author has seen the latter condition disappear under deep breathing. To return to the heart the author insists that deep breathing causes a physiological hypertrophy of the right side, in which the musculature is apt to be relatively weak.

The subject of the respiratory exchanges, which naturally is one of vast importance, is left by the author to the last. An increased intake of oxygen naturally stimulates metabolism. Increased combustion of carbohydrates may cause a notable reduction in weight, while all products of incomplete catabolism become fully oxidized. Deep breathing is therefore the most scientific resource for the prevention of uric acid disease. Much depends upon a correct technique. One must begin with diaphragmatic breathing, which naturally precedes rib breathing. The inspiratory movements are now slowly increased until all the muscles involved in rib breathing gradually participate. One begins with three daily periods of 15 or 20 minutes each. The position of the breather is immaterial, and he may do his forced breathing while standing or walking. The author makes one assertion which should be modified slightly. It is true that continuous deep breathing will cause an increase in the volume of the radial pulse, but in some individuals a very deep breath appears to arrest the pulse because of the compression of the subclavian artery by the fully inflated apex of the lung. Hence inspirations should be limited to a certain number per minute.

SUBFEBRILE TEMPERATURE AND FEBRICULA.

SLIGHT hyperthermia may represent the initial phase of a serious process; of a benign type of a disease which usually pursues a serious course; or of a condition essentially mild. Fifty years ago the term "slow fever" was used for a protracted febricula, but such terms disappeared with the general use of the clinical thermometer. If the latter instrument were in more familiar use we should doubtless find that many an individual who is feeling below par is running a subfebrile evening temperature. If the medical man recognizes such a case he orders the patient to bed until the temperature becomes normal. But when, as is often the case, rest does not help and the patient rebels at the rest cure, the practitioner is constrained to let the patient go about his business, and the temperature becomes normal in time. Febricula is most common in childhood, when many affections react with subfebrile temperature, or actual fever. This may be associated with slight colds, gastrointestinal disturbances, a single inflamed tonsillar crypt, etc. In adults the same conditions may or may not cause febricula.

In *La Riforma Medica* for September 18, Professor Rossi considers a number of conditions which cause mild hyperthemia of a sustained type. The first patient suffered from Graves's disease. The symptoms were numerous but very vague, and at first no diagnosis was made. A subfebrile temperature at times became febrile. The entire range was 37° to 38° C. (98.6° to 100.4° Fahr.). Lowering of temperature had no prognostic significance. The theory in such cases is that hyperthyroidism can affect the heat centers. In another case a febricula

was brought with difficulty into relationship with lues. In an elderly man with a slight febrile movement pointing to an enterocolitis the cause was found to be pseudoleucemia. In certain cases of cancer and sarcoma, usually of the viscera, rise of temperature may be present. The febricula of tuberculosis requires no discussion. A temperature up to 100° Fahr. in a child of 4 years was found to have been due to basilar meningitis.

There are, however, quite different types of febricula. Rossi mentions the case of a woman who was sent to a sanatorium for general failure of health. A subfebrile temperature led to the diagnosis of tuberculosis, which was, however, negatived by other tests. No cause could be found for the temperature rise nor for the general state. Subsequent developments appeared to show that all the symptoms were psychogenic. Rossi also gives in great detail other cases which were finally found to be examples of nervous or hysterical hyperthemia. For all of these cases he makes use of the term dysthermia—whether neurotic or endocrinic or mixed origin. There is no doubt that this neuro-endocrinic mechanism may be sometimes involved in the first-mentioned cases of febricula—notably in cases of exophthalmic goiter.

THE FRENCH TREATMENT OF BURNS.

THE daily press and certain medical reports from the European fighting front have frequently mentioned a new and successful treatment of burns by French surgeons. Since the special dressing was known by a coined word and since its composition was not definitely stated, the profession has been awaiting an official description. In the first place it is not very new, since its employment goes back to 1904. It has been in use in the present war almost from the outset, but has only recently come into anything like general employment. It consists of a mixture of paraffin and resin, and while no chemical change is set up it possesses peculiar physical properties which make it available for the treatment of burns.

In the *Archives de médecine et de pharmacie militaires* for August Dr. Barthe de Sanfort reported over 300 burns in soldiers treated with the remedy, which is described in detail. The name "ambrine," with which it was christened, comes from its amber hue, and seems to be purely descriptive. This surgeon states that he first devised the formula in 1904. Toussaint used it in 1907 in the Military Hospital at Lille, while another colleague, Michaux, has also had long experience with it. Recently Kirmisson presented some patients before the Société de Chirurgie in which the remarkably favorable action was well demonstrated.

The substance is a solid which fuses at about 50° C. and may be sterilized by boiling without injury. It is applied hot (at 70° C.—158° F.), causing no pain whatever, and even after 24 hours is still warmer than the body. The favorable action is due in part to local hyperthermia. Occurring as it does in cakes of paraffin consistency it is broken up into bits of various size, heated to 125° C. (257° F.) and then cooled to 70° C. (158° F.), the temperature of application. Its use is not confined to burns for it is excellent in freezes and is even superior in the treatment of certain wounds. It is first applied in very small quantities with formation of a thin pellicle. Over this is placed a very thin layer of cotton, which is followed by more of the remedy. This simple dressing is painless and inexpensive. It is removed in 24 hours and comes away *en masse* and without pain. It is true that considerable pus, often of foul odor, is found beneath. This, together with loose sloughs, is carefully wiped off and the surface dried with a hot air douche. The dressing is then reapplied. In no type of burn is it contraindicated. In general, rapid healing takes place with superior end results.

LEAD POISONING FROM IMBEDDED BULLETS.

INTEREST in this possibility has been revived during the present war. Nothing seems more assured than that bullets in the tissues do not, in the vast majority of cases, cause even the mildest form of plumbism. The question is, have they ever caused this condition beyond doubt. Lewin and Küster long ago answered this question in the affirmative and in more recent years Dennig and also Neu have analyzed a very large number of observations and have found the sequence less uncommon than one might otherwise believe. It is necessary to follow cases up, because plumbism may not appear until many years after the injury. At a session last June of the Verein der Aerzte in Halle a. S. (*Muenchener medizinische Wochenschrift*, September 26) Disselhorst discusses the possibility of the solubility of metallic lead in the tissues and the mode of its elimination. That erythrocytes show basophile granulations as a result of lead absorption cannot always be shown. Should the bullets be extracted as a prophylactic or curative measure? For anatomical reasons this must be answered largely in the negative—for we are presumably dealing with deeply buried projectiles. In discussion Schneider said that he had seen plumbism follow retention of bullets; why it does not always occur is a great mystery. Deeply seated bullets must not be removed as long as these are reactionless. Should lead appear in the urine the question of removal must be thought of, all depending on the general surgical problems involved. David thought the blood test most dependable if several tests were made before reaching a decision.

THE ENGLISH BULLDOG.

THERE are certain characteristics, said to be national, which we are fond of exemplifying by anecdotes. Some of these are complimentary, many the reverse. Thus we speak of the pugnacity of the Irish, the economy of the Scot, the vivacity of the Frenchman, and the gallantry of the Spaniard. The English nation takes a secret satisfaction in the tradition which ascribes to her children the quality of bulldog perseverance, the not-knowing-when-you're-beaten spirit, the tenacity which "muddles through" somehow. The soldier imbued with such a spirit would, theoretically at least, be hard to kill, and a communication to a recent number of the *Lancet* seems to bear this out. Dr. Sidney D. Rhind writes in the issue of September 9 of a British soldier who accidentally received two bayonet wounds in the chest while practising with another soldier. When seen, shortly afterward, he was

found to have a left-sided pneumothorax with internal hemorrhage. About four inches of colon and mesentery were protruding from one of the wounds. He was operated on under a general anesthetic and the abdomen was examined, but no injury to any viscus was found. The operation lasted half an hour, and he survived it six and a half hours; but the remarkable part of the affair was that a post-mortem revealed that one of the wounds had gone through the diaphragm into the right ventricle, injuring the septal cusp of the tricuspid valve, and then through the right auricle. Each of these two wounds in the heart would admit an index finger easily. This man, in other words, lived eight and a half hours with two large wounds of the heart, a hemopneumothorax on one side and a hemothorax on the other. And during these eight and a half hours he underwent an abdominal section under general anesthesia. No wonder the British don't know when they are beaten. They do not even know when they have been instantly killed.

News of the Week.

Plan New State Hospital.—At the first hearing before Governor Whitman on the New York State budget, on December 19, Dr. George W. Pilgrim, medical superintendent of the State Hospital Board, called attention to the fact that during the past fifteen years no new State hospital has been built, although in that time the insane population in the various hospitals has increased from 20,845 to 35,657. Dr. Pilgrim told the Governor that the Board planned to build a new institution on State land to care for a population of 1,500, and to change the district boundaries so that the metropolitan district will be relieved by the transfer of 1,500 patients from Ward's Island to Poughkeepsie.

Ambulance in Collision.—A motor ambulance of St. Joseph's Hospital, Paterson, N. J., was in collision with an Erie Railroad train on December 22, and was completely demolished. The driver was thrown out, and so badly injured that his death was expected; the surgeon and the patient, a woman being taken into the maternity ward of the hospital, however, suffered only minor injuries.

Hospital Shelled.—The Italian War Office, on December 22, announced that the military hospital in Goritz had again been shelled, in spite of its protection by visible red crosses. Of the sanitary personnel, two were killed and four wounded.

Herter Lectures.—The Faculty of the University and Bellevue Hospital Medical College announces that five lectures will be given under the Herter Foundation on "The Distribution of Inorganic Compounds in Animal and Vegetable Tissues, and the Forces that Determine It," by Prof. A. B. Macallum of the University of Toronto. The first lecture will be given on Monday, January 8, 1917, at four o'clock, at the Carnegie Laboratory, 338 East Twenty-sixth Street, and the remainder of the series will be given on subsequent days at the same time and place.

New Hospital Building.—The directors of the Manhattan Eye, Ear and Throat Hospital announce that there will shortly be constructed a six-story stone extension to the present hospital building on East Sixty-fourth Street, to cost $350,000, and to be used as a nurses' home and administrative building.

Gifts to Charities.—By the will of the late Jacob H. Purdy of New York, the sum of $100,000 is bequeathed to St. Mary's Free Hospital for Children of this city, for the establishment of free beds in memory of the testator's sister, Joanna H. Purdy, formerly a member of St. Mary's Guild.

Dr. J. Madison Taylor of Philadelphia addressed the College of Physicians, Pittsburgh, on the evening of December 14, on the subject, "The Scope of Reconstructive Therapeutics."

Physicians Graduate.—Forty-seven candidates successfully passed the recent examinations of the Medical Department of the University of Toronto, and all have enlisted for service overseas. The class had been at work steadily for the past fourteen months in order that they might be ready for service as soon as possible, and a special convocation for the conferring of degrees was held on December 11.

Care of Infantile Paralysis Cases.—The New York Committee on After Care of Infantile Paralysis cases, which grew out of a series of conferences called by Health Commissioner Emerson, and includes about 350 persons representing the medical profession, hospitals and dispensaries, nursing associations, charitable societies, and the general citizenship, has undertaken three major pieces of work. First, it has tried to coordinate the efforts that have been made for the treatment, home care, and training of children left paralyzed by the epidemic, to distribute them among the agencies, and to keep track of them so that none shall be neglected. Second, it has attempted to unite the several transportation funds and to augment them, so that, if possible, all children in need of special transportation to and from dispensaries may have it; to which end a Committee on Transportation has been appointed. And third, the committee has undertaken to raise $250,000 for the work. This last branch of the work has been entrusted to a Committee on Appeals, the administrative expenses of which will be met by the Rockefeller Foundation, so that contributions to the funds will be used entirely for the after-care work. All of this work is being carried on with the cooperation of the Department of Health and of the Department of Public Charities. Up to December 12, the committee reports, 5,773 children had been referred to it by the Health Department, and 5,504 were under treatment or had been satisfactorily accounted for; 51 had died since their discharge from quarantine; 30 had left the city; and 152 had not been found. To the same date, the Committee on Transportation had been able to provide seven motor buses and four motor cars, which had been fully engaged in transporting 1,227 different children a week. About $2,000 had been spent by the committee for braces, upon request from the dispensaries, and the Health Commissioner has turned over to it the large fund for braces raised in answer to his appeal last summer.

Birth Control Advocates Defeated.—At a meeting of the Medical Society of the County of New York on Tuesday evening of this week, a resolution asking for the repeal of the State law forbidding instruction in measures for preventing conception was defeated by a vote of 210 to 72.

Medical Society Elections.—DUVAL COUNTY (FLA.) MEDICAL SOCIETY: Annual meeting at Jacksonville on December 6. Officers elected: *President*, Dr. William MacDonell, Jacksonville; *Vice-President*, Dr. Kirby Smith; *Secretary-Treasurer*, Dr. S. Richardson.

ORLEANS PARISH (LA.) MEDICAL SOCIETY: Annual meeting at New Orleans on December 9. Officers elected: *President*, Dr. Paul J. Gelpi; *Vice-Presi-*

dents, Dr. Frank J. Chalaron, Dr. J. George Dempsey, and Dr. H. E. Bernadas; *Secretary*, Dr. Charles A. Bahn; *Treasurer*, Dr. H. W. E. Walther, all of New Orleans.

Greene County (Mo.) Medical Society: Annual meeting at Springfield on December 12. Officers elected: *President*, Dr. William Reinhoff; *Vice-President*, Dr. John C. Matthews; *Secretary*, Dr. T. O. Klingner; *Treasurer*, Dr. Edwin F. James, all of Springfield.

Medical and Surgical Association of the Southwest: Third annual convention at Frankfort, Ky., on December 11. Officers elected: *President*, Dr. J. I. Butler, Tucson, Ariz.; *Vice-Presidents*, Dr. R. E. McBride, Las Cruces, N. M., and Dr. J. W. Laws, Lincoln, N. M.; *Secretary-Treasurer*, Dr. D. W. Detwiler, El Paso, Tex.

Harrison County (Ia.) Medical Society: Annual meeting at Logan on December 7. Officers elected: *President*, Dr. Charles S. Kennedy, Logan; *Vice-President*, Dr. A. H. Konigmacher, Missouri Valley; *Secretary-Treasurer*, Dr. J. D. Slattery, Dunlap.

Grafton County (N. H.) Medical Society: Annual meeting at Woodsville on December 13. Officers elected: *President*, Dr. Percy Bartlett, Hanover; *Vice-President*, Dr. A. T. Downing, Littleton; *Secretary-Treasurer*, Dr. John M. Wise, Glencliffe.

Pittsburg County (Okla.) Medical Society: Annual meeting at McAlester on December 8. Officers elected: *President*, Dr. J. O. Grubbs, McAlester; *Vice-President*, Dr. George S. Turner, Krebs; *Secretary-Treasurer*, Dr. James C. Johnston, McAlester.

Columbia (S. C.) Medical Society: Annual meeting at Columbia on December 11. Officers elected: *President*, Dr. Le Grand Guerry; *Vice-President*, Dr. John La Bruce Ward; *Secretary-Treasurer*, Dr. Edythe Welbourne.

Obituary Notes.—Dr. Nora Johnson Ross of Chicago, Ill., a graduate of the Chicago College of Medicine and Surgery in 1911, died at her home on December 1, from septicemia, aged 47 years.

Dr. William Calvin James of Lawson, Mo., a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, in 1864, died at his home on November 12, aged 75 years.

Dr. Ira Sidney Hooker of Winner, S. D., a graduate of the College of Medicine of the State University of Iowa, Iowa City, in 1903, died at the South Dakota State Hospital, Yankton, on October 25, aged 40 years.

Dr. Albert A. Dougherty of Muscoda, Wis., a graduate of Starling Medical College, Columbus, Ohio, in 1896, died at his home on November 23 from angina pectoris, aged 51 years.

Dr. Jabez Fisher of Fitchburg, Mass., a graduate of the Medical School of Harvard University, Boston, in 1850, died at his home on December 15, aged 92 years.

Dr. Harry Malcolm Wasley of Shenandoah, Pa., a graduate of the Medico-Chirurgical College of Philadelphia, Pa., in 1900, and a member of the Medical Society of the State of Pennsylvania and the Schuylkill County Medical Society, died suddenly on November 28, from heart disease, aged 43 years.

Dr. Francis Harvey Roof of New York, a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1862, died on December 14, aged 76 years.

Dr. William Overholt Baker of Louisville, Ohio, a graduate of the University of Wooster, Medical Department, Cleveland, Ohio, in 1873, died in the Ingleside Hospital, Canton, Ohio, on November 26, from broncho-pneumonia, aged 89 years.

Dr. Charles Young Hogsett of Fort Worth, Tex,. a graduate of the Department of Medicine of the University of Virginia, Charlottesville, in 1895, and a member of the American Medical Association, the State Medical Association of Texas and the Tarrant County Medical Society, died in a sanatorium in Saratoga Springs, N. Y., on November 25, aged 44 years.

Dr. John C. Crowell of Pawpaw, Ill., a graduate of Rush Medical College, Chicago, in 1891, died at his home on November 17, from cerebral hemorrhage, aged 58 years.

Dr. Moses S. Brundage of Rockford, Ill., a graduate of Rush Medical College, Chicago, in 1883, died in his office on November 19, from heart disease, aged 58 years.

Obituary.

WALLACE WOOD, M.D.

NEW YORK.

Dr. Wallace Wood of New York, for many years the holder of the Samuel F. Morse chair of art in New York University, died after a short illness from pneumonia, in Bellevue Hospital, on December 17, aged 64 years. Dr. Wood was educated abroad and had achieved an unusual reputation in several lines of research. He had written largely on many subjects, varying from "Twenty Styles of Architecture," to "A New Method in Brain Study," and had formed a remarkable collection of pictures, costumes, and relics illustrating the history of civilization, which is now in the possession of New York University.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

AT THE ROENTGEN SOCIETY—PAROXYSMAL COUGH—IRISH MEDICAL GRADUATES—CEREBROSPINAL MENINGITIS—RESIDENTIAL TREATMENT OF TUBERCULOSIS.

London, Dec. 2, 1916.

At the Roentgen Society, Captain C. Thurston Holland, the new president, remarked in his address that during the war mistakes had occurred both in interpretation and in localization in consequence of *x*-ray work having been entrusted to unskilled and untrained operators. This work should be carried out by medically qualified persons with special experience in pathology, as well as in physics, electricity and *x*-ray work. Dissatisfaction was expressed by the president with the present position of radiology, and particularly with the installations in the smaller hospitals of districts where only the services of untrained operators could be obtained. The value of such services was very variable, and in some instances could not be said to exist, and might be more than replaced by error. Electrotherapeutics is becoming more and more important, and should not be separated from other modes of treatment. The time for separate radium institutes has gone by, and the recognition of radiology and electrotherapy by the universities and schools should no longer be delayed. I understand that on your side such teaching is well organized, so that you are, as usual, ahead of us.

Paroxysmal cough is often the chief trouble in connection with influenza, or, indeed, any form of catarrh. In every case the fauces should be explored at the outset and the mucous surface will almost always deserve attention. Inflammation in some stage will generally be present, and swelling of the tissues will be the most marked appearance. The tonsils will present this symptom most prominently, but that should not be allowed to obscure other changes in the lining membrane. If the tonsil is so enlarged as to come from time to time in contact with the epiglottis, this may set up severe attacks of spasmodic cough. The local application of trichloracetic acid is the best remedy. With a holder bent at a right angle and charged with a very thin layer of cotton wool moistened with the acid, it is easily applied to the swollen tonsil and restricted to that. Mr. Hovell reported two very chronic cases to the Section of Laryngology (R. S. M.), one of which had lasted for 15 years, the other for 7. In both of them the cough diminished concurrently with decrease of the swelling of the tonsils. To some extent he approves the old popular remedy of garlic, which has long been held in the highest repute by herbalists, who use it by peeling the "cloves" (segments of the root), cut into thin slices, and worn beneath the soles of the feet, between two pairs of socks If worn next to the skin too great irritation will be set up. He mentions two cases of persistent cough following attacks of pertussis, in both of which relief was obtained as the swelling of the tonsil diminished under treatment by trichloracetic acid. Considering the paroxysms of whooping cough as the result of enlarged tonsils, he holds its terrors as no longer existing, since the juice of garlic passed into the circulation through the skin at once destroys the microorganism, after which a strong astringent applied to the swollen tonsil will complete the cure. Care should be taken to prevent the fluid entering the larynx. This sometimes has occurred, and the spasm so set up is distressing. To arrest it, the patient should be induced to speak. The pronunciation of a single syllable will often suffice.

The Irish Medical Graduates' Association has presented an address of congratulation to Dr. Macnaughton Jones, who has lately celebrated his golden wedding, and who has been the chief worker at the helm of the society for the last 37 years, has been president three times, and has presented it with beautiful works of art which ornament its festive board.

Dr. Macnaughton Jones, in thanking the members, said he would treasure it as one of his most valued heirlooms, as coming from those whom he recognized as worthy successors in the footsteps of the men who, when he joined the association in 1879, presented a galaxy of talent of which they were all proud. He was further delighted that it was not only in professional skill they were worthy successors of the giants of those days, but in devotion to the cause for which all our countrymen are fighting.

In the three months ending on September 30 there were 66 cases of cerebrospinal meningitis notified in London, with 36 deaths. Last year, in the corresponding period, there were 102 notified, with 62 deaths.

At the end of September, this year, 446 persons were undergoing residential treatment for tuberculosis provided by the London County Council. Of these, 136 were adults and 310 children.

CANADIAN LETTER

(From Our Special Correspondent.)

FEEBLE-MINDED IN ONTARIO—A FOOD DICTATOR IN TORONTO—RAILWAY ARRANGEMENTS FOR CONVEYING SICK AND WOUNDED SOLDIERS—MEETING OF THE CANADIAN MEDICAL ASSOCIATION—MEETING OF THE ONTARIO MEDICAL ASSOCIATION—RETURN OF COLONEL NASMITH—APPOINTMENT OF CAPTAIN ELLIS IN HIS PLACE—RETURN OF DR. G. ADAM—RESIGNATION OF C. R. CLARKE AS SUPERINTENDENT OF TORONTO GENERAL HOSPITAL—APPOINTMENT OF PROFESSOR MACALLUM AS HEAD OF THE COMMITTEE FOR INDUSTRIAL AND SCIENTIFIC RESEARCH—CAPT. A. H. CAULFIELD DIRECTOR OF TREATMENT OF TYPHOID FEVER AND CEREBROSPINAL MENINGITIS AT SHOMCLIFFE MILITARY HOSPITAL—LIEUT.-COL. T. B. RICHARDSON MADE PRESIDENT OF THE MILITARY BOARD OF TORONTO—LIEUT.-COL. CLARENCE STARR AT THE ORTHOPEDIC HOSPITAL AT RAMSGATE, ENGLAND.

Toronto, Dec. 21, 1916.

The problem of the feeble-minded is a grave one in all parts of the world, graver in the old world especially, because industrialism, urban life, and conditions of living generally tend to the deterioration of the race. However, on this side of the Atlantic we have our feeble-minded, like our poor, always with us, and recently, both in the United States and in Canada, the proportion of defectives to the general population has increased considerably. This is due to several causes: to the tendency to massing together of the population in cities, to the increase of industrialism, but perhaps above all to the widespread prevalence of social disease, and especially of syphilis. In addition, Canada has received for some years a somewhat large number of defectives from Europe. An important meeting to discuss the situation as regards the mentally defective persons in the population of Toronto and of the Province of Ontario was held by the Section of State Medicine of the Toronto Academy of Medicine a short time ago.

Dr. C. R. Clarke, superintendent of the Toronto General Hospital, one of the speakers, stated that the reason why Ontario possessed such a large mentally defective population was because politicians had failed to do their duty in preventing hordes of defectives from coming into the country. He stated that 54 per cent. of the defectives examined at the psychiatric clinic at the Toronto General Hospital had been imported, and many of them had been in the country only a short time.

Dr. C. M. Hincke, connected with the psychiatric clinic at the Toronto General Hospital, said that there had been examined in that clinic 285 feeble-minded individuals who were habitual thieves, and who were still at large in Toronto. Fifty-eight feeble-minded persons had been examined whose greatest delight was to burn down buildings. One hundred and twenty feeble-minded persons examined had attempted to commit murder. Perhaps the chief menace of uncontrolled mental defectives is that they propagate their species in a most prolific manner, and the uncontrolled female mental defective is a constant source of danger to the race and the state, in that she is the main agent in spreading that most destructive of diseases, syphilis. At least 60 per cent. of prostitutes are feeble-minded. Another mode in which the mentally defective impede the wheels of progress is that when educated with normal children they are

apt to convey and spread their taint, and they hinder the education of all.

So far as Ontario was concerned, Dr. Helen McMurchy stated that there were 7,000 feeble-minded persons in Ontario, while Dr. C. M. Hincke was of the opinion that there were 3,000 in Toronto alone.

The object of the meeting was to impress upon the minds of the medical profession and the general public the gravity of the situation and to suggest and discuss the most effectual means of successfully coping with the existing state of affairs.

The suggestion brought forward by the Toronto branch of the Provincial Association for the Care of the Feeble-minded was told by Dr. Conboy. It is proposed to establish industrial farm colonies for mentally defective boys and girls, such institutions to be of the cottage type, with accommodations for 500 inmates in each institution, in buildings each capable of accommodating fifty.

After discussing the matter for more than two hours and a half the Toronto City Council, on Dec. 18, decided to apply to the Ontario Legislature for permissive legislation to the following effect: 1. To permit the city to issue debentures without the consent of the ratepayers, not to exceed $150,000, for the erection of buildings and equipment for the care of the feeble-minded; and 2. To amend the industrial Farms Act to allow the use of such portions of the industrial farm lands for a site as may be hereafter determined.

The high cost of living, which is attributed by producers and retailers to the war, is pressing heavily upon a considerable part of the population of Canada. Those workers who are engaged in munition making, or in other employments concerned in war supplies, do not feel the advanced prices of all commodities, for the reason that they are earning more money than they ever earned in their lives before. But the poor who have not been afforded the opportunity to earn money in this manner are suffering seriously from the enhanced cost of the necessaries of life. With an early, sharp winter, and the cost of fuel and food at famine prices, the situation is becoming worse. In Toronto, the city authorities have recognized the fact that something must be done to ameliorate conditions, and with this end in view have appointed Dr. Chas. Hastings the medical officer of health to thoroughly investigate into all the circumstances of the case. Dr. Hastings has been vested with exceptional powers, indeed almost with the powers of a dictator, and there is no doubt that his investigations will be searching and productive of good results. Such a duty obviously is well within the province of a department of health, for few events prejudice health more potently than the high cost of the necessaries of life. If individuals cannot obtain good food in sufficient quantities, it follows that their vitality is decreased and their powers of resistance to disease diminished. Infants and children, especially, suffer from the lack of nourishing food and warmth. It matters little how costly luxuries become, as luxuries are not essential to health and well being, but when the necessaries of life are beyond the reach of the poor man's pocket the question is one which intimately concerns the community at large, as it is a menace to the public health.

When Dr. Hastings has thoroughly probed into the reason for the excessive cost of the necessaries of life he will doubtless suggest measures of relief, and it is to be hoped that he will be given the powers of a dictator to enforce such measures.

Arrangements have been made with the Intercolonial and Canadian Pacific Railways for the provision of hospital trains to bring wounded soldiers from Halifax upon their arrival from England. The trains are being built on the same plane as the British military hospital trains, but adapted to the larger Canadian cars. They will be fitted up with hospital beds, surgeries, and accommodation for medical men and nurses. There are said to be in England about 20,000 wounded Canadians, and it is expected that about 250 will leave for Canada each week.

It has been decided to hold the general meeting of the Canadian Medical Association at Montreal on June 13, 14 and 15, 1907. Dr. A. D. Blackader, acting dean of the Medical Faculty of McGill University, has been unanimously chosen president, and Dr. W. S. Morrow, president of the Montreal Medico-Chirurgical Society, vice-president.

The annual meeting of the Ontario Medical Association will take place in Toronto from May 31 to June 12 next.

Col. E. E. Nasmith, C. M. G., Ph.D., Director of the Health Department Laboratories of Toronto, who had done so much excellent work in the sanitary direction both at the camp at Valcartier and overseas has been relieved from active duty and has returned to Toronto. It was considered that the special work which he had organized was practically completed and that it was now more or less a question of routine administration. However, in spite of the fact, leave was given with a good deal of hesitation and chiefly because Dr. Hastings represented that he was urgently needed in Toronto.

Colonel Nasmith may be said to be to a considerable extent responsible for the success of the precautions that have rendered typhoid and paratyphoid fever negligible quantities in the British armies during the war. Of course, inoculation has played a paramount rôle in warding off an epidemic, but the manner in which the water has been sterilized so effectively by chlorination is due to Colonel Nasmith.

Capt. Arthur Ellis, who has done so much valuable research work at the Rockefeller Institute and afterward in the army, has been appointed to succeed Colonel Nasmith as officer-in-charge of the sanitary arrangements of the Canadian oversea forces at the front. Captain Ellis will be assisted by Capt. George Campbell. Capt. Ellis is a son of Professor Ellis, dean of the faculty of Applied Sciences in the University of Toronto.

Dr. George Adam, Professor of Pathology at McGill University, has been granted leave of absence and has returned to his work in Montreal.

Dr. C. R. Clarke has resigned from the superintendency of the Toronto General Hospital after filling that position for five years. Doctor Macallum, Professor of Physiology at Toronto University, has been appointed head of the Committee for Industrial and Scientific Research. The committee has been formed at the instance of the Federal Government with the view of organizing industry and science on a thorough working basis. The war has aroused the British Empire to the need for more and better organization in all branches of industry and commerce, and, moreover, it is recognized that science plays a great part in such an organization. No more able man for the post of head of the committee could be found in Canada than Professor Macallum.

Capt. A. H. Caulfield, A. C. M. C. for Gravenhurst, Ont., is now directing the treatment of cases of typhoid fever and cerebrospinal meningitis at the Shorncliffe Military Hospital.

Lieut.-Col. Thomas B. Richardson, who has been in command of the Toronto Military Base Hospital, has been appointed president of the Military Board, Toronto, and the temporary command of the base hospital has been given to Lieut.-Col. Cameron A. Warren of Toronto. The laboratories of the hospital have been placed under the direction of Capt. George D. Porter.

Lieut.-Col. Clarence Starr, the well-known Toronto surgeon who has had charge of the military orthopedic work in Canada, is now at the Canadian Orthopedic Hospital at Ramsgate, England. On his return to Canada he will set up similar institutions in this country.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 14, 1916.

1. The History of the Growth of the Anti-Tuberculosis Movement in Massachusetts, and the Lessons to be Learned Therefrom. Vincent Y. Bowditch.
2. Shock at the Front. W. T. Porter.
3. Failing Cardiac Compensation During Pregnancy. Charles H. Lawrence.
4. Some of the Clinical Evidence Relating to the Etiology of Epilepsy, Including Some Notes on the Condition of the Teeth as a Factor in Its Production, and on Its Relation to Alcoholism and to Mental Defect. Hale Powers.

1. The History of the Growth of the Anti-Tuberculosis Movement in Massachusetts and the Lessons to Be Learned Therefrom.—Vincent Y. Bowditch gave an account of the work accomplished in Massachusetts along this line before the Trudeau School of Tuberculosis, Saranac Lake, N. Y. He refers to the early teachings of his father, the late Dr. Henry Ingersoll Bowditch, and his investigations begun in the early fifties as to the causative factors of pulmonary tuberculosis. After eight years of study and research the elder Bowditch presented to the Massachusetts Medical Society a paper under the title "Soil Moisture as a Cause of Consumption." This was in 1862. In 1885 Trudeau founded his famous institution, the first of its kind in America. In 1889, a small farm was purchased in Sharon, Massachusetts, eighteen miles from Boston, and a building erected to accommodate eight women suffering from tuberculosis. This was done in accordance with the theory of the writer that this disease could be cured at a low altitude not far from the sea. In 1891 the Sharon Sanatorium opened its doors as a semi-charitable institution, the first of its kind in New England. Bowditch traced the growth of tuberculosis work all through Massachusetts, as well as in some of the United States possessions, namely, Philippines. He also refers to the types of treatment employed at the present time and concludes with a touching tribute to Edward Livingston Trudeau.

4. Some of the Clinical Evidence Relating to Etiology of Epilepsy, Including Notes on Condition of the Teeth as a Factor in Its Production.—Hale Powers states that the students of epilepsy will for some time be divided into two groups as to the causation of epilepsy: one group holding that it is primarily or entirely a disease of the brain, and the other group who look upon it as an intoxication, probably of intestinal origin. Powers, while holding the latter theory, has not yet been convinced that it is in every case the result of infection by a specific organism, because he has so often seen the arrest of the disease follow the correction of errors in diet and the relief of indigestion and constipation without any treatment designed to remove a supposed infection; on the other hand, he has never seen the arrest of the disease occur when these simple measures have been neglected, even after the removal of the colon, not to mention the persistent use of intestinal antispetics. Several years ago he began to realize the fact that the majority of epileptics had bad teeth, and investigating, concluded that the outcome of a case might depend upon the repairing of the teeth. Notes have been taken by him on the condition of the teeth in fifty consecutive cases, and classifications made according to the conditions of the teeth into "good," "fairly good," "bad," and "very bad." All types of decayed teeth were found, and only the fitness of the teeth to perform their function of chewing has been considered, and the presence of unerupted teeth has not been sought for, because the object of the work has been merely to show that the failure of the teeth to perform their function is a factor in the production of epilepsy. In age the patients ranged from three and a half to sixty years, and include almost all the conditions supposed to produce epilepsy with the probable exception of intracranial tumor. In fully half of the cases the diagnosis was made before they were seen by the writer, and in none has the diagnosis been disputed by others. Of the fifty cases, five have bad teeth, five have fairly good teeth, thirteen have had bad teeth, and twenty-seven have very bad teeth. In one case where there was imbecility and cerebral palsy, digestive troubles preceded the epilepsy, which became less severe under treatment of the digestive condition. Overfeeding, in a mistaken effort to restore the patient's strength, is often the actual cause of an epilepsy following an injury or an illness. Powers cites several cases of epilepsy greatly relieved by careful attention to the care of the teeth and the diet. He says that epilepsy is rare in breast-fed infants, and it does not occur before the age of eighteen months. Other investigations showed that epilepsy in childhood usually begins at the time when the child is beginning to eat solid food that requires chewing, and when the teeth are not sufficiently developed to do the work. Powers insists that epilepsy in children is not the direct result of alcoholism in the parents, when it thus occurs, but is the direct result of neglect and not heredity. There is experimental proof of this in the fact that epilepsy in the children of alcoholic parents is just as amenable to treatment as epilepsy in other children, provided that they can receive proper food and care.

New York Medical Journal.

December 16, 1916.

1. Medical Fees Among Primitive Man. Jonathan Wright.
2. Anorectal Injuries. Samuel Goodwin Gant.
3. Aural Complications of Grippe. Edward B. Dench.
4. Nose and Throat Complications and Sequelæ of Grippe. William Ledlie Culbert.
5. The Faucial Tonsils in Singers. Irving Wilson Voorhees.
6. The Experimental Pathology of Goitre. Ernest Zueblin.
7. Infantile Paralysis Treated with Immune Serum. Orlando H. Petty.
8. Compulsory Health Insurance. Eden V. Delphey.
9. Gastric and Duodenal Ulcers. Samuel Weiss.

3. Aural Complications of Grippe.—Edward B. Dench brings out the facts that aural complications or influenza are severe chiefly from the facts that the constitutional infection lowers the general bodily tone; the hemorrhagic type of inflammation, both in the middle ear and in the mastoid process, occurs probably more frequently as a complication of influenza than other constitutional diseases, and that operative interference in these cases must depend upon the otoscopic appearances and the local symptoms. In other words, the actual local lesion determines the character of the surgical interference.

4. Nose and Throat Sequelæ of Grippe.—William L. Culbert states that each succeeding year brings its own particular type of infectious troubles, usually clas-

sified as grippe; however, nothing new has been shown for the last fifteen years in the manifestations of the disease, according to the literature. It is probable that the specific organism produces a specific effect, modified by the resistance of the victim and the point selected for attack. Stated simply, influenza bacilli generally obtain their first foothold in the nasal mucous membrane, with results already too well known to all. The attack may subside and later flare into flame again in any of the adjacent mucous membranes of the upper respiratory tract, namely, of the accessory sinuses, eustachian tubes, tonsils, ethmoid cells, and may go down into the deeper respiratory tract. There may be no lapse of time in this occurrence, but as it often happens, the acute attack may pass into any of these neighboring membranes. Through Stenson's duct the parotid gland can be involved. Culbert outlines the condition produced more in detail and says that in the preventive treatment of infectious grippe three main points must be considered: (1) The condition of the mucous membrane and the anatomical structure of the nose; (2) the resistance of the subject; (3) the environment, which in our crowded cities is a most important factor.

5. **The Faucial Tonsils in Singers.**—Irving W. Voorhees has made a determined attempt to obtain from over a hundred physicians reports as to the effects they have found were produced by tonsillectomies in singers. From knowledge thus obtained and his own experience he draws the following conclusions: 1. An analysis of 5,000 tonsil operations in singers shows that in the hands of skilled operators there need be no special fear of bad results. 2. It is the consensus that bad results are most often due to cicatricial contractions occurring from careless dissection or from neglected after-treatment. 3. Pain in the tonsillar region, neck, and larynx, is probably due to section of some of the larger branches of the glossopharyngeal nerve (Justus Matthews). 4. Loss of singing voice after tonsillectomy might be due to a nerve lesion, but is probably due to adhesions and cicatricial formations in the fauces. 5. Loss of singing voice occurs very rarely after tonsillectomy. Impaired voice is possible, but most cases show an increased range of from one-half to a full tone. 6. The singer's problem is a very special one and no laryngologist should undertake to operate on these patients unless he has some knowledge of the art of singing. 7. At operation the greatest care and skill must be exercised in securing a clean, free dissection. Injury to the tissues surrounding the tonsil may prove disastrous. 8. Postoperative care is of special importance. The patient should be seen daily until full healing occurs.

Journal of the American Medical Association.

December 16, 1916.

1. Some Phases of Experimental Syphilis, with Special Reference to the Question of Strains. Mathew A. Reasoner.
2. Report of a Series of Sixty-one Extragenital Chancres. H. N. Cole.
3. External Frontal Sinus Operation. Joseph C. Beck.
4. Intranasal Surgery for Relief of Chronic Frontal Sinusitis. Lee M. Hurd.
5. Empyema of the Ethmoid Cells. George F. Cott.
6. County Health Administration. W. S. Rankin.
7. The Scope of Industrial Hygiene. J. W. Kerr, Sidney Morrell McCurdy, and Otto P. Geier.
8. The Ability of Brain Tissue to Take Up Water in Delirium Tremens and Other Conditions: A Study of Cerebral Edema. Frank Nuzum, and E. R. Le Count.
9. Treatment of Acute Alcoholic Delirium. James J. Hogan.
10. An Experimental Research Into the Nature of Nitrous Oxide and of Ether Anesthesia, with Special Reference to Certain Effects on the Organs of the Body, and Certain Relations to Normal Sleep, Hydrogen-Ion Concentration and Infections. George W. Crile.
11. Constitutional Inferiority. Morris J. Karpas.
12. A New Treatment for Paralysis Agitans. Walter B. Swift.
13. Clonorchis Sinensis in Orientals Arriving in the United States. Herbert Gunn.
14. The Composition and Physiological Activity of the Pineal Gland. Frederic Fenger.
15. The Salicylates: III. Salicylate Albuminuria. R. W. Scott, and P. J. Hanzlik.
16. Appendicitis and Pulmonary Tuberculosis. Hugh M. Kinghorn.
17. Polycythemia: Preliminary Report of a Case with a Hitherto Undescribed Increased Resistance of the Red Cells to Hemolytic Amboceptor. Rawson J. Pickard.
18. The Control of the Nausea and Vomiting of Pregnancy by Intramuscular Injections of Corpus Luteum Extract. John Cooke Hirst.

9. **Treatment of Acute Alcoholic Delirium.**—Hogan conducted his treatments on patients with delirium tremens last year in the Emergency Hospital Service in San Francisco. He found those of the severer types were suffering from an acid intoxication, so his treatment was directed towards efforts to neutralize and dilute the effects of this intoxication and to favor its rapid elimination. Alcohol, belonging to the group of the hydrocarbon narcotics, has an especially selective action for the fats of the liver and nervous system. The pathological changes produced may be anything from simple edema to severe degenerative changes of the fatty type. Therefore, the treatment, to be of service, must be used in the stage of edema. It was only employed in the most severe cases, and not on the mild drunks or mild delirium cases. He employed a mixture of sodium bromide, sodium chloride, and sodium bicarbonate that could be used in large quantities intravenously without producing the toxic effect of bromide as ordinarily given in large doses. As the severe types also suffer from starvation acidosis, glucose in high concentration was also used intravenously, which in 30 per cent. concentration produced dehydrating effects of the central nervous system. Cases are cited, and from the reports the solution may be given once a day or every two hours, according to the results obtained. It is interesting to note that in the cases given the blood pressure was lowered after the injections. Also any existing edema, as of the brain, will be reduced; all the tissues of the body and the blood are dehydrated by the action of the salts. Both of the solutions are prepared so that they do not produce hemolysis, and the association of the chlorin with the bromin ions prevents the toxic effect of the latter.

12. **A New Treatment for Paralysis Agitans.**—Walter B. Swift offers a set of control exercises for treatment of this condition, and reports that he succeeded in bringing about improvement in a marked case of paralysis agitans which was treated with slow moving exercises taken for fifteen minutes three times a day, and resulted in a general constant relief of bad feelings, occasionally an hour of complete relief from all distressing symptoms, and a quickly gained repose into sleep upon retiring. The treatment, though giving marked relief from intense suffering, even to the point of recovering normal conditions for hours at a time, proves no cure, and the symptoms all returned when the exercises were omitted; but they showed improvement again when resumed, and also again gave relief. Swift reports the case of a woman to whom he gave some vowels to be sounded in a prolonged, steady fashion, to improve the voice tremor. She returned later to relate that the tremor in the hands was better, and that she felt better. He then instructed her to carry out the arm and leg exercises, and in about two weeks she had an hour of complete relief from all symptoms. Improvement became prolonged to satisfaction of patient. The exercises are as follows: Patient stands with all clothing constrictions removed. All motions should be executed slowly. The speed is about 3 feet in ten seconds. All sudden, quick or reflex-like motions should be omitted. Each exercise is repeated three times. The patient should practice from fifteen to thirty minutes, three times a day. Exercises:

1. Right arm up to side; down (shoulder level). 2. Right arm up front; down. 3. Right arm up back; down. 4. Right arm flex; extend. 5. Right hand open; shut. 6-10. Same for left arm. 11-15. Same for both arms together. 16. Right leg up to side; down. 17. Right leg up front; down. 18. Right leg up; back; down. 19. Right leg flex; extend. 20. Toes extend; flex. 21-25. Same for left leg. The form of the exercise may be varied from those given, but the important point is the slowness. One case proves little. A series of cases are now under treatment to be reported later. In one case, at least, the marked temporary relief from severe suffering has amply repaid for all the trouble to do the exercises.

18. The Control of the Nausea and Vomiting of Pregnancy by Intramuscular Injections of Corpus Luteum Extract.—John Cooke Hirst gave a preliminary report on this subject in *The Journal A. M. A.*, February 26, 1916, and now presents the result of further experience. He states that the corpus luteum of pregnancy constantly increases in size until it reaches its acme about the third month; from then on it is gradually absorbed. About this time the vomiting of pregnancy begins, during the period of nonabsorption, and disappears about the time the corpus luteum begins to decrease in size. Hirst considers this to be cause and effect, and works out his theory accordingly. Corpus luteum extract was administered intramuscularly in twenty-five cases, taken as they came, without regard to choice, and the treatment was successful in controlling the nausea and vomiting in twenty-one of the twenty-five. In four it proved a complete failure. Hirst reports the cases of his failures as offering a more interesting field. In the average case of nausea, in which it amounts only to discomfort, and the vomiting is limited to one or two morning attacks, the patient will usually respond to a dose of 1 c.c. every other day for five or six doses. Particularly is this true in the cases in which the nausea has begun to decline. In these cases the effect is almost immediate. In the more severe cases, when nausea is constant, and the patients are subject to frequent paroxysms of vomiting at any time during the day, the dose should be 1 c.c. daily for from twelve to fifteen doses. During the period of treatment the patient's activity should be curtailed, and as much rest as possible is essential. In the pernicious cases 1 c.c. was given twice daily, and more if necessary. These patients are confined to bed, of course. The doses suggested above are average only, and Hirst would not hesitate to give 2 or more cubic centimeters to a dose in severe cases in which a decision as to the value of the method must be reached without delay. The site of the injection is prepared by cleansing with tincture of green soap and alcohol. The deltoid is his preference. The syringe used is glass, and it and the needle are boiled, and allowed to cool before the extract is drawn up from the ampule. Alcohol is not a safe antiseptic to prepare a syringe for injection of any animal extract. The site of the injection is gently massaged for a minute or two after the needle is withdrawn. All injections are given deep, into the muscle, and *never* subcutaneously. The material used is in ampules, containing 1/3 grain of soluble corpus luteum powder in 16 minims of physiological salt solution saturated with chlorbutanol for its anesthetic effect. This amount is equivalent to 2½ grains of dessicated corpora lutea. The preparation is absolutely sterile. Not one of the patients aborted, which is contrary to the accepted theory. A sedative action is also produced in neurasthenic cases. Hirst's results encourage him sufficiently to wish that a more extended trial might be made by the profession to prove that his assertion is not unfounded.

The Lancet.

November 25, 1916.

1. A Consideration of Some of the Maladies in Which Splenectomy May Be Indicated. William J. Mayo.
2. An Address on the Medical Profession and the Campaign Against Venereal Disease. Otto May.
3. Illustrations of the Diagnostic Value of Agglutinin Determinations in Inoculated Individuals. E. W. Ainley Walker.
4. A Preliminary Note on Pieces of Clothing Embedded in War Wounds. R. J. Willan, with a Note by Watson Cheyne.
5. The Toxic Action of Dilute Pure Sodium Chloride Solutions on the Meningococcus. Cresswell Shearer.

2. An Address on the Medical Profession and the Campaign Against Venereal Disease.—Otto May goes into detail with reference to the final report of the Royal Commission in this important campaign. Broadly speaking, he states that the two chief objects to be attained are education of the general public in the significance of the diseases, their racial and economic effects, the importance of thorough and early treatment, and the dangers of neglect; the provision of wide facilities for the free diagnosis and treatment of the diseases by modern methods. He praises the work done in this respect by the higher-class newspapers of the Kingdom, and condemns the hypocritical attitude assumed by the lower-class papers. Knowledge of the diseases and their effects should be brought to the young, first by educating the parents, who in turn could present this knowledge sensibly to their children; again through the school teachers, and more through the family doctor. Through the Army authorities about 900,000 men in and out of the trenches have been addressed through lectures on this subject. Young women have been taught through lectures by the women doctors. The National Council for Combating Venereal Disease has opened up and controlled many of the above avenues for disseminating such knowledge. The idea of the Royal Commission is the establishment of free diagnosis and treatment through clinics, to be organized and carried on through the borough and county council; 75 per cent. of the cost to be borne by the treasury and 25 per cent. by the local authority. This order is called the "Emergency Order," and is compulsory. The principal requirements demanded of local schemes include: (*a*) Arrangements for enabling any practitioner in the given area to obtain at the cost of the council a report on any material he may submit from a patient suspected to be suffering from venereal disease. (*b*) Provision for the treatment at hospitals or other institutions of persons suffering from venereal disease. (*c*) Provision for the supply, under certain conditions, to medical practitioners of salvarsan or its substitutes. It is suggested that, for any given area, the medical officer of health should, in consultation with the medical staff of the available hospitals and pathological laboratories, organize such a scheme. Cards are to be given to patients both by private practitioners and in clinics, and on these cards prepared by the proper authorities are instructions with regard to the methods of contraction of syphilis and gonorrhea, and the care to be taken by the person having already contracted either disease. May states that Mott has informed him that he agrees with Fournier that in the case of syphilis permission may be given for marriage if four years have elapsed since the primary infection and the patient has been free from all symptoms for at least a year. As regards gonorrhea on the question of marriage Mr. Kidd states that doubtful cases are decided by a bacterial examination of three samples of the contents of the seminal glands, obtained by prostatic

massage. The presence or absence of gonoccoci decide the matter. May touches on "compulsory notification," and gives the reasons for and against it as conditions are at the present time.

4. **Pieces of Clothing Embedded in War Wounds.**—Willan decided after the Jutland naval battle that it would be a good thing if it could be known definitely if there was any foreign body, ordinarily nontransparent to *x*-rays, in the wound; and if the same foreign body could be treated with some antiseptic prior to its entry to the wound, and, if possible, that the same medium should be made to fulfill the two purposes. He found on his wards many cases of septic wounds containing pieces of clothing that were not shown up by *x*-ray. He experimented as follows: Strips of flannelette were dipped in the following solutions, respectively: pot. permanganate, 1:5000; hydrargyrum perchloridum, 1:1000; tinctura benzoin. co.; aqueous solution of borsal (equal parts of salicylic acid and boracic acid); and boracic acid, saturated solution. These strips were dried, laid in a row, and *x*-rayed. The strip soaked in tinct. benzoin. co. showed the densest shadow, while that treated with the borsal was next best in density. As a medium similar to borsal seemed to be the easiest one to work with he decided to experiment with a modification of this. Salicylic acid by itself is not very soluble in water. If, however, borax be added it is readily soluble. The solution used was: ℞ Boracic acid, gr. xv.; salicylic acid, gr. xv.; borax, gr. xxiv.; aq. ad ℥i. This solution is referred to hereafter as "B. S. B." The "B. S. B." solution proved to be impermeable to *x*-rays, was nonirritating to the tissues, contained some antiseptic properties, and was nonirritating to the wearer's skin. This raises the hope for Willan that the soldiers' and sailors' uniforms and clothing could be treated and worn just before battle, with the result of lessening septic conditions in wounds through clothing. Surgeon-General Cheyne adds a note to the effect that he has passed the report of Willan's work on to the Board of Scientific Studies, and hopes some satisfactory conclusion may be reached.

British Medical Journal.

November 25, 1916.

1. Excision of the Knee Joint as a Method of Treatment for Severe Infections. Andrew Fullerton.
2. Gunshot Injuries to the Knee Joint: Some Suggestions with Regard to Their Treatment. William Edmond, and Walter Weir Galbraith.
3. The Use of Atropine as an Aid to the Diagnosis of Typhoid and Paratyphoid A and B Infections. H. Fairley Marris.
4. The Whirlpool Bath. F. P. Nunneley.
5. Relief Staining for Bacteria and Spirochetes. T. H. C Benians.

1. **Excision of the Knee Joint as a Method of Treatment for Severe Infections.**—Andrew Fullerton, Consulting Surgeon, British Expeditionary Force, states that the treatment of these wounds of the knee joint produced in warfare has received a good deal of attention of late, and much progress has been made. Colonel Gray and his followers have done much to perfect what may be called the "closed" method. Excision of septic wounds into the joint and removal of foreign bodies, if present, followed by complete suture of the synovial membrane, is now the almost universal practice among British surgeons in France. The results of drainage of the joint by tubes as formerly were disastrous. The results of this old method have been seen during this war. Elder and Fullerton followed several cases of knee joint wounds and found in eleven, in which tubes had been introduced into the joint shortly after injury and before entering their ward, that three of the cases required amputation to save life, five were evacuated to England with total disorganization of the joint and sinuses still discharging, and three gave promise of slight movement. Similar results, or worse, have been common in the experience of other surgeons in France. Fullerton, after comparing the bad results obtained through the use of the tubes, ending in stiff joints, sinuses discharging for months, considers the excision method the one of choice. All obstacles to drainage have been removed, the risk of residual pockets remaining after ankylosis is reduced to a minimum, and it is an advantage with a stiff knee that the leg should be shorter than its fellow of the opposite side, as this allows the foot to swing free of the ground in walking without the toes hitching at every step. In an ordinary case the shortening is just under two inches and part of this can be restored, if necessary, by raising the heel of the boot on the affected side. While it is too early yet to speak of the final results, in the meantime they are concerned in the problem of combating sepsis and saving life. In the area to which Fullerton was attached they have operated on sixty-four knee joint cases according to the method he indorses, namely, excision. It will thus appear that the total mortality was six cases out of a grand total of sixty-four. Two of these followed excision alone, and four occurred after a subsequent amputation. From a study of these statistics, incomplete as they are, one can form a fair estimate of the risks of the operation. It must be remembered that a patient who will not submit to an amputation will, even when the additional risk is explained to him, submit to an operation which gives him a fair prospect of retaining his leg, even with a stiff knee. Fifty cases reached the stage of apparent safety as regards limb and life. Most of these have been evacuated to England, and the remainder are about to be transferred. Those operated on within a few days of the dispatch of this paper are not included, as they are obviously useless for statistical purposes.

2. **Gunshot Injuries to the Knee Joint: Treatment.**—Edmond and Galbraith divide these injuries into two classes: Those which get well without interference; those which are better amputated. Cases do not reach their hospital until forty-eight hours after injury. They have passed through a casualty clearing station, where they are cleaned up and splinted, before being evacuated to the base. The treatment they use is based upon the pathological report of the nature of the fluid in the joint and the *x*-ray. Temperature, pulse, or degree of pain mean little, as they are influenced by the mental condition of the patient, often due to his stress and fatigue. They record the types of wounds and treatment for each, such as aseptic without fracture, where excision is not done unless absolutely necessary. When foreign bodies are present, if small, they are left in, and two drachms of glycerin and formalin are injected and the joint watched. With large foreign bodies present, they are removed through a counter incision and the joint is irrigated with normal saline, the wound sutured, and the glycerin and formalin solution injected. The joint is immobilized on a splint in a position of slight flexion. In the septic cases with fracture the wound is freely excised, detached portions of bone are removed along with the missile, and the track is thoroughly cleansed and scraped. A salt pack is the ideal dressing, provided it comes in contact with all parts, otherwise a continuous eusol irrigation is used. In the acute or moderate cases with sepsis and severe fracture, the treatment amounts to an excision of the joint, but modified, so that the septic nature of the wound can be dealt with by irrigation with 0.5 per cent. eusol. To prevent retraction of the patellar flap they have devised a method of their own. The limb is finally splinted at the proper time in a Thomas

splint, with a ham splint posteriorly to support the knee.

Münchener medizinische Wochenschrift.

October 31, 1916.

Ultraviolet Rays from the Carbon Arc Light in Primary and Secondary Tuberculosis of the Skin and Mucosæ.—Spitzer, the director of the Lupus Sanatorium, Vienna, has been using a modification of the Reyn arc light bath with remarkable results. Cases which failed to improve under other forms of light treatment, as well as *x*-rays and radium, have been cured with this appartus. There is no longer any doubt that chemical rays from this source can exert a deep action. The total number of patients treated has been over 200, and the number of exposures was from 50 to 100, given daily. The amperage was 80 and the voltage 60. The earliest exposures are limited to 15 minutes, increased until at the fourth day they number 60 minutes, at which interval they remain. That lupus of the skin should be benefited is not strange, for that happens when the original Finsen-Reyn lamp is used. Far more impressive is the healing of all tuberculous lesions in the mouth, often in cachectic subjects who are perishing of inanition. Six cases which would have been classed as "inoperable" were readily cured. In several cases initial tuberculosis of the apex incidentally underwent resolution, a phenomenon not fully explained, but perhaps due to the general soborant effects of the light treatment.

Eye Lesions in Nephritis and Eclampsia.—Machwitz and Rosenberg conclude that neuroretinitis albuminuria stands in causal relationship with an injury of the renal function, which leads to azotemia. It is seen but seldom in acute, diffuse glomerulo nephritis, and in about one-half the cases of malignant renal sclerosis, and of chronic diffuse glomerulo-nephritis in the stage of insufficiency. It is, in fact, connected with lesion of the glomeruli. Its absence is of value in differentiating between benign and malignant sclerosis. When present it means that the patient cannot live over two years at the outside. The amaurosis of eclampsia is a part phenomenon of eclamptic uremia, in which the eye grounds are normal save for occasional edema of the papilla. The prognosis is good, and improvement usually follows lumbar puncture. In rare cases true neuroretinitis may coexist. The so-called pseudo-uremic ocular disturbances are seen only in kidney scleroses. As a rule, they are extremely fugacious, and are probably dependent on arteriosclerosis and vascular crisis of the cerebral arteries.

Colloidal Silver in Endocarditis.—Klewitz writes in confirmation of his earlier claims that colloidal silver is of benefit in this condition. There must be some selection of cases, for treatment by the intravenous route cannot come into general vogue because of the fear of untoward colateral effects in unskilled hands. The author regards this attitude as unfounded. The intravenous route is the only one to use, and the technique to be used is all important, as in all intravenous medication. In the treatment of endocarditis the author uses a 2 per cent. solution, 5 c.c. for the initial dose. This is followed by another of 8-10 c.c. As a rule, a chill and temperature rise occur in from 2 to 3 hours after injection. This reaction, although it may be severe, is soon over. Permanent damage has not yet been seen. Unless the reaction sets in the benefit from the remedy may not be noted. If the action of the silver is favorable there will be a lowering of temperature on the following day. There is usually a rise after 2 or 3 days, which indicates a second injection. In most cases more than two injections will be required—enough to cause the permanent disappearance of the fever. In rebellious cases larger and more frequent dosage may be required. Often 3 or 4 injections suffice, while as high as 12 have been required. The severity of these cases is associated with notable valvular lesions. In a small per cent. of cases the remedy disappoints us. At present it is the best, if not the only remedy we possess for endocarditis.

Le Bulletin Médical.

November 18, 1916.

Evolution of the Ureter After Nephrectomy.—Leguen regards this subject as a pertinent one. A woman patient from whom he had removed a tuberculous kidney, three years before, later sought aid for a large uterine fibroma. She had never suffered from the ureteral stump. The fibroma and appendix having been removed, search was made for the ureter through a button hole opening in the peritoneum. It was located near the iliac vessels, and when pulled through the button hole was found to be a fibrous cord. The opening was sutured and the operation completed. A piece of this cord was amputated and examined under the microscope. There was no lumen and no suggestion of tuberculosis. The author then practised ureteral catheterization on a number of nephrectomized patients, with the same result, *i.e.*, the ureter proved impervious in a certain number of cases. He then caused an intensive research to be made, literary and clinical, and found that at first the canal was permeable and contractile for a certain period. To the cystoscope both orifices appeared the same; on the operated side contraction and dilatation occurred, just as if the canal was functioning. This activity persisted for several years, and only very gradually was the mutilated ureter seen to slow up in its contractions. When this point was reached a catheter would no longer pass. This gradual process the author regards as physiological. External fistulæ after nephrectomy seldom occurs, and when present tends to close spontaneously. If this does not occur the entire fistulous tract should be excised. In considerable detail the history of a case of post-nephrectomic ureteritis is given. Pus accumulated and was discharged into the bladder. Resorption fever indicated intervention, and lumbar drainage was established after a very difficult operation, which the author regards now as a technical error. Drainage was sufficient at first, but later proved defective, and retention resulted. As a result of the original ureteritis, a periureteritis had formed, with much thickening. In a similar case the treatment should be extirpation of the entire thickened canal. The patient in question had been nephrectomized for a pyonephrosis, and the ureter had been secondarily infected. Originally it was the custom to take out the ureter along with the kidney. This was the author's custom in 1897-8. The practice was abandoned because the conservative policy seemed to give satisfactory results, the canal being sutured or obliterated by one or another procedure.

La Presse Médicale.

November 16, 1916.

Pathogeny of Cholera.—Sanarelli of Rome has been studying experimental cholera in animals. The old belief is that the vibrio of the disease can traverse the stomach unharmed, and set up the disease in the intestine, but this is certainly not the case in all creatures, for in the rabbit the strongly acid gastric juice destroys the microorganisms readily. It becomes apparent that the route of the vibrio from mouth to intestine is through the general circulation. The point

of election is in the vicinity of the ileocecal valve. This is true not only of the cholera vibrio, but of other intestinal flora, as well, and it is not unlikely that Eberth's bacillus reaches the ileum through the blood. In nursing rabbits the author has caused typical cholera by injecting the vibrio into the tissues and veins, and into a loop of small intestine. Proliferation occurs when the organisms have reached the intestine and the lymphatic absorbents are invaded. If the mother rabbit has been immunized against cholera all experiments on the nurslings give negative results. The presence of intestinal flora, notably the colon bacillus, precipitates and augments the symptoms of cholera, and the colitoxin has the same effect. Otherwise stated, the presence in the intestine of the *B. coli* in large quantities weakens their resistance to the cholera vibrio. But long naturalization of the *B. coli* in the intestine results in some degree of immunity towards injections of this bacillus in the blood. The author's researches in this field have only just begun.

Malignant Infection of War Wounds by Anaerobes.—Lardennois and Baumel emphasize the great role of muscle injury in the genesis of all anaerobic infection. Especially in deep, narrow wounds of muscle is infection of this sort to be feared. There are four different clinical expressions, viz.: local, malignant, tumefaction, and edema, simple local gangrene, localized gaseous gangrene, and diffuse gaseous gangrene. From 77 per cent. to 93 per cent. of these infections are due to shell fragments. The lower extremities are far more frequently involved (78.5 per cent. in the author's cases), and the mortality far higher (95 per cent. in the author's material). In about 25 per cent. the wound was complicated with fracture of the limb. Two germs are responsible for the existence of these infections, viz., the septic vibrio and the *Bacillus perfringens;* but numerous other bacterial flora coexist. In malignant edema there is no blood infection, but simply a toxemia. The gas appears to be due to the digestion of the muscle, including, of course, its glycogen. The term edema is not the same as tumefaction, for the latter occurs in the absence of the former. Simple tumefaction is identical with gas phlegmon, a term which the authors repudiated. The entire muscle may be greatly enlarged from interstitial gas. The infiltration develops rapidly, and is a danger signal. It has been taken for hematoma of the muscle. This condition passes on to gas gangrene, but at the outset little free gas is evident and no odor is present. Edema, when present, is located between the muscles and in the cellular tissue, and may also be associated with bronze erysipelas. The treatment is centered in early incision and removal of all infected tissue.

Correspondenz-Blatt für Schweizer Aerzte.

November 25, 1916.

Swiss Ichthyol.—Merian first discusses the original ichthyol source of the Tyrol. Its native name is rock oil, and aside from the Tyrolean supply this oil occurs in several adjacent regions, including Switzerland—a fact not generally or long known. The author describes minutely the region where the substance is to be found, which is the Tre Fontane, near Meride. Here there are masses of black bituminous slate, in the midst of which are found fossil remains of fishes and saurians. When the entire material is dry distilled a sulphurated mineral oil is obtained. The various species or genera of fishes are readily identified, and include the great fish-lizard, or ichthyosaurus. The oil obtained is brownish, with a slight greenish fluorescence, and contains from 6 per cent. to 7 per cent. of sulphur organically united. The new substance (which is at present marketed as a proprietary with an artificial name) has been tested freely in all suitable conditions and forms of exhibition. It costs only half as much as original ichthyol and its congeners, and has several minor advantages. The author claims that it gives satisfactory results, but does not claim that it is the equal of the ichthyol of commerce. The natural supply seems unlimited, as it is found in the mining galleries and tunnels from which the bituminous slate is obtained. The slate masses alternate regularly with cretaceous dolomitic plates.

Myasthenia Gravis Pseudoparalytica.—Krähenbuhl relates a case of this rare affection. The female patient was 31, and had had several attacks of articular rheumatism, the last at the age of 20. At this period myasthenia gravis first announced itself as diplopia toward evening, with slight ptosis in the left eye. These symptoms improved under treatment, but eight days after hospital discharge they reappeared. She then improved under potassic iodide and began to learn nursing. The following year she began to suffer from progressive sense of fatigue, with leg ache and backache, and later dysphagia and general weakness. The corners of her mouth no longer move when she laughs. She was unable to climb stairs at a single effort, and her knees often buckled under her. She was interned five months, and improved so much under strychnin hypodermics that she was looked on as practically cured. She resumed her domestic life, and remained well for eighteen months. The symptoms reappared, but again yielded to treatment. When 27 she suffered a new recurrence with suffocative attacks. She was now interned and treated with rest, heliotherapy, arsenic, and galvanization. After five months she was much improved, and afterward always favored herself. She became worse, and at this time was first seen by the author. She looked tired, and her lower jaw sagged. There was bilateral ptosis, and she was unable to open her eyes. There was nystagmus and lacrymation. She was unable to wrinkle her forehead or pout her lips, and was hardly equal to raising her upper lip. She had speech defects, and chewing was greatly impaired. Swallowing led quickly to exhaustion, but with rapid recovery. The soft palate hung loose, and fluid food often escaped through the nose. The hands and arms dropped from fatigue after slight use, while the legs were badly involved. She could walk but a few steps, and her gait showed great caution. The myasthenic reaction was positive. This disease has long been known and has been interpreted in various ways. In recent years it has been regarded as a syndrome which occurs in Addison's disease and leukemia, as well as uncomplicated. From another viewpoint it can hardly be distinguished from bulbar paralysis. At present it is best regarded as neurogenic, and some evidence of an anatomical substratum has been found in the nervous system.

El Siglo Médico.

November 18, 1916.

Two Cases of Lathyrism.—Dr. Fernandez Sanz states that lathyrism is expressed clinically by spastic paraplegia, while pathologically it is a food intoxication due to eating the seeds or legumes of various species of the genus Lathyrus, which belongs to the pulses or leguminosæ. The disease is not rare in Spain, and the author reports cases in two brothers, aged respectively 26 and 19 years, who had always been healthy. In December, 1915, they left home to work in an olive oil mill, living chiefly on cakes made from the flour of the

chick pea. Not until March did they notice simultaneously a sluggishness in the legs, due to stiffness. The condition became progressively worse, contractures developed, and the men could no longer work. Aside from this affection of the lower extremities the health was unimpaired. In April they returned home, and under changed diet and environment the condition was arrested. The author saw them and at the request of authorities made a complete study of the cases. The men were in perfect health, aside from paraplegic symptoms. Urine and feces were voided laboriously by one brother, while the other complained of priapism. There was a spastic paresis of the lower extremities, muscular hypertonia, contractures in extension, increased tendon reflexes—especially the patellar—foot clonus, Babinski's sign, typical spastic gait. The younger brother could walk only with two canes, and could not climb stairs, while the older used a single cane. There were absolutely no distinctively nervous symptoms aside from the preceding. All the ordinary causes of spastic paraplegia could readily be eliminated, for this affection is nearly always symptomatic. By exclusion the diagnosis of lathyrism was reached, and was clinched by the history of the chick pea diet. Some predisposition must have been present, since both brothers were attacked in the same time and manner. Typical lathyrism differs from the preceding cases in appearing brusquely, with general disorders, fever, and lumbar pains. In order to fix the identity of the poisonous pulse the author identifies it with the Licia sativa, or common vetch, and the English chick-pea, or chickling-vetch. How such bland substances can produce alimentary intoxication is not understood. Many people eat of them with impunity, and the toxicity may proceed from some secondary modification. The disease has never been produced in animals, and autopsies on human beings have thrown no light on the mystery. The author does not mention familial spastic paraplegia under differentiation.

La Presse Médicale.

November 23, 1916.

Case of Chronic Giant Urticaria: Cure by Antianaphylaxis.—Pagniez and Pasteur Vailory-Radot report the results of a physiopathological and therapeutic study of a case of giant urticaria, and consider in this connection anaphylaxis and antianaphylaxis. Urticaria begins as a vasculohematic crisis, and the authors followed up the case, arriving at important prophylactic conclusions which have to do with anaphylaxis. The patient was a healthy man of 29, and the crisis appeared suddenly in the form of angioneurotic edema, later passing into that of giant urticaria. The lesions were of the wandering type, appearing in succession in various localities on the surface. Individual lesions persisted for several hours. Changes in the diet did not appear to exert any influence on the progress of the disease. Pressure on any point in the integument, if sufficiently prolonged, produced a great wheal of urticaria factitia. Hence patient was unable to carry burdens on his shoulder. Scratching also produced hives. The malady became chronic in its duration, although its expression remained acute. The patient, highly intelligent, feared a fatal attack of edema of the glottis. Only one practical lesson had been learned, to wit, that fasting for three days caused a cessation in the outbreak. Of various foods tried after starvation, milk and eggs were notably bad for the disease, while both the mixed and vegetarian regimens evoked a medium degree of lesion. Under a pure carbohydrate diet the lesions ceased to appear. Hence, protein, whether vegetable or animal, could provoke the eruption, the latter form being the most active. The patient was placed on a diet of bread, potatoes, bananas, vichy and wine, in order that a research for anaphylactic phenomena might be instituted. In one-half hour after the first meal pruritus first appeared; in six hours the leucocytes had dropped from 5600 to 2800, while at the same time there was a notable drop in the blood pressure. At the eighth hour the eruption of wheals appeared, although in the meantime the leucocyte count and blood pressure had become normal. The patient was now made to fast three days, and tried out again with animal albumin—eggs and milk. In one hour after the repast generalized pruritus developed. Several hours passed, and only a few small hives had appeared; then simultaneously the leucocyte count and blood pressure began to fall, and the urticarial crisis promptly followed, pruritus became intolerable, followed in twenty minutes by the appearance of large wheals. It is evident that a blood crisis (hemoclasic crisis of Widal) had preceded the skin crisis, as the giant wheals never appeared unless preceded by both these crises. Meanwhile, no progress toward a cure had been made. Treatment of the anaphylactic factor by calcium chloride had long ago been proved valueless. Injections of adrenalin during a severe paroxysm were able to relieve the pruritus, and favorably influenced the wheals. Blood was at once withdrawn, and was found to give no precipitate with egg albumin, although the blood before injection had given a notable one. However, no marked effect could be obtained on the course of the disease. Injection of the patient's own serum distinctly aggravated the trouble. An attempt at antianaphylaxis was now made. As injections were not practicable, a similar procedure per os was carried out. The patient was first fed very small rations of the very substances which had caused the anaphylaxis, viz., bread, 2 gm.; boiled potato, 6 gm. One hour later he received 200 gm. boiled potato, 100 gm. haricot beans, two bananas, 200 gm. bread, 250 c.c. wine. This scheme worked beautifully, and no urticarial crisis followed the meal. As far as known this idea, the author claims, is one which is quite new in therapeutics; a minute quantity of the offending food acting to protect the organism from the anaphylactic shock which follows the ingestion of large amounts.

Axillary Temperatures.—Fürbringer states that a wet armpit usually gives a higher reading than a dry one, the difference averaging two-thirds of a degree. It is, however, not practicable to dry the armpit, for sweating is resumed during the sojourn of the thermometer in this locality.—*Zentralblatt für Gynäkologie.*

Dietary Study—British Beef Stew.—Aulde gives the formula for the 6,000,000 cans of beef stew said to have been ordered for the British Army. Each man is probably entitled to a can a day. The weight is 13 ounces, divided up as follows: Cooked beef, 6 ounces; rice, 4 ounces; beans, 1 ounce; onions, 1 ounce; carrots, 1 ounce. The total amount of calories is 922. The beef must be quite fat, for the per cent. of the latter is somewhat in excess of the protein. The carbohydrate content is small, but of course there is no attempt at a balanced ration. If we reckon the latter at protein 50, fat 50, carbohydrate 200, the stew contains protein 50, fat 60, carbohydrate 37. It is very easy, however, to balance this ration with bread and potatoes, one or both. The chief mineral content is calcium and magnesium oxides, each about 1½ grains per can. Of the 363 grams of stew 294 are utilizable.—*The Medical Times.*

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

One Hundred and Eleventh Annual Meeting, Held November 27, 1916.

THE PRESIDENT, DR. FREDERICK E. SONDERN, IN THE CHAIR.

Election of Officers.—The following officers were elected to serve for the year 1917: *President*, Dr. J. Bentley Squier; *First Vice-President*, Dr. Charles H. Peck; *Second Vice-President*, Dr. Ludwig Kast; *Secretary*, Dr. Daniel S. Dougherty; *Assistant Secretary*, Dr. J. Milton Mabbott; *Treasurer*, Dr. Frederic E. Sondern; *Censors* (to serve two years), Drs. William S. Gottheil, Ward B. Hoag, and Alexander Lyle.

Report of the Counsel.—Mr. GEORGE W. WHITESIDE presented this report. He stated that the efforts of the counsel directed to the activities of quacks operating the so-called medical offices and institutes which were raided during the spring of 1915, had, during the current year, discontinued their most objectionable features and had conducted their places in a manner not only less offensive to public decency, but more equitable to the unfortunates who were allured to these places by the magnetic advertisements circulated by means of the press. The complaints against these places during the past year had been very few indeed, and where a victim had presented a just cause the counsel had been enabled to be of assistance to him or her. The counsel felt confident that the fear of the law was still in the hearts and minds of these men and while it was not possible under our present law to drive them out entirely, still, because of the efforts of the society, the counsel was of the opinion that their practices would not be so vicious in the future as they were a year ago. The so-called museums of anatomy, successfully raided and closed up during the spring of 1915, had not reopened and today the county was practically free from this form of indecency. Mr. Whiteside then presented a detailed account of the prosecutions against individuals alleged to have been practising medicine illegally and also a record of the cases now pending in the Court of Special Sessions. He said that the complaints received during the current year had not been quite so numerous as those received during the previous year. This was due to the fact, undoubtedly, that the records of the prosecutions established during the fiscal year of 1915 had served, and still continued to serve, as a deterrent to those inclined to disregard the laws regulating the practice of medicine. They had received during the year, however, 122 complaints, which were classified and presented. Among the decisions under the medical law there had been none handed down in this State which affected the interests of society so much as the decision of the Court of Appeals in the case of People *versus* Willis Vernon Cole. The court had squarely held that the practice of healing by Christian Scientists was a religious tenet of a church, and, therefore, Christian Science healers were exempted from prosecution so long as that provision of the statute remained. Counsel stated that he had given this matter considerable thought and attention and had come to the conclusion that if the public was to be protected, some drastic preventive measure ought to be taken that should not be designed or interpreted as interfering with the religious liberty of any part of the community, but which should safeguard the public health of the community by strengthening the arm of the law in dealing with those who would improperly, for personal gain, take advantage of the situation which the Cole decision had created. Under the present law a license to practise medicine might be procured either by following laboriously the necessary course in elementary study—devoting years of one's life to the preparation—or, in an instant, by embracing and professing the tenets of any church or faith the creed of which provided for the healing of human disease. Needless to say, a person bent on perpetrating a fraud upon the public would not choose the laborious and lengthy method of procuring his right to practice, but would find it more convenient and possibly as lucrative to suffer a sudden conversion to some form of religion which permitted him, within the law, for money to undertake the healing art. A proper and vigorous appeal to the Legislature must be made to prevent such an absurd and ridiculous perpetration of fraud; this should be done with due respect and complete recognition of the rights of all classes who enjoyed and had complete religious liberty. Another case of interest was the prosecution that was being conducted against the Gatlin Institute of New York, Inc. The charge alleged in the prosecution was that said institute, as a corporation, was practising medicine and that its manager and organizer was aiding and abetting the corporation in its illegal practice. They had in this State at the present time decisions to the effect that a corporation might not advertise to practice medicine unless it was a corporation, such as a hospital, organized under the membership Corporation Laws of New York State. The Court of Special Sessions acquitted the institute and subsequently action was brought against the society for malicious prosecution. The counsel had appealed from a judgment in this matter and expected to argue the case for the society before the Appellate Division during the current month. The cardinal question was "Might a corporation practise medicine, as a corporation, by hiring registered physicians to make the diagnosis and prescribe the treatment?" It was the hope of the counsel that the Appellate Division, in rendering its answer to this question, would make its decision so full that the necessity for raising this question might never again arise in the courts of this State. Pursuant to the instructions of the Comitia Minora, counsel drafted a proposed bill for the purpose of dealing with the evil of venereal disease, abortion, and similar advertising by registered practitioners. This bill had been approved by the Public Health Committee of the County Medical Society and was thereafter approved by the Comitia Minora and forwarded to the Public Health Committee of the Medical Society of the State of New York for its consideration.

Report of the Committee on Public Health.—Dr. FRANCIS CARTER WOOD presented this report, in which he stated that this committee had received a copy of a letter sent to the president of the society asking the society to take action on the following resolutions: "*Whereas*, it has been proven that alcohol has a pernicious and injurious effect on the public health of the country in that it lowers the resistance of the individual to disease, thereby disposing to tuberculosis and other diseases, and, *Whereas*, it is one of the chief contributing factors to poverty, misery, and crime, *Therefore*, We, the New York County Medical Society, place ourselves on record as opposed to its use as a beverage and strongly recommend its use only on medical prescription." The Public Health Committee recommended that the society express its approval of the campaign of the Department of Health of New York City against the widespread use of alcoholic beverages. Mr. Whiteside, in the course of his work as counsel of the society, had found the need of further restriction of advertising on the part of quacks and had proposed the following amendment to Section 170 of the Public Health Law, making it read as follows: "The Regents of the State of New York may censure, suspend from practice, or revoke the license of a practitioner of medicine or annul his registration (or do both) in any of the following cases: . . . (*e*) One who advertises to practise medicine under a name or designation other than his own; or makes, publishes, disseminates, circulates, or places before the public, or causes either directly or indirectly, to be made, published, disseminated, circulated, or placed before the public in this State, in a newspaper or other publication, or in the form of a book, notice, handbill, postbill, circular, or pamphlet, or advertisement of any sort, regarding service, treatment, care, or medicine, offered to the public, which advertisement contains any assertion or misrepresentation of fact which is untrue, deceptive, or misleading, or which offends public decency or morals; (*f*) Who advertises that he can or will restore manly vigor, lost manhood, lost power, or cure stricture, gonorrhea, tuberculosis, or cancer; or (*g*) who advertises any treatment for a woman in a manner that is calculated to lead another to believe that such a treatment refers to abortion, by whatever name such treatment is called or described." The Public Health Committee, after very careful consideration, approved of these amendments.

The above reports were accepted and referred to the Board of Censors.

Report of the Legislative Committee.—Dr. SAMUEL J. KOPETZKY presented this report. He stated that during the past year they had had before them and acted on about eighty-six proposed bills. Of these twenty-three were of such a character that no action was rec-

ommended, thirty-five were approved for reasons specified, and twenty-eight were disapproved. As in previous years many attempts had been made through proposed legislative enactments to threaten the public health by permitting various cults and "isms" to practise medicine. During the year just past no measures of this nature ever reached the floor of the Legislature; they were all killed in committee. There was passed at the last session of the Legislature a bill technically known as "An Enactment Law," which provided authority to boards of aldermen in the larger cities to issue licenses to massage parlors and the practitioners of massage, but also permitted the issuance of a license to all others who practised cures without resort to drugs, as, for instance, osteopaths, naturopaths, chiropractors, etc.; and the board of aldermen were to delegate to the commissioner of police, the commissioner of licenses, and the commissioner of health the power to formulate the qualifications of those whom the city was to license. This measure was defeated. Heretofore, the profession had at most expended its energy through the activities of its various committees on legislation in opposing proposed bills which threatened public health. During the past year their efforts had taken an additional direction and they had begun to engage in constructive legislation. For some years the Regents had been at work on legislation that would better control the practice of medicine so as to protect the lawful practitioner and to discipline the unlawful one. For the last three years the measures submitted to the Legislature had been unsatisfactory to the profession and had been successfully combated. Last year the bill was finally withdrawn with the understanding that the profession could voice its opinions regarding it and have its own will written into the proposed bill. The chairman of this committee therefore submitted the following: 'That the power to issue and to grant the privilege to practise medicine, their preliminary standards having first been met, resided in the Regents of the State of New York, and under the present law they also had the power to revoke the right to practise. The definition of unprofessional conduct, which the Regents proposed as a cause for revocation of the right should not include questions of ethics. Guilt of a breach of ethics did not constitute a breach of law and the medical profession did not deem it advisable to enact legislation making breaches of ethics a misdemeanor or other degree of crime. Finally the contention was submitted of the right of the medical profession to be judged on medical questions, not by laymen, but by medical men, reserving to the members of the profession without prejudice final resort to courts of law for the review of all proceedings under the proposed act. The machinery to make these contentions effective was suggested in the form of courts of honor composed of medical men to hear, to take testimony, and to make recommendations to the Regents in any given case of unprofessional conduct or other act on the part of licensed doctors of medicine. It was the opinion of the chairman of the Legislative Committee that such a law when introduced should have the support of the medical profession. It would raise the standards of the profession, place the discipline of their brothers in their own hands, and would do much toward regulating the practice of medicine, because the law would embrace the whole profession, whereas, the State Society and its constituent bodies, the county societies, could reach, discipline, and control only their own membership.

In the matter of the Compulsory Health Insurance Bill, which was introduced into the Legislature last year, there was recorded their effective opposition. Since the defeat of this bill through cooperation of the special committee appointed by resolution of this society under the chairmanship of Dr. Fisher, constructive work had been done on this bill. An outline of the postulates written into this bill were as follows: "1. The profession shall be represented on the administration board of the public health insurance department. 2. On all subdivisions of the administration department there shall be medical representation. 3. All legally qualified practitioners shall be eligible to serve on panels, namely, to serve with pay to treat the sick coming under the act. 4. No physician shall have on his list more than 1000 persons or more than 500 families. 5. There shall be a reasonably free choice of physicians by the sick. 6. The Department of Health of the State, the city, and other geographical subdivisions, shall be represented on the administrative boards in an advisory capacity so as to safeguard the public health. 7. Supervision over the sick coming under this act, the detection of malingering, the issuance of certificates entitling the recipient to cash benefits shall be left to salaried physicians employed by the carriers of the insurance. 8. There shall be a complete separation of the two medical departments, the one which treats the sick and the other which looks after the interests of the carriers, the funds, and the association. 9. Salaried physicians shall be protected in their positions by extending the civil service laws to cover their positions. 10. Provision shall be made so that the panel physicians do not bid against one another for these jobs, but rather have the law so drawn that group contracts are favored. 11. All disputes arising under the administration of the Insurance Act, between physician and physician, physician and patient, physician and carrier, as well as in addition all other matters, including fees for service rendered, shall be heard, tried, and decided by bodies of physicians rather than laymen. 12. The various medical committees and boards upon which physicians serve shall be representative and measures on them shall be obtained by vote of the physicians themselves." It was the sense of this committee that the measure as it would be presented to the Legislature this year would amply protect the public health, and that its medical provisions would be found on the whole satisfactory. Therefore the chairman recommended that the County Society take no action either for or against compulsory health insurance as a measure, but he recommended that the proposed draft of the medical sections of this bill as drawn receive the support of the society. In closing, Dr. Kopetzky recommended that, as the present legislative committee represented only a part of those legally qualified to practise medicine, the formation of a Commission on Medical Legislation, to which all organized medical societies could send duly elected or appointed representatives, which should create the machinery to keep track of the proposed legislation, ascertain the will of the profession, and study and report to the medical societies represented, should be established. It should in no sense become a medical lobby.

Report of the Special Committee on Compulsory Health Insurance. — Dr. EDWARD D. FISHER reported that this committee had also drawn up a set of recommendations. These contained in a briefer form practically the same postulates that Dr. Kopetzky had embodied in his report.

The report of the legislative committee was accepted in so far as it had reference to past activities; the portion relating to the compulsory health insurance was not accepted. The report of the special committee on compulsory health insurance was accepted.

Report of the Milk Commission.—Dr. ROWLAND G. FREEMAN presented this report, in which he said that the work of the milk commission had been carried on on the same basis as usual. They certified at the present time more than 17,000 quarts of milk daily. The milk was produced on thirty-three different farms, all of which were visited by an inspector, who had made 242 visits during the year. They were now inspecting for three other milk commissions, the Milk Commission of the Medical Society of Westchester, the Milk Commission of the Medical Society of the Bronx, and the Hudson County Medical Milk Commission. The use of the Widal test to exclude typhoid fever carriers among employees had been continued, 653 employees having been examined. These were practically all the employees on the farms producing certified milk. The commission had undertaken to investigate the relative advantage of goats' milk in comparison with cows' milk. Ten goats were now kept in Central Park, and the milk was sent to two institutions that cared for babies, where a careful comparison of the results obtained was being made.

Motion Photographs as Adjuvants to the Teaching of Surgery.—Dr. JOHN A. WYETH made this presentation. (*See* MEDICAL RECORD, Nov. 18, 1916, page 919.)

The Technique of Painless Radical Cure of Hernia Under Local Anesthesia.—Dr. JOHN A. BODINE gave a motion picture demonstration of the technique of this operation, which he prefaced by commenting on the frequency of hernia and its importance as a factor lowering the capacity of the individual. He stated that in the examination of men for military service it was found that the presence of an inguinal hernia detracted from 15 to 50 per cent. from the normal

capacity of the individual. Furthermore, there was a certain death rate connected with it owing to the possibility of strangulation. Out of every ten men having hernia, it might safely be estimated that there were nine who preferred to wear a truss to one who chose to submit to an operation. Of all operations there was none so well established as that for the radical cure of inguinal hernia. It was never necessary to give a general anesthetic for this operation. The operation could be performed under local anesthesia with as little pain and inconvenience to the patient as that of filling a tooth. The local anesthetic which he used was 0.5 per cent. novocaine. If one used cocaine the operation could be proceeded with almost immediately, but after the injection of novocaine one should wait at least five minutes before making the incision. A feature of special importance in the technique was the finding of the ilioinguinal nerve and blocking it by the injection of the local anesthetic before it divided into its branches. This nerve should be sought in the upper angle of the incision and a deep incision should not be made in the lower portion of the incision until this nerve was blocked. Dr. Bodine said he could not understand why this operation was not more generally taught and practised among surgeons, since it was so uniformly successful and required no special skill; even the house surgeons were permitted to perform it.

Dr. JOHN A. WYETH said that this operation was so safe and so simple that it had been performed over 3,000 times with only one death, and this one not due directly to the operation. It might be considered absolutely free from danger.

Dr. J. HERMAN BRANTH said that he wished to say a few words, as he had been on the sharp end of the knife when Dr. Bodine had been on the other end. He had been operated on for a direct inguinal hernia last spring, from which he had suffered for about two years, and by which he had been almost entirely invalided, though well otherwise. He was past 75 years of age and had had an attack of dilatation of the heart. The operation for hernia as Dr. Bodine performed it was not painful to the patient. After the injection of the novocaine the patient could feel the touch of the instruments, but nothing more save a general hot burning sensation over the whole surface. About eight hours after the operation followed a period of severe pain, which, under ordinary circumstances, could be assuaged by morphine, but as he had an idiosyncrasy against morphine, castor oil, strong alcoholics, and cocaine he had to stand this pain. Except for extreme tenderness of the region he was today well. Hernia should be classed as a major operation. There were no two cases exactly alike, and the surgeon's ingenuity and resourcefulness were taxed in every case. As there was no novocaine in the market at the present time, the speaker said he used a formula, 1/3 cocaine hydrochlorate and 2/3 eucaine B. in a large quantity of water. He took only one or two small crystals like granulated sugar and twice as much eucaine in a wineglass full of water. He had removed a large cancerous tumor from the neck some time ago, one that interfered with deglutition and respiration, and had produced conditions under which the patient's life could not last more than a few days. In this case he used 1/250 gr. of cocaine and 1/125 gr. of eucaine. The operation lasted over an hour. The patient got up from the table and walked to his room, returning home the following day. He lived two months with much comfort and died of general cancerous cachexia and cancerous invasion of the carotid artery.

The Approach and Entrance to the Kidney for the Removal of Calculi.—Dr. CHARLES H. CHETWOOD exhibited motion pictures illustrating this subject. He described the technique in three stages: the first, the approach through the skin; the second, the mobilization of the kidney, and, third, the operative interference proper. For the exposure of the kidney either the transverse or the perpendicular incision, as might appear most convenient, might be used. If on inspection removal of the kidney was indicated, it might be necessary to enlarge either one of these incisions or to combine both of them. The mobilization of the kidney was the most important step; sometimes this was a very simple matter, as when one found a prolapsed kidney, while at other times it was a perplexing and difficult matter, as in cases of tuberculosis of the kidney or numerous calculi. In the case which was chosen for demonstration it was found after mobilization that numerous calculi were present and removal was indicated. As the preliminary tests of the function of the other kidney had been made and its secretory capacity was normal a pyelithotomy and a nephrotomy were performed. The extirpated kidney confirmed the diagnosis of dilated pelvis that had been made by collargol injections, and also the wisdom of removing the kidney since there still remained a number of calculi.

Operation for Repair of Rectocele.—Dr. THOMAS H. MORGAN demonstrated this operation by means of motion pictures. He stated that there was nothing new in the technique of the operation except the disposal of the flap. There was no method by which one could see his faults in operating equal to the moving picture. In reviewing the technique of this operation, Dr. Morgan called special attention to the dissection of the pubo-coccygeal muscles, which he said one should reach by dissecting high up and never in the direction of the pubes; in order to find these muscles he must go backward, outward and downward and should not dissect the deeper part of these muscles from their sheath. In suturing the perineum he worked from the back forward, leaving the last stitch open and catching the vaginal flap in this last suture; he then removed redundant tissue. He found kangaroo tendon, No. 2, most satisfactory for suturing in these operations.

NEUROLOGICAL SOCIETY OF NEW YORK.

Three Hundred and Fiftieth Meeting of the New York Neurological Society, Held in Conjunction with the Neurological Section of the New York Academy of Medicine, Tuesday, November 14, 1916.

PRESIDENTS, DRS. WILLIAM M. LESZYNSKY AND FOSTER KENNEDY.

Idiopathic Epilepsy.—Dr. JOHN T. MACCURDY read this paper, which he said was not an argument in favor of epilepsy being a disease of ultimate psychic origin, but a report of some mental phenomena which he thought to be of diagnostic value. A striking clinical experience led him to formulate the hypothesis that epilepsy was a disease characterized by a functional instability of consciousness and control of muscles wherein both were lost in crises and that the excitement of the aura, when present, might contribute such a crisis. To test this view, the auras of idiopathic epileptics were studied. These studies revealed the following: (1) That no primary motor aura existed in idiopathic epilepsy, all movements being apparent reactions to primary sensations; (2) that every aura was accompanied by a painful effect, usually fear, directed against the convulsion which was felt to be impending; (3) that auras always occurred apart from convulsions as well as preceding them; (4) that the patient always felt that if he could distract his mind the fit would be averted, for which conviction there was good objective evidence; (5) that the symptomatology of auras corresponded closely to that of neuroses and psychoses, occurring independently of epilepsy, so that they might not be epileptic symptoms in essence, but concurrent attacks that were psychologically determined. In general one could say that the attitude of the idiopathic epileptic toward his aura was subjective and rather hypochondriacal. The auras of pure Jacksonian cases, on the other hand, were often primarily motor; the sensory component was not so prominent and the attitude of the patient was objective rather than subjective. The patient, as a rule, felt no fear, and never believed that disregarding his symptoms would ward off the attack. On the contrary, he thought that a concentration of attention on the part affected was more apt to abort the attack. This difference of attitude should be a valuable point in diagnosis when neurological signs were absent, particularly if operation be thought of. Some histories seemed to show that a case might begin as Jacksonian epilepsy and develop the idiopathic disease as the former was being recovered from. Such cases showed a change in auras from the objective to the subjective type. One could probably not hope to cure epilepsy by the removal of the aura, for a patient might substitute another if one disappeared for any reason. Therapy, in so far as it was mental, should be directed toward relieving the stress, either internal or external, which tended toward creating crises.

Dr. L. PIERCE CLARK said that he had looked over his

own cases in the light of Dr. MacCurdy's contention as to the significance of the aura in idiopathic and organic epilepsy, and had found it in the main to be true. Unfortunately, but a third of the cases of epilepsy had any sort of aura upon which one could place a differential dependence. He was rather inclined to consider the aura as really a part of the attack, and not as a separate phenomenon. He thought there was some reason to think the fear element in idiopathic cases was due to the automatic conscious repression of the inherent and underlying demands for the psychic expression of the unconscious, and thus a riddance from the type of stress and irritation present in the individual's life, thereby producing fear as a result of such conflict. It might also be true that the fear element, not being present in the Jacksonian cases, was due to the gradual loss of consciousness in which the individual had an opportunity to adjust himself to all the possibilities of an attack and its accidental consequences. The fear in idiopathic cases might be due to the sudden threatening of the loss of consciousness. It was interesting to note that probably the great value of mental distraction in doing away with the fear, which had been universally practised since ancient times, had some good justification on psychic grounds. He called attention to the fact that many writers, such as Gowers, had indicated that hemiplegic epilepsies had a tendency later on in life to take on the clinical sequence of ordinary idiopathic attacks. It was interesting to note, though, in such cases finally showing idiopathic attacks, that the fear element was not added in their aura. He would not be inclined to agree that the consequential epileptic phenomena, after the focal lesion of the brain had been removed, should be considered as a neurosis, but rather idiopathic epilepsy initiated by a traumatic factor. He thought that Dr. MacCurdy's point of not depending upon certain types of convulsive movements for operations on the cortex was quite sound; it indicated clearly that we should still depend upon paralytic phenomena and alterations in the reflexes as diagnostic criteria for any focal operation on the brain in which epileptic attacks were to be treated surgically.

The Management of the Recent Epidemic of Poliomyelitis in New York City, from the Neurologist's Viewpoint.—Dr. WILLIAM M. LESZYNSKY stated that a meeting of the Council of the New York Neurological Society was held on October 12, 1916, for the purpose of discussing the management of the recent epidemic. A committee, consisting of Drs. F. Tilney, B. Sachs, C. L. Dana, W. Timme, and W. M. Leszynsky, was appointed to survey the field. Clinics were visited in order to ascertain the scope of the work. Conditions were found to vary at the three large orthopedic institutions, but, owing to lack of funds, facilities and equipment were entirely inadequate. Treatment was limited to braces and massage, and no neurological observations were made. Two hundred, three hundred, and two hundred patients were treated respectively in each; in one only was neurological aid sought. At Bellevue Hospital and Cornell Medical School there was cooperation of neurologists and orthopedists. At Mount Sinai Hospital and the Neurological Institute patients were supervised by neurologists; at all other dispensaries patients were treated in the orthopedic departments. In 1907 the epidemic in New York, comprising about 2,500 cases, was not discovered until the large number of paralyses in children attracted attention in the dispensaries. No official measures were instituted, but in October, 1907, the Neurological Society appointed a committee, consisting of neurologists, pediatrists, bacteriologisis, and orthopedists, to study the epidemic of that year. Results of careful analyses of 752 cases were embodied in a volume called "Epidemic Poliomyelitis; Report of the Collective Investigation Committee on the New York Epidemic of 1907." This fully demonstrated the interest of the neurologists in the disease. Since then the Health Department had been active in quarantining and controlling the disease, but the report of the Neurological Society seemed to have been disregarded or forgotten. In the recent epidemic the value of cooperative neurological study had been entirely forgotten or ignored and no official action had been taken by the New York City Health Department to request the cooperation of neurologists, either in committees of the city administration or those for after-care. Of the Committee for After-care, there were fifty-three members, twenty-five of whom were physicians, but only three of these neurologists. Furthermore, the New York City Health Department had provided information to parents only as to where orthopedic treatment might be obtained. Thus the entire medical control was in the hands of orthopedists. These remarks, the doctor stated, were not meant in any spirit of rivalry. It was, however, universally admitted that poliomyelitis was a disease of the central nervous system, and the disease had hitherto been assigned to the province of neurology, so that the state of affairs as above described was the more extraordinary. The scientific interest of neurologists in the disease, however, could not be so easily eliminated. It should be added that the care by orthopedic institutions was probably a matter of expediency rather than medical selection or preference. If the children were being properly cared for their condition could be properly studied through suitable medical cooperation. The importance of preventive measures, immunization, and laboratory research was fully realized. There should, however, be a standardization of treatment to suit individual requirements, and the best interests of the patients would be served by harmonious cooperation of orthopedists, pediatrists, and neurologists. Disabled children should not be deprived of any benefit resulting from associated service.

The Present Methods of Management of Poliomyelitis in New York City.—Dr. FREDERICK TILNEY made this presentation. He said that last spring preparedness was preached, and after some excitement they were satisfied that they were sufficiently prepared. In the summer came the epidemic, the third in nine years, and found them unprepared. Quarantine was a travesty, and hospitals were not ready. The measures for proper clinical management were lacking, and the opportunity to increase knowledge of diagnosis, prognosis, and treatment was not recognized. Owing to lack of intelligent organization, the epidemic would have to go down into history without scientific record. Treatment of the acute stage fluctuated between radical experimentation and conservative expediency. The after-treatment lacked the necessary organization. Patients were recommended to attend certain clinics, and there the matter ended. The victims of the epidemic needed the best help of the medical profession and to give this, the adequacy of the means now in force had to be considered. A study of the ten largest institutions showed that they had had the care of about 3,000 cases, and a clinical plan of treatment should determine which departments should care for the patients and also which departments should work together. Classification for the grouping of cases should be made and patients should be individualized with reference to therapeutic needs and after-care. Careful records would have to be kept of the cases of paralyses and reexaminations made at stated intervals. Although all cases were treated in orthopedic departments, only 30 per cent. were receiving strictly orthopedic treatment. Few patients had neurological care. As the disease was essentially one of the nervous system, the services of the neurologist must have value. Cooperation between the neurologist and the orthopedist had been lacking. As 64 per cent. of children were under five years of age, muscle education in these ages was impossible. After five years it could be successfully done. Only the neurologist could make the distinctions between the groups of cases as regards types of involvement. He should judge the advisability of electrical treatment for particular cases. A particular type of current was indicated—the galvanic sinusoidal, a slow wave current with alternating polarity. In conclusion Dr. Tilney said that what was most needed at present was a comprehensive plan of organization. The suggestions offered by him covered the following points: (1) The neurologist should direct the after-care of patients; (2) cooperation between neurologists and orthopedists was the ideal plan; (3) classifications of cases should be made by neurologists; (4) reexaminations should be made at stated intervals to classify methods of treatment; (5) there should be a distribution of cases according to the institutions most accessible to the patients; (6) every therapeutic means sanctioned by good authority should be employed; (7) institutions should adopt certain regulations as to staff organizations, with special reference to the number of physicians, nurses, and masseuses per number of patients. Equipment of institutions engaged in the after-care should be brought up to a desired standard.

Diagnosis and Treatment of Poliomyelitis.—Dr. B. SACHS presented this paper. He said that he would single out points of special interest which would bear on the proper future diagnosis and treatment of polio-

myelitis. The duty of the neurologist to the public was twofold—first, to assist, if possible, in prevention of another epidemic; second, to lay down sensible rules for the public in the matter of treatment. Little was known about transference of the disease from one person to another. It had appeared in a crowded section of the city, spread rapidly, and then had appeared in other parts of the country, evidently spread by healthy carriers and also by intimate contact with those afflicted with the disease. Contagion was probably most frequent in the prodromal stage of the disease. In families children had evidently caught the disease from one another, but in hospitals this had not occurred. Thus it appeared that intimate contact was necessary for infection. In the uncertainty of the exact method of transference it was necessary to advise strict quarantine and the greatest possible cleanliness in the home. The dirty conditions of the New York streets, with many uncovered garbage cans, invited epidemics, but the better care of children's food in the past summer had lowered the death rate from gastrointestinal disease so that the death rate was not higher than in non-epidemic years. Evidence had long been established that poliomyelitis was an acute infectious disease of microbic origin. Recently Peabody, Draper, and Dochez had laid great stress on the edematous appearance of the brain and cord, and concluded that the damage to the nerve cells was from direct pressure, by hemorrhage, edema, and exudate. The report of the committee of the Neurological Society on the epidemic of 1907 had evidently been forgotten in New York, but neurologists were familiar with this work and had noted greater virulence and higher mortality in the present epidemic. Since 1907 the work of Flexner and others had brought the possibility of treatment by immune serum nearer. The examination of the cerebrospinal fluid also had been found a valuable diagnostic aid. In some cases with intense infection the respiratory and cardiac centers were affected and the disease was rapidly fatal. In other less severe cases the gray matter of the cord only was affected, and in others the infection was so slight as not to produce paralysis. As regards treatment, the neurologist should always be chiefly responsible, now as well as formerly, when the laboratory worker could not be relied upon as infallible. Furibund forms always showed diminution of deep reflexes and muscle hypotonia, and a detailed neurological examination of the entire body was necessary. In the better known forms of the disease there was rapidly developing paralysis, which subsided in intensity, with first slightly increased, and then lost deep reflexes. Electrical reactions here were of great importance. Irritability was excessive in the first two days, followed by some degeneration. The neurologist should make the differential diagnosis between poliomyelitis and transverse myelitis, which was often difficult. In the early stages of the disease care in feeding and bathing of children and the manner of disposal of the limbs called for expert care and handling. Immune serum injection should be resorted to. Artificial respiration was of aid in cases with respiratory involvement. In after-treatment electrical examinations with faradic and galvanic stimulation should be made of all groups of muscles. Galvanic stimulation could be used to exercise muscles that could not be exercised by the will. Patient reeducation of the muscles by the mother or visiting nurse was highly valuable, also massage after warm baths. The crying need in these cases was for good visiting nurses; this was more necessary than spending public money on ambulances to convey children to the clinics. The neurologist should cooperate with the orthopedist as to the necessity of orthopedic appliances. Too early or too persistent use of braces was to be condemned.

Dr. Charles L. Dana said that with regard to the general management of the late epidemic, it was only fair to remember that nobody knew exactly what to do at its inception. No preparation had been made, because no one knew exactly how to prepare. He thought that the authorities did the best they knew how, acting on the best advice they could get. They made some mistakes, and one was undoubtedly that of ignoring tthe work and possible help of neurology. The speaker said that it was not now too late to introduce their services for the therapeutic work, since the victims of this epidemic would require treatment for a long time. He said that the public, and perhaps some of the faculty, did not realize that a considerable percentage of these victims would not need much treatment anyway. They had the infection, but no or very slight paralysis, and promptly got well. Another percentage of cases, viz., those with single and moderate paralysis involving only one segment of one limb, did not require elaborate treatment and largely improved under simple measures. There was another, a small percentage, in which the patients suffered enormously, having quadriplegic and triplegic paralyses often with involvement of the trunk. These required the most careful supervision and humane attendance, but were often hopeless so far as cure was concerned. There was a fourth group of cases, which included 30 to 40 per cent. of the whole, in which the paralyses were of considerable or moderate severity and distribution. These were the cases in which the very best treatment of every possible kind should be employed. It was this phase of the question which was largely being debated to-night. In further discussion the speaker said that there were two phases of the subject to be considered: one, that of the general management and organization of the institutions and individuals concerned in treatment, and the other that of the technical methods of treatment. With regard to the first, he thought that the New York Committee on After-care of Infantile Paralysis Cases was working earnestly and would, he believed, gradually bring matters into an efficient state. The speaker then went over the various measures used in treatment. Everyone, he said, agreed that warm baths, exercises, muscle training, and educational methods in general were definitely helpful. Some doubted the value of electricity; others acclaimed it. The speaker said that he did not give his opinion but simply his experience, which was that it was helpful in properly selected cases, and he considered it not only wrong but rather silly to take the position that it was useless when properly applied. He had never seen any direct benefit from massage, but thought it might be a useful thing indirectly if done carefully. There was no question as to the value of warmth or of the utility of exercising in warm baths. The same was true of the measures which gave support to the paralyzed muscles by approximating the ends and relieving the tension. There was a distinct difference of opinion between some neurologists and some orthopedists as to how much support by braces should be given and as to its extent and duration. Neurologists, among them the speaker, believed in allowing as much as possible normal physiological movements, allowing the child to lie on the bed or the floor and kick about, rather than to lock up the joints in positions of perfect anatomical adjustment. Practically, however, he said that there had never been any difference of opinion, when it came to individual cases, between himself and the orthopedist. Referring to the matter of prognosis, the speaker said that a psysiological fact, perhaps not generally known but of hopeful significance, was that the motor cells of the spinal cord practically increased in number from birth to adult life. Kaiser had shown that in the anterior horn of the cervical spinal cord at the time of birth there were about one hundred thousand cells and at the age of fifteen years about two hundred thousand cells. This did not mean that nerve cells actually divided and multiplied, but that minute nucleated nerve cells developed into full-sized functioning cells. Thus there was always hope in these cases of young children that nature was going to assist enormously the work of the therapeutist. The speaker concluded that, on the whole, it was better for us to take the position that all these therapeutic measures should be allowed under wise supervision. We did not, any of us, know enough to stand up and say, "Massage is of no use; electricity is of no use; vibration is of no use, and braces are of no use." This attitude would be unjust to the child and to our art. The essential thing was a sane judgment of what should be used in every individual case. We could only be absolutely sure that good came from wisely applied treatment and bad came from neglect or stupid and unintelligent treatment, whether this was by boluses or braces. We might be sure also that the general profession which both looked on and took part in this discussion would eventually pass final judgment, and the care of poliomyelitis would be taken to or stay with the pediatrist, the neurologist, or the orthopedist in accordance with the final test of experience. He believed it would come about that the cases would be assorted to each department in accordance with individual indications and the stage of the disease. But now, while we waited, it was only right that we should urge upon those who had any authority in dispensary therapeutics of the crippled children that they give the child *all* the measures known to be prob-

ably helpful when wisely applied, and surely this meant that they should secure the cooperation of good and soundly trained neurologists, for they were persons trained in dealing with paralyses, familiar with the anatomy and physiology of the disease, and able to give help in diagnosis and prognosis as well as therapeutics. He made the qualifications of *good* neurologist, because of the neurologist who dealt with the delicate mechanisms of the soul as well as of the body, it was especially true to paraphrase what Horace said of poets and poetry—"In some specialties mediocrity and tolerable endowments may properly be allowed, but neither gods nor men give any indulgence to middling neurologists."

Dr. M. Allen Starr said he could only add that every suggestion made by Drs. Sachs and Dana met with his approval. They had every right to use every method that they knew of as a therapeutic aid. He agreed with Dr. Sachs in regard to electricity. He had opposed its indiscriminate use for many years, but he thought that the use of electricity for the purpose of exercising muscles which could not be exercised by the will was certainly beneficial. A great many children could not use the muscles voluntarily. For two years after the onset of the disease constant improvement was possible. Exercise could be given by one kind of electrical current only; that was the galvanic. Faradism did nothing but scare the child. The sinusoidal current was the most efficacious. He thought electricity could be given properly with intelligent training by anyone, and six lessons to a careful and intelligent mother in the use of the galvanic battery should enable her to give it properly. This could not always be done with the tenement house population, and with this element it was well to bring the child to the clinic for electricity. As Drs. Sachs and Dana had pointed out, visiting nurses should be employed by philanthropic individuals, and this recommendation should be made to them. There was great benefit in graduated exercise under direction. Some years ago Dr. Fraenkel pointed this out and instructed them in the improvement to be gained in locomotor ataxia by adjusted series of movements. With the patient working by himself there was not much result, but with a trained instructor to carry out the training and help and encourage the patient very remarkable results were obtained. In educational exercises there must be someone to understand the object of the work. Dr. Starr had seen some work of Dr. Lovett's with a Harvard student, and he had succeeded in reeducating the muscles of his arm. This was done with the intelligent cooperation of the patient. As regarded massage, he thought it could be best done under water, and any mother could be instructed in this. He thought the Zander instruments were important. As regards braces, out of 404 cases there were 280 with paralyzed legs, 84 arm cases, and 40 of the face and neck reported in the epidemic of 1907. Orthopedic appliances would, then, benefit the 280 cases, but the remainder they would not affect. Thus a great many cases were not open to orthopedic treatment. The mind of the public had been unnecessarily directed to the question of braces, and it should be borne in mind that the brace which kept the muscle from recovering function was doing harm. Braces should not be kept on all the time.

Dr. E. D. Fisher said that he could hardly agree with the point of view that had been expressed, that there had been any antagonism between neurologists and orthopedists. He had seen many cases of poliomyelitis during the past summer and in the hospitals, and the opportunity was open to others. In regard to the treatment of the cases, it was not necessary for the neurologist to treat the case in the early stage. The neurologist could not take the credit for the discovery of the early stages; that work belonged to the laboratory. As regards the future of these cases, they must agree heartily with all the remarks of Drs. Starr and Dana. The combination of treatment should be by the orthopedists and the neurologists. He did not think that they had to blame themselves in this epidemic. Very careful work had been done and the results would be made clear later.

Dr. Walter Timme read some resolutions drawn up at a special meeting of the New York Neurological Society (see page 950).

Dr. Virgil P. Gibney said he felt that this had been exclusively a neurological banquet, and while listening to the various experiences he was reminded of a story of a young man who committed suicide by hanging himself to the limb of a tree, and the question arose why he did it. It was said because he was criticised. But if he were not criticised it were better that he commit suicide, as he would be a dead one already. The doctor said he agreed with many of the views that had been expressed during the evening. He was formerly a member of the society, and was even at one time put up as a compromise candidate for president. For many years he had employed faradism and galvanism and applied it to the treatment of paralyzed limbs. He got patients in the early stages and took measurements of the limbs, recording the results faithfully, and after thirteen years he came to the conclusions that Dr. Starr had expressed and he felt that galvanism was good as a diagnostic measure in obtaining the reaction of degeneration. He had referred many patients to neurologists and had also carried out the treatment they suggested. He had found the galvanic current was useful in a certain number of cases during the first year or two. He always told patients they could have electricity and massage if they wanted, but he did not assure them that the treatment would yield them the results they expected. He thought that paralyzed paients had a right to all kinds of therapeutics not harmful and holding out relief, however little. Warm baths could be of use. In the treatment of deformity they employed braces and plaster of Paris for a while, and when the deformity recurred, after allowing the limbs to go free, they used the braces again. He felt that though they were orthopedic men they did practise neurology just as faithfully as did the neurologists. In reference to Dr. Starr's remark as to the inapplicability of appliances to the upper extremity, he found that the deltoid had been paralyzed very frequently in this epidemic and they were constructing an appliance to lift the arm up and rest the deltoid muscle. He believed firmly in the theory that had been advanced, not to overtire a weak muscle. He remembered that Dr. Lewis A. Sayre used to say that you must not whip up a tired horse, and one must apply this to the tired muscle. As regards drop foot, they had to correct that deformity, and in spite of all treatment they were still working on the cases that occurred in the 1907 epidemic. They had given the patients electricity and massage; they had stiffened joints; and they had implanted tendons. The present epidemic was the most serious they had had, and the orthopedic men were willing to cooperate heartily with the neurologists.

Dr. R. H. Sayre said that it seemed to be taken for granted that the orthopedist did the patient up in plaster of paris and left to God his improvement. However, the orthopedist made use of all the means used by the neurologist.

Dr. A. H. Cilley asked if the strictures passed upon the Health Department in not using the services of neurologists were really well taken. Was it true that these services had been offered and refused? He knew of two neurologists that had been asked and they both were away.

Dr. William M. Leszynsky said that he had made the above remarks with deliberation and had every reason for his statements.

The Electromagnet in Military Surgery.—Cords states two procedures are in use, viz., extraction of metal splinters at a distance and employment of the magnetic sound with the same aim. They are both of undoubted value, especially in cerebral surgery.—*Zentralblatt für Chirurgie.*

Acute Hallucinatory Confusion, Optic Neuritis, etc., from Paint Fumes.—Besenbouch alludes to the frequency of untoward effects of the volatile principles in paints as experienced by painters. He relates a case in which the nature of the fumes was obscure. Benzol could be excluded, but the manufacturers admitted the use of a distillate of Borneo petroleum known as sanzajol. This statement was confirmed by an analysis. The toxic substance was also identified as putröl, a substitute for turpentine known for its disagreeable odor. The paint, a light green, was used on ships, especially for decorating small spaces, in which ventilation was poor. Numerous cases of poisoning had been reported, and a single case is given in detail. The victim made an eventual recovery. To prevent such accidents painters are warned not to converse, whistle, etc., while painting. The greatest possible ventilation should be secured, a portable ventilator being available. The shift should be only 3 hours long with an hour's intermission, to be spent on deck. The paint, pronounced relatively nontoxic, was not condemned.—*Archiv für Schiffs und Tropen-Hygiene.*

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